UNITED STATES DEPARTMENT OF ENERGY

TRANSITION 2008

PROGRAM DETAILS

BOOK THREE

U.S. DEPARTMENT OF ENERGY

U.S. Department of Energy, Transition 2008 – Program Details

Section 1 - National Nuclear Security Administration (NNSA)

Section 2 - Office of Science (SC)

Section 3 - Office of Energy Efficiency and Renewable Energy (EERE)

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National Nuclear Security Adminstration

National Nuclear Security Administration
Overview and Office of the Administrator

Organization Information

Organization Name:

National Nuclear Security Administration (NNSA)
Office of the Administrator

Address:

1000 Independence Avenue, SW, Room 7A-199, Washington, DC 20585

Organization Phone Number:

202-586-5555

Organization Website:

www.nnsa.energy.gov

POC E-mail Address:

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Supporting the DOE Mission

The Office of the Administrator supports the Department of Energy (DOE) Strategic Theme 2, Nuclear Security: Ensuring America's nuclear security. Within this Strategic Theme, the Office of the Administrator supports the following DOE Strategic Goals:

- Strategic Goal 2.1, Nuclear Deterrent. Transform the Nation's nuclear weapons stockpile and supporting infrastructure to be more responsive to the threats of the 21st century.
- Strategic Goal 2.2, Weapons of Mass Destruction. Prevent the acquisition of nuclear and radiological materials for use in weapons of mass destruction and other acts of terrorism.

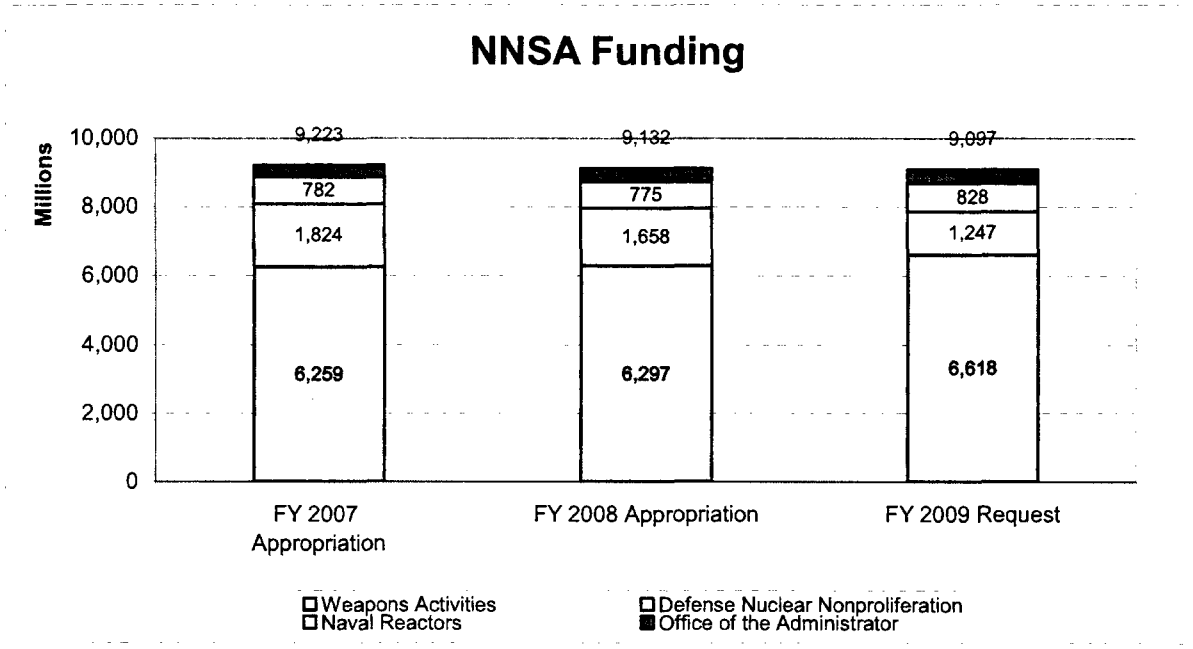
The Office of the Administrator contributes to these Strategic Goals by providing Federal personnel and resources necessary to plan, manage, and oversee the operation of all NNSA programs.

Mission Statement

NNSA's primary missions are to strengthen national security through the military application of nuclear energy and reduce the global threat from terrorism and weapons of mass destruction. To support these missions, the Office of the Administrator creates a well-managed, inclusive, responsive, and accountable organization through the management of human capital, enhanced cost-effective utilization of information technology, and greater integration of performance data.

Status

Budget:



FY 2009 Congressional Request: $9,097,262,000

People:

Federal FTEs	Actual FY 2007	Actual FY 2008	Requested FY 2009
Office of the Administrator			
Headquarters			
Office of the Administrator	71	79	71
Defense Programs	173	181	189
Defense Nuclear Nonproliferation	229	218	249
Emergency Operations	80	89	90
Infrastructure and Environment	28	31	31
Management and Administration	88	83	90
Defense Nuclear Security	24	23	29
Future Leaders Program	53	55	57
Subtotal, Headquarters	*746*	*759*	*806*
NNSA Service Center	433	428	466
Livermore Site Office	95	96	107
Los Alamos Site Office	102	103	116
Sandia Site Office	83	82	92
Nevada Site Office	93	91	109
Pantex Site Office	83	76	86
Y-12 Site Office	83	82	86
Kansas City Site Office	44	43	49
Savannah River Site Office	27	33	25
Total, Office of the Administrator	**1,789**	**1,793**	**1,942**
Secure Transportation	536	544	647
Naval Reactors	192	191	209
Total, NNSA	**2,517**	**2,528**	**2,798**

232 Support Service Contractors at Headquarters;

71 Management and Operating (M&O) contractors at Headquarters; and,

The national laboratories, test site, and production plants staff number about 32,000 and are covered by the M&O contracting arrangements.

Facilities:

- Headquarters
  - Forrestal and L'Enfant Plaza (Washington, DC)
  - Germantown (Germantown, MD)
- Service Center (Albuquerque, NM)
- Savannah River Site Office (Aiken, SC)
- Y-12 Site Office (Oak Ridge, TN)
- Kansas City Site Office (Kansas City, MO)
- Pantex Site Office (Amarillo, TX)
- Nevada Site Office (Las Vegas, NV)
- Sandia Site Office (Albuquerque, NM)
- Los Alamos Site Office (Los Alamos, NM)

- Livermore Site Office (Livermore, CA)

Performance:

FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Advanced Simulation and Computing Campaign – *Effective*	Inertial Confinement Fusion Ignition & High Yield Campaign and National Ignition Facility – *Moderately Effective*	Directed Stockpile Work – *Moderately Effective*	Science Campaign – *Moderately Effective*	Nuclear Weapons Incident Response – *Moderately Effective*	Advanced Simulation and Computing Campaign – *Effective*
International Materials Protection and Cooperation – *Effective*	Readiness in Technical Base and Facilities – Operations – *Moderately Effective*	Secure Transportation Asset – *Moderately Effective*	Readiness Campaign – *Effective*	Pit Campaign – *Effective*	Readiness in Technical Base and Facilities – *Moderately Effective*
Facilities and Infrastructure Recapitalization – *Moderately Effective*	Elimination of Weapons Grade Plutonium Production (new program) – *Results Not Demonstrated (reassessed in FY 2007 as Effective)*	Nonproliferation and International Security – *Effective*	Nonproliferation and Verification Research and Development – *Moderately Effective*	Global Threat Reduction Initiative – *Effective*	International Nuclear Materials Protection and Cooperation -- *Effective*
Safeguards and Security – *Adequate (reassessed in FY 2006 as Moderately Effective)*			Global Initiatives for Proliferation Prevention – *Effective*	Fissile Materials Disposition – *Moderately Effective*	
			Naval Reactors – *Effective*	Engineering Campaign – *Moderately Effective*	

NNSA FY 2008 PART/Joule Performance Measures
3rd Quarter Summary

SUMMARY BY TARGETS	NUMBER	REMARK(S)
GREEN	77	DSW (4), Science (6), Engineering (5), ICF (4), ASC (4), Pit (2), Readiness (3), RTBF (3), STA (5), NWIR (1), FIRP (4), EPO (2) , DNS (Physical) (2), Cyber Security (2), NN R&D (6), EWGPP (2), NIS (5), INMP&C (5), FMD (2), GTRI (5), NR (5)
YELLOW	5	ICF (1), Pit (1), Cyber Security (1), EWGPP (1) , OA (1)
RED	3	DSW (1), Pit (1), RTBF (1)
TOTAL	85	

History

NNSA was established in 2000 as a separately organized agency within DOE. The NNSA Act (Title XXXII of the National Defense Authorization Act for Fiscal Year 2000, Public Law 106-65) specifies that the NNSA's national security missions are:

- To enhance U.S. national security through the military application of nuclear energy;
- To maintain and enhance the safety, reliability, and performance of the U.S. nuclear weapons stockpile (including the ability to design, produce, and test) in order to meet national security requirements;
- To provide the U.S. Navy with safe, militarily-effective nuclear propulsion plants and ensure the safe and reliable operation of these plants;
- To promote international nuclear safety and nonproliferation;
- To reduce global danger from weapons of mass destruction; and,
- To support U.S. leadership in science and technology.

NNSA is currently responsible for the management and security of the Nation's nuclear weapons, defense nuclear nonproliferation, and naval reactor programs. NNSA responds to nuclear and radiological emergencies, both in the U.S. and abroad. In addition, NNSA agents provide safe and secure transportation of nuclear weapons and components and special nuclear materials, along with other missions supporting national security.

In 2002, NNSA reorganized and eliminated regional operations offices in New Mexico, California, and Nevada. Contract and project management oversight responsibility for NNSA's laboratories, plants, and special facilities was given to individual site offices. NNSA Headquarters retained responsibility for strategic and program planning, budgeting, and oversight of research, development, and nonproliferation activities. In addition, a Service Center

was established in Albuquerque, New Mexico, to provide procurement, human resources, and other support services to the site offices.

NNSA oversees management by contractors of day-to-day site operations to ensure adherence to DOE policies and contractual obligations when operating the laboratories, production plants, and other facilities within the NNSA complex. These facilities implement NNSA's Stockpile Stewardship Program, which includes operations associated with surveillance, assessment, maintenance, refurbishment, manufacturing, and dismantlement of the nuclear weapons stockpile, as well as research and development and certification efforts.

The Office of the Administrator oversees all programs within NNSA and is responsible for: policy and guidance; strategic and program management; program direction; budgeting; resource allocation; safeguards and security; emergency management; environment; contracts; intelligence; counterintelligence; personnel; and, Congressional and public affairs.

Critical Operating Procedures

The Office of the Administrator uses various means and strategies, including collaborative activities, to achieve its goals. NNSA works directly with DOE to adopt enhanced business systems. NNSA implemented a disciplined planning, programming, and budgeting process to assure that programs are well integrated and cost effective. The Office of the Administrator also implements information and acquisition management tools and practices for improved job performance and efficiency.

NNSA conducts various internal and external review and audits. NNSA programmatic activities are subject to review by the Congress; the Government Accountability Office; the Department's Inspector General; the National Security Council; the Defense Nuclear Facilities Safety Board; and, the Department's Office of Independent Oversight and Performance Assurance. Each year, numerous external independent reviews are conducted on selected projects. Additionally, NNSA Headquarters senior management and Field Managers conduct frequent, in-depth reviews of cost, schedule, and scope to ensure projects are on-track and within budget.

NNSA has established a comprehensive validation and verification process as part of the Planning, Programming, Budgeting, and Evaluation system. Long-term performance goals are established and validated during the planning phase and linked to annual targets and detailed technical milestones. During the programming phase, budget and resource trade-offs and decisions are evaluated based on the impact to annual and long-term performance measures. These decisions are documented and used to develop budget requests. Program and financial performance for each measure is monitored and progress verified during the execution and evaluation phase.

NNSA validation and verification activities include a set of tiered performance reviews to examine program management and corporate performance against long-term goals. The reviews include: 1) the Office of Management and Budget's Program Assessment Rating Tool; 2) the NNSA Administrator Program Reviews; 3) the NNSA Mid-Year Finance and Performance Review; 4) quarterly reporting of progress through the Department's JOULE performance tracking system; 5) Program Management Self Assessment reporting; and, 6) the NNSA Administrator's Annual Performance Report.

The NNSA Administrator reviews each NNSA program annually during the NNSA Administrator's Program Reviews. These reviews involve all members of the NNSA

Management Council to ensure progress and recommendations are fully integrated for corporate improvement. The focus of the reviews is to verify and validate that NNSA programs are on-track to meet their long-term goals and annual targets.

The review results are reported quarterly in the Department's JOULE performance tracking system and Program Management Self Assessment reporting. The results are reported annually in the NNSA Administrator's Annual Performance Report and the DOE Performance Accountability Report. These documents help measure the progress that NNSA programs are achieving both in annual targets and long-term goals. The summary level documents help senior managers verify and validate progress toward NNSA and DOE commitments listed in the budget.

Recent Organizational Accomplishments and Strengths

In addition to the accomplishments below, specific organizational accomplishments and strengths are contained in the individual NNSA organization's Standard Issue Papers.

Annual Assessment of the Safety, Reliability, Performance, and Military Effectiveness of the Nuclear Weapons Stockpile. The 12th Annual Assessment of the Stockpile for 2007 has been completed by the Secretaries of Energy and Defense and has been transmitted to the National Security Council for the President. The Secretaries of Energy and Defense; the Commander, Strategic Command; and, the Directors of Livermore, Los Alamos, and Sandia National Laboratories are required annually to carry out a comprehensive assessment of the stockpile and to report their findings to the President. The focus of the assessment is on the safety and reliability of the stockpile in the absence of underground nuclear tests. Today's stockpile remains safe and reliable and does not require underground nuclear testing.

Global Threat Reduction Initiative (GTRI). Under NNSA's Global Threat Reduction Initiative, NNSA completed a project to increase the security of radiological materials in China prior to the Olympic Games in Beijing. The joint U.S.-China project team completed radiological physical protection upgrades at 11 facilities at eight sites, totaling over 7 million curies secured. These sites contained large radiological sources that were in close proximity to Olympic venues. In addition, the team removed disused sources from 22 sites, totaling over 32,000 curies.

Lab Vision. On June 19, 2008, Secretary of Energy Bodman announced his approval of a "Lab Vision" paper setting forth a strategic mission of NNSA's three national security laboratories and the Nevada Test Site to be able to work closely with other Federal agencies to respond to evolving 21st century global security threats.

Leadership Challenges

Accomplishing the NNSA National Security mission is replete with challenges. In addition to the President's Management Agenda, there are challenges that have been specifically identified by the Department, the General Accountability Office (GAO), and the Inspector General (IG). Additionally, NNSA has identified Special Focus Areas for the NNSA management team to provide programmatic focus. Not all items that are inclusive to these various management and programmatic areas require corrective actions but, rather require significant management attention above and beyond what is normally required for efficient management and assist in achieving Agency goals.

Stockpile Stewardship
The Stockpile Stewardship Program was established to ensure that the nuclear weapons stockpile is safe, secure, and reliable without underground testing. The nature of the program, in and of itself, makes Stockpile Stewardship a significant management challenge. This program is composed of discreet elements, the success of which makes Stockpile Stewardship a viable program. These discreet elements go through a process of review, audit, and independent oversight—with corresponding corrective actions being developed, that the development of a corrective action plan for Stockpile Stewardship becomes moot. Our Planning, Programming, Budgeting and Evaluation process (and associated Five-Year planning) ensures that the Stockpile Stewardship Program will meet the Nation's Nuclear Weapons mission. The discreet elements include, but are not limited to, Project Management, Oversight of Contractors/Contract Administration, Safety and Security, Human Capital Management, and Complex Transformation. Additionally, NNSA has six Special Focus Areas to focus on the most pressing needs of NNSA. One of these Special Focus Areas, all of which will be discussed later, is established to focus on stockpile planning.

Oversight of Contractors/Contract Administration
As with Stockpile Stewardship, Contract Administration is a significant management challenge because roughly 80 percent of NNSA's budget is provided to Management and Operating Contractors (three nuclear weapons laboratories, four production facilities, and the Nevada Test Site). Therefore, almost all Federal functions lead in some form or fashion to the proper administration of our contracts, and in making our contractor evaluation process more efficient, effective, and responsive to NNSA needs. In addition to topic specific reviews (Purchasing and Property) implemented by NNSA's Senior Procurement Executive, there are some tools which provide Federal managers with quality metrics in various areas. These tools include a balanced scorecard/objectives matrix and A-123 entity controls testing as prescribed by the Office of Management and Budget.

The most important element of our contractor oversight is the Federal Headquarters and Site Office Oversight and Assurance Plans and the Contractor Assurance Systems put in place by our contractors. These allow NNSA, through dynamic transparency, to manage risks and ensure that the contractors take accountability for their actions and operations. As with Stockpile Stewardship, NNSA has a Special Focus Area that is focused on ensuring the overall effectiveness of the interface between Federal Oversight and Contractor Assurance Systems for Nuclear Safety, Physical, and Cyber Security.

Project Management
The Department's and NNSA's contract and project management activities have been designated by the Government Accountability Office as a high-risk area that is vulnerable to waste, fraud, and abuse. NNSA has a Special Focus Area to integrate project management best practices throughout the NNSA complex and to further enhance our credibility by increasing the likelihood of project success. Through the efforts of this Special Focus Area, NNSA is, or has:

- Ensured that the number of Federal contracting and project management staff with the skills to plan, direct, and oversee project execution is adequate;

- Developed an effective front-end planning process for projects
- Ensuring that NNSA has consistent and effective independent Government estimates;
- Improved our project-related acquisition planning/contracting capability;
- Ensuring that NNSA improves its capability to identify and manage project risks; and, clarified roles, responsibilities, authorities, and accountability in project management.

Safety
NNSA's Nuclear Safety program was strengthened during the realignment of roles and responsibilities within the weapons program. The incumbent Chief, Defense Nuclear Safety, was reassigned to head a new line organization responsible for the safety of nuclear operations. This new organization will provide the weapons program with indigenous capability to address safety issues more directly and effectively. The Office of the Chief, Defense Nuclear Safety, continues to provide staff support to the NNSA Administrator and Central Technical Authority on nuclear safety matters, and an acting Chief has been designated. NNSA continues to work with Departmental elements to improve the overall safety culture within NNSA.

Security
NNSA is continuing the implementation of plans and systems to meet our protection requirements. There has been a realignment of roles and responsibilities within the Office of the Chief, Defense Nuclear Security, which will provide better oversight and accountability of processes necessary to ensure an efficient and effective program.

Strategic Management of Human Capital
NNSA continues building a vibrant human capital management program characterized by clear program direction and delegations of authorities, by management programs, guidance, tools, policies and programmatic innovations and improvements tailored to NNSA's unique mission needs. Our Future Leaders Intern Program is successful. Our policies for efficient, effective, and innovative plans for merit promotion; recruitment, relocation, and retention incentives; student loan repayment; and, strategic management of human capital are in place and working. We continue to utilize Managed Staffing Plans in assigning staffing targets, and in identifying critical hiring needs, skills mix imbalances, and opportunities for retraining. Our automated workforce analysis and planning process is a first within the Department.

Most importantly, in partnership with the Office of Personnel Management, NNSA commenced an unprecedented pilot personnel Demonstration Project in April 2008, that is designed to rebuild our basic Civil Service employment system. This project will alleviate many traditional regulation-based encumbrances on managerial discretion and flexibility when hiring, promoting, and rewarding employees while assuring adherence to the Federal Government's fundamental personnel laws and merit-based Civil Service regulations.

Organizational Management
A continuing significant management challenge is ensuring that the optimum management structure is in place to effect change, implementation, and integration of programs. Within NNSA, our organizational management changes have affected the programmatic and management challenges discussed above. For example, we have reorganized the Office of Defense Programs to refine lines of accountability and oversight in the areas of Site Management

and Nuclear Safety; the Office of the Chief, Defense Nuclear Security for improved integration; the Office of the Chief Information Officer for improved visibility and management for our cyber security programs; and, the Office of Infrastructure and Environment to reenergize our Nuclear Material Consolidation and Disposition efforts.

Special Focus Areas

In May 2007, NNSA announced plans to address the following six Special Focus Areas that were determined to be critical to the accomplishment of NNSA's objectives:

Special Focus Area 1: Ensure the Overall Effectiveness of the Interface between Federal Oversight and Contractor Assurance Systems for Nuclear Safety, Physical, and Cyber Security.

Special Focus Area 2: Nuclear Weapons Stockpile Planning; Reliable Replacement Warhead; and, Complex Transformation.

2A: Ensure the Effectiveness of our Nuclear Weapons Stockpile Planning.

2B: Develop and Implement an Effective Internal and External Communications Strategy for RRW Concepts, Complex Transformation, the overall Stockpile Stewardship Program, and Nuclear Weapons Missions of the NNSA.

2C: Ensure that Planning and Costing Estimates for Complex Transformation are comprehensive and accurate.

Special Focus Area 3: Reenergize the NNSA Nuclear Material Consolidation and Disposition effort.

Special Focus Area 4: Develop and articulate NNSA's Vision for the Future for the integrated roles and missions of the National Security Laboratories.

Special Focus Area 5: Integrate Project Management Best Practices throughout NNSA.

Special Focus Area 6: Reenergize the NNSA Employer of Choice Initiative.

Integrated action teams were appointed and key milestones and deliverables were established. Since May 2007, these teams have made significant progress and status reports to all of NNSA have been issued. Milestones and deliverables have been met and periodic meetings with the NNSA senior leadership have been held. The work of several teams has been completed and all of the other teams are closing in on their overall objectives.

NNSA must continue to mold its programs, staff offices, sites, and Service Center into one cohesive team. NNSA continues to rely on the organizational structure, processes, and procedures for managing an organization to allow NNSA to address these challenges.

The major challenges facing NNSA and over the next 18 months, will continue to be ones of:

- Human Capital Management
- Physical and Cyber Security

- Contract Administration
- Nuclear and Worker Safety
- Program and Project Management
- Complex Transformation

Key Strategies and Timing

At the beginning of CY 2008, the Administrator developed the following four key areas or "themes," as well as a listing of the NNSA's highest priorities, to be addressed over the next 12 months. The four key themes are:

- "Securing and Maintaining an Aging Stockpile without Nuclear Testing;"
- "Transitioning from a Nuclear Weapons Complex to an Integrated National Security Enterprise;"
- "Advancing Nonproliferation and Countering Nuclear and Radiological Terrorism;" and,
- "Expanding our Technical Excellence while Developing the Next Generation of National Security Scientific, Engineering and Program Management Talent."

2008 Priorities:

- Transform the nuclear weapons stockpile through Life Extension Programs (LEPs) and by meeting Advanced Certification Program milestones.
- Reduce the overall stockpile level in accordance with the President's goal and Department of Defense (DoD) requirements; meet and then exceed the scheduled levels of weapons dismantlements at Pantex.
- Consolidate nuclear materials by removing at least 11 metric tons of special nuclear material from NNSA sites for processing and final disposition.
- Reach a Record of Decision (ROD) and finalize the acquisition strategy in 2008 for the Transformation of the Complex. In addition, complete and then implement the acquisition strategy for the Naval Reactors laboratories.
- Complete Materials Protection, Control, and Accountability upgrades to an additional 49 Russian buildings containing weapons-usable material. Downblend 1.2 metric tons of Russian Highly-Enriched Uranium (HEU) to Low-Enriched Uranium. Complete installation of nuclear detection monitors at 51 border crossings in 12 countries, and at 11 Megaports in 10 countries and cease production of Russian fissile material at two reactors, eliminating the annual creation of 800 kgs of weapons-grade plutonium.
- Expand Nonproliferation and Threat Reduction Initiatives including: converting or shutting down eight HEU-fueled reactors; repatriating 374 kgs of fresh and spent HEU; installing detectors in 49 foreign sites; and, recovering thousands of excess radiological sources.

- Launch the Next Generation Safeguards Initiative to revitalize and expand international safeguards and the related technical base. Verify disablement of the North Korean nuclear weapons program.

- Install a total of 40,000 cubic yards of concrete and 7,700 tons of rebar at the Mixed Oxide Fuel Fabrication Facility; negotiate an amended Plutonium Management and Disposition Agreement with Russia; and, deliver nine metric tons of surplus U.S. HEU for downblending into LEU.

- Deliver to the Air Force components for two GPS satellites that will strengthen the U.S. space-based nuclear detonation detection capability; deliver to the Air Force 25 geophysical and seismic research packages that will strengthen U.S. ground-based nuclear detonation detection capabilities.

- Provide scientific and technical support to expanded nuclear counterterrorism efforts across the Federal Government. Strengthen existing counterterrorism cooperation with international partners and conduct emergency response training for at least two additional countries. Bring on line new nuclear render-safe and technical nuclear forensics technologies by the end of 2008.

- Lay the groundwork to ensure Naval Reactors is ready to meet the future needs of the Nuclear Navy to include potential new platform designs.

- Improve operational oversight of the national security enterprise, its programs, and its contractors by:

  - Implementing the Contractor Assurance System;

  - Applying Environment, Safety and Health leading performance indicators;

  - Complying with the Design Basis Threat and maintaining the security enhancements put into place since 9/11; and,

  - Implementing critical cyber security advancements, such as the "Diskless Initiative" and the Enterprise Secure Network.

- Achieve full compliance by NNSA's technical personnel with the requirements of the NNSA Technical Qualifications Program.

- Implement at least one strategic partnership agreement with other Federal Government agencies. This will support our national security mission by applying NNSA laboratories' capabilities and expertise to strategic partnerships with agencies that have national security responsibilities.

- Implement the Federal Pay Banding Demonstration Project to improve our ability to recruit, retain, and reward our best and brightest, which will advance NNSA's Employer of Choice Program.

Each lead official in NNSA has established strategies to meet these objectives and each is tracked on a quarterly basis. Several of these milestones have already been achieved and progress is reported to the Secretary of Energy on a periodic basis.

Critical Events and Action Items. See NNSA organizational standard issue papers for details on specific critical events and action items.

3-month events

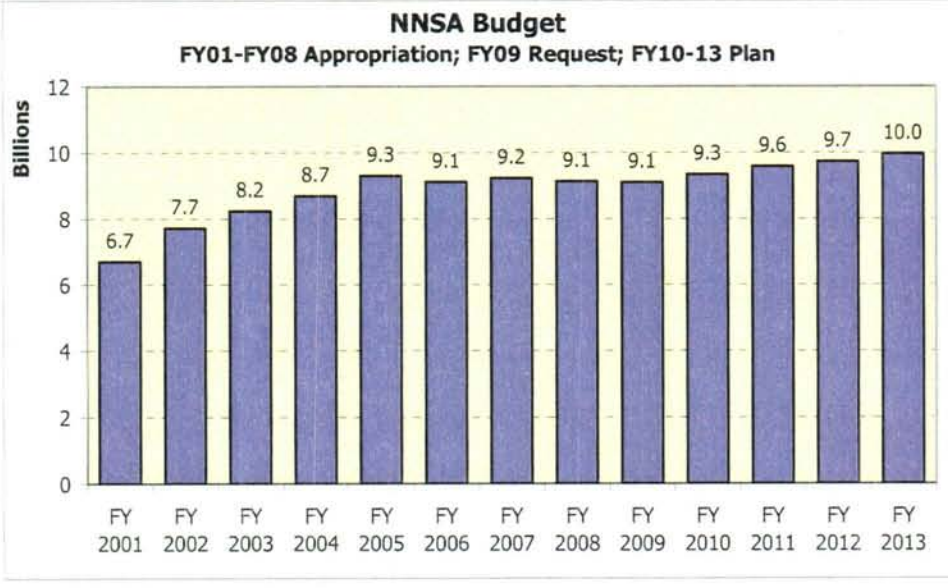
Complete the Annual Assessment of the safety, security, and reliability of the stockpile and provide the required assessments report to the Secretary for submission to the President.

Hot Issues

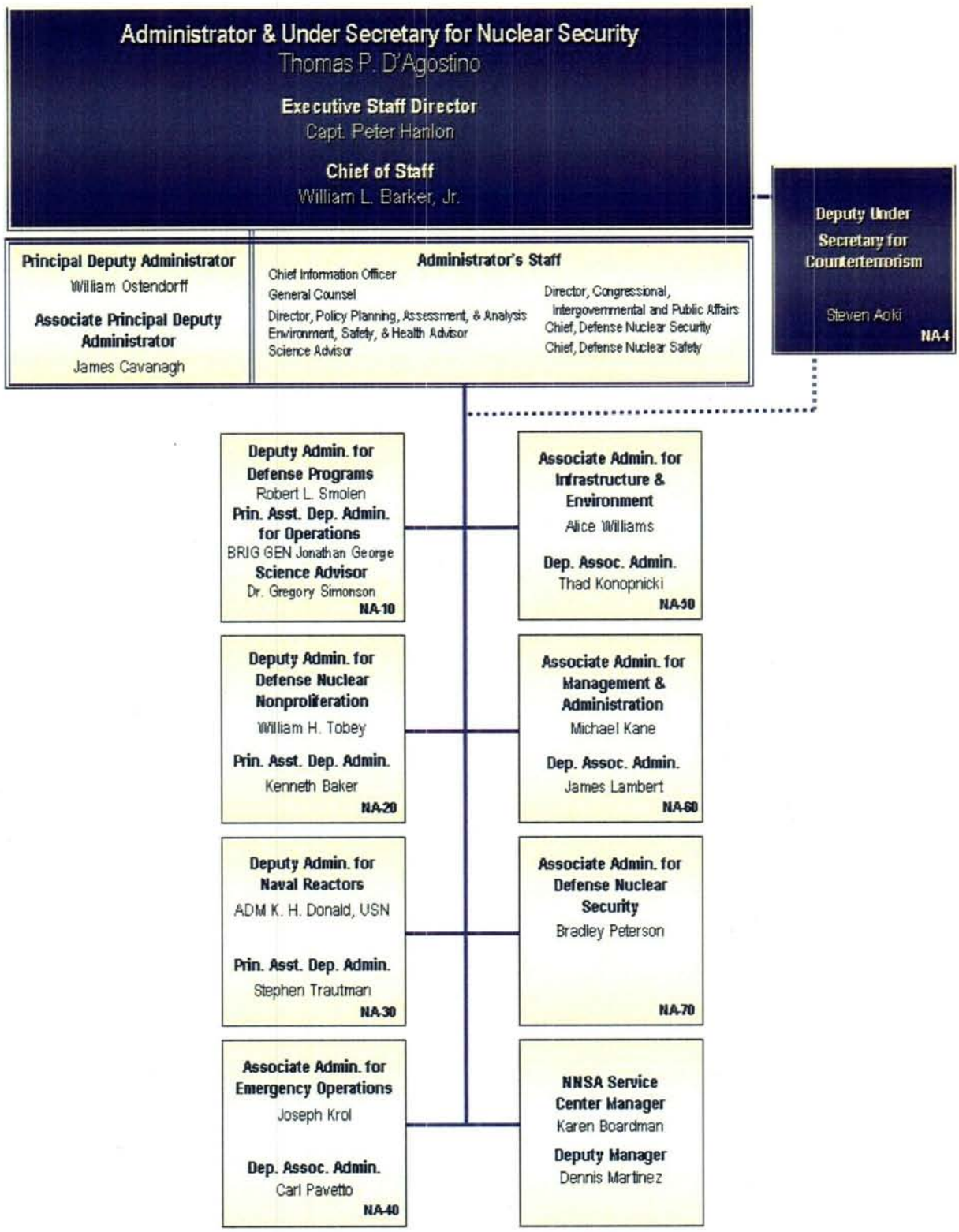
- Stockpile Transformation
- Nuclear Weapons Complex Transformation
- Pit Disassembly and Conversion Facility (PDCF)
- Plutonium Research, Processing and Manufacturing Facilities and Los Alamos National Laboratory (LANL)
- Annual Assessment of the Nuclear Weapons Stockpile
- Overseas Office Expansion and Governance
- NNSA Study of Nuclear Weapons and Nuclear Weapons Parts Control and Accountability
- 2009 Nuclear Posture Review
- Bipartisan Congressional Commission on the Strategic Posture of the United States
- Nuclear Incident Response Teams
- State of New Mexico Cleanup Order on Consent for LANL Legacy Environmental Cleanup
- Nuclear Incident Response Teams
- Biosurety Executive Team
- Nuclear Material Integration
- OHIO-Class Ballistic Missile Submarine Replacement
- Nuclear-Powered Surface Combatant
- Land-Based Prototype Refueling
- Spent Nuclear Fuel Infrastructure Recapitalization
- Supercritical Carbon Dioxide Energy Conversion

Funding Profile

	FY 2008 Current Appropriation	FY 2009 Congressional Request	FY 2010	FY 2011	FY 2012	FY 2013
National Nuclear Security Administration (NNSA)						
Weapons Activities	6,297,466	6,618,079	6,985,695	7,197,844	7,286,912	7,460,318
Defense Nuclear Nonproliferation	1,657,996	1,247,048	1,082,680	1,076,578	1,111,337	1,133,982
Naval Reactors	774,686	828,054	848,641	869,755	880,418	899,838
Office of the Administrator	402,137	404,081	419,848	436,266	451,771	469,173
Total, NNSA	**9,132,285**	**9,097,262**	**9,336,864**	**9,580,443**	**9,730,438**	**9,963,311**



Current Organizational Chart



National Nuclear Security Administration
Chief Information Officer

Organization Information

Organization Name:

National Nuclear Security Administration
Chief Information Officer

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Organization Website:

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Supporting the DOE Mission

The mission of NNSA is to strengthen national security through the military application of nuclear energy and by reducing the global threat from terrorism and weapons of mass destruction. The NNSA was created by Congress through the National Defense Authorization Act for Fiscal Year 2000 to bring focus to the management of the Nation's defense nuclear security programs. Three existing organizations, Defense Programs, Defense Nuclear Nonproliferation, and Naval Reactors were combined into a new, semi-autonomous, and managed agency within the Department of Energy, headed by an Administrator, who reports to the Secretary of Energy. The creation of the NNSA by the Congress provided a unique opportunity to transform the institution into an integrated nuclear security enterprise capable of delivering quality products on time and within budget.

The role of the CIO within DOE and NSSA are shown in Figure 1.

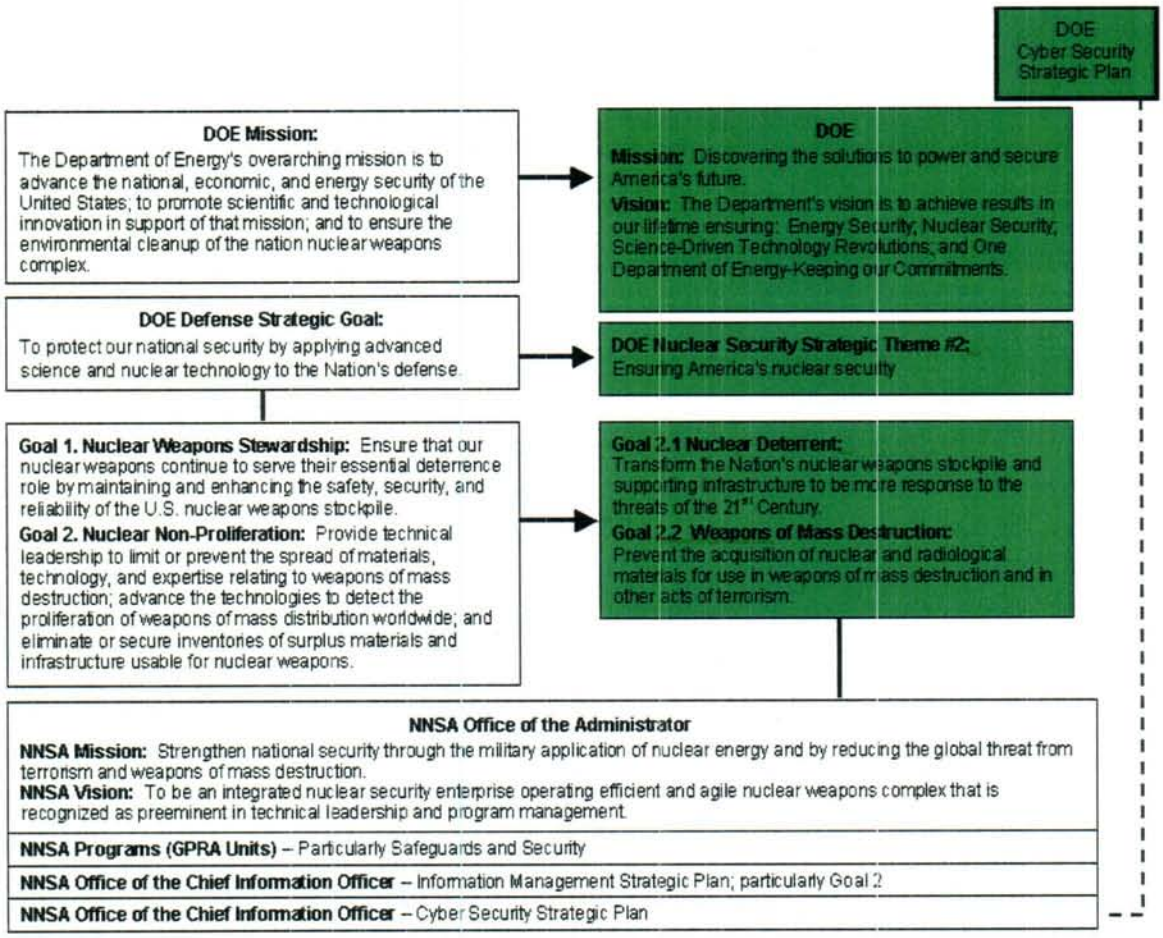


Figure 1. Cyber Security Strategic Plan Links

The overarching goal is to implement a flexible, comprehensive, and risk-based cyber security program that:

- Provides adequate protection of the NNSA information and information assets;
- Receives authority from Executive Orders; national standards; laws and regulations; and Departmental and NNSA orders, manuals, directives, and guidance;
- Results in the following:
  - Policy-driven cyber security architecture, aligned with the NNSA enterprise architecture
  - Programmatic framework and methodology that is based on current policies and procedures
  - Management approach that:
    - Integrates all of the components of a comprehensive cyber security program
    - Ensures alignment of the program with NNSA and Departmental strategic plans and relevant plans of the Offices of the CIO
    - Supports the NNSA mission

- Complies with the DOE's "defense-in-depth" cyber security strategy, and the NNSA Information Management Strategic Plan; and,
- Provides for current certification and accreditation packages across the complex resulting in an official authority to operate as signed by the Designated Approval Authority.

Executing the strategies and meeting the milestones to accomplish the objectives and goals outlined in this plan will result in an integrated cyber security program that considers and balances operations, technologies, and people, and will result in realizing the transformational vision for a "defense-in-depth" methodology. The following figure summarizes NNSA cyber security strategic goals and objectives.

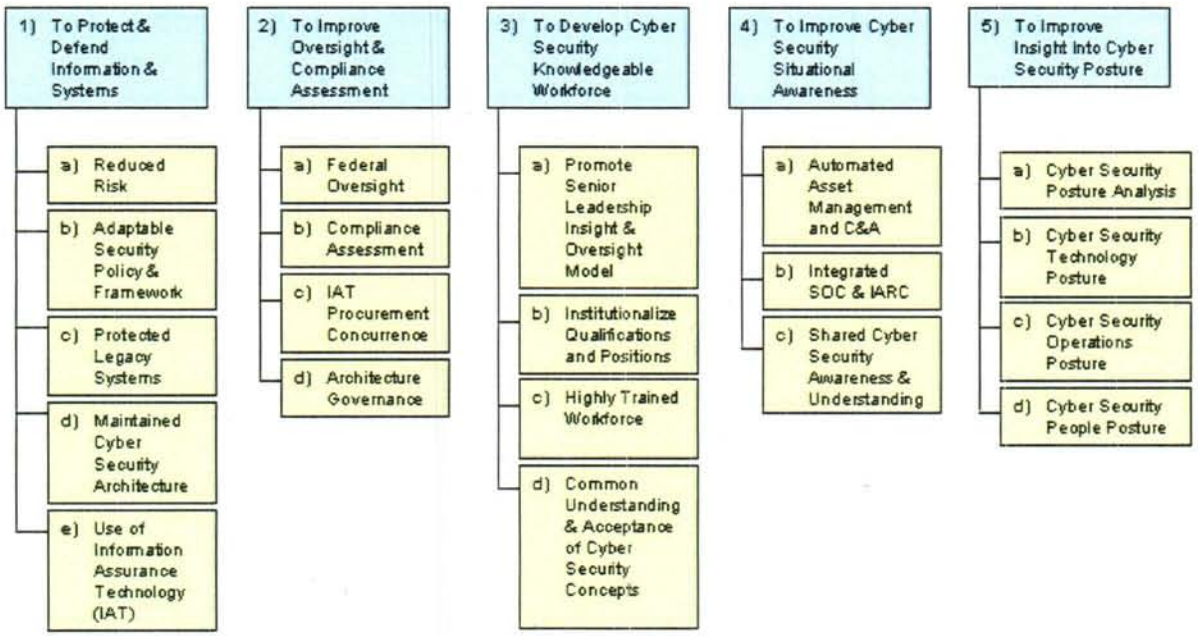


Figure 2. Cyber Security Strategic Goals and Objectives

A critical factor in ensuring adequate protection for all data and assets is the responsive development, updating and implementation of policies, procedures and guidelines to address the latest changes in technologies while defending against the latest threats and vulnerabilities. It is equally important to ensure that those policies, procedures, and guidelines provide for sufficient flexibility to allow their adaptation to the diverse mission across NNSA. Cyber security policies, procedures, guidelines, and performance metrics define the requirements to effectively achieve completion of the NNSA cyber security mission.

Management, operational, administrative, and technical controls are the primary means of protecting and defending NNSA information and information assets. The objectives of this goal are to:

1. Reduce the risk of loss, unauthorized disclosure, or unauthorized modification of information and information systems;

2. Develop an adaptable security policy and guidance framework that results in defense-in-depth based on emerging threats and mission need;

3. Increase cyber security protection of legacy systems;

4. Maintain and continuously improve the NNSA cyber security architecture; and,

5. Drive the use of Information Assurance enabled products, where appropriate.

Figure 3 shows the policy framework and requirement input, coordination output, and implementation output. Figure 4 shows the policy-driven architecture and supporting governance groups.

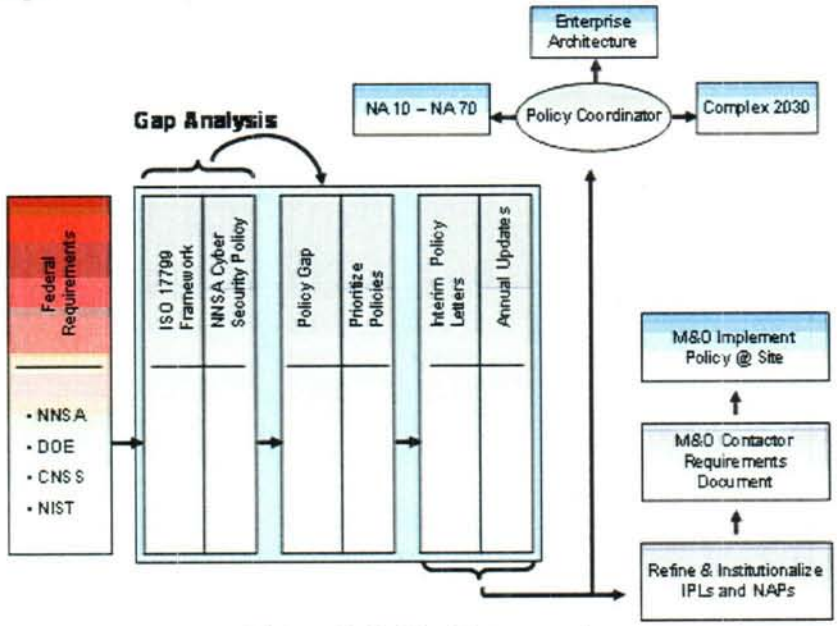


Figure 3. Policy Framework

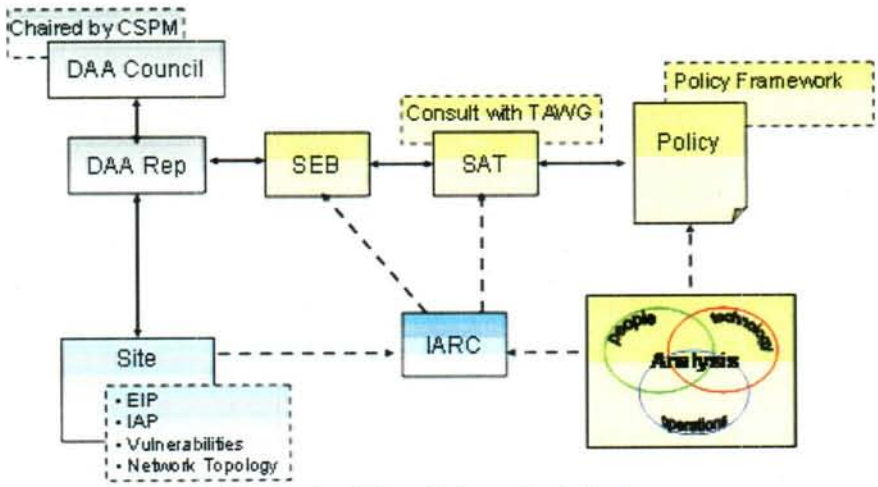


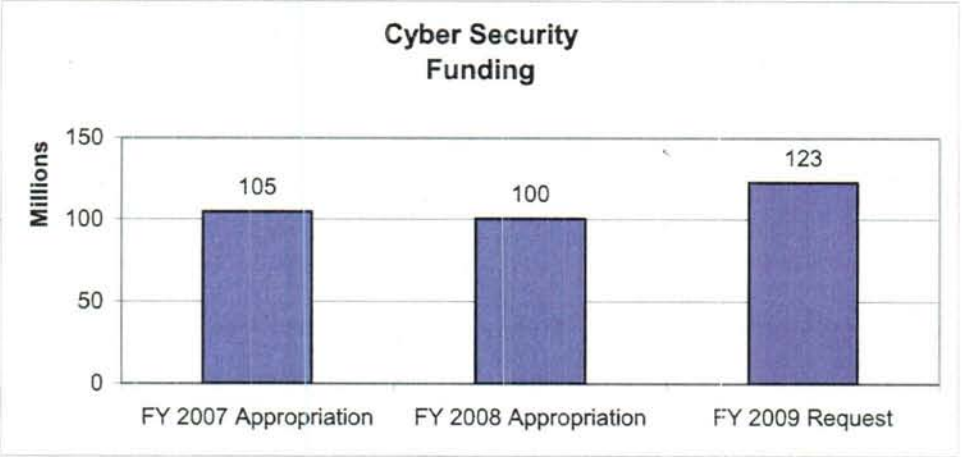
Figure 4. Policy-Driven Architecture

Mission Statement

In support of the NNSA mission, the Office of the Chief Information Officer (OCIO) has the responsibility for the development and implementation of information technology and cyber security policies, procedures and architectures. The mission of the NNSA Cyber Security Program is to ensure that sufficient information technology and information management security safeguards are implemented throughout the NNSA complex to adequately protect in NNSA information assets.

Status

Budget:



FY 2009 Congressional Request: $122,511,000

People:

	FEDERAL EMPLOYMENT		
	FY 2007 ACTUAL	FY 2008 PROJECTED	FY 2008 REQUEST
Cyber Security Headquarters	7	7	12
IT Headquarters	8	9	10
	CONTRACTOR EMPLOYMENT 2008		
	SUPPORT SERVICES		M&O DETAILEES
Headquarters	46		1

Facilities:

Information Assurance Response Center
The Information Assurance Response Center (IARC), a NNSA entity located in Las Vegas, Nevada, provides the DOE/NNSA enterprise with a centralized view of its computer security posture and assists with the prevention, detection, analysis and mitigation of cyber security

incidents throughout the complex. In order to accomplish its mission, the IARC is equipped and staffed to provide the NNSA enterprise and the individual sites that comprise it with 24-hour-a-day, 7-days-per-week, 365 days per year monitoring of cyber security related devices.

As the central NNSA Incident Management reporting agency, the IARC utilizes knowledge gathered from all aspects of incident response to coordinate with the enterprise site for a proactive defense against attacks. The IARC notifies site incident response and cyber security personnel through Information Assurance Vulnerability Alert (IAVA) information of potential threats. The IARC provides the Security Operations Center (SOC) and Network Operations Center (NOC) services for the classified Enterprise Secure Network (ESN). In this role, the IARC is responsible for maintaining and monitoring the ESN to ensure system availability and security.

Performance:

NA-2.2 FY 2008 PART/Joule Performance Measures
3rd Quarter Summary

SUMMARY BY TARGETS	NUMBER	REMARK(S)
GREEN	2	Cyber Security (2)
YELLOW	1	Cyber Security (1)
RED	0	
TOTAL	3	

History

To support the NNSA mission, the NNSA Administrator created the Office of the Chief Information Officer (OCIO) in FY 2003. The mission of the OCIO is to ensure the protection of NNSA information and information assets. To accomplish its mission, the OCIO created the Cyber Security Program with goals, objectives, milestones, and expected outcomes to ensure NNSA information and information assets are protected. The vision of the NNSA Cyber Security Program is to transform the NNSA security posture by making strategic investment in people, operations, and technology.

Critical Operating Procedures

The NNSA Cyber Security Policy (NAP) 14.X series, NNSA Threat Statement, NNSA Risk Assessment, and the Cyber Security Program Strategic Plan are the elements of the Program Cyber Security Plan (PCSP). The NNSA PCSP systematically integrates cyber security into management and work practices at all levels in the NNSA so that missions are accomplished while appropriately protecting information on information systems, establishes requirements and responsibilities for protecting information and information assets. The PCSP is implemented through a Cyber Security Program Plan (CSPP) for each NNSA Element. The PCSP establishes

minimum protection requirements based on the consequence of lost of confidentiality, integrity, and availability of all information. The protection requirements for all information systems are documented in Information System Security Plans (ISSPs). The PCSP is consistent with other NNSA Directives, as well as DOE Orders and Manuals that provide specific security requirements for information systems including communications systems, transmission systems to include classified and unclassified assets.

NNSA follows relevant DOE Orders, Memos, Directives and Guidance with respect to IT services, technology standards and overall infrastructure. These are supplemented or extended, as needed, to meet NNSA-specific requirements, over and above DOE-established standards.

The IT Program has recently reviewed DOE's existing policy statements in order to complete a gap analysis which may result in supplemental policy and guidance to meet NNSA-unique needs. The special focus for NNSA is on cyber security and the protection of sensitive and classified information.

Recent Organizational Accomplishments and Strengths

Cyber Security Accomplishments

- Enterprise Secure Network (ESN) operating at the following sites:
  - Information Assurance Response Center (IARC)
  - Headquarters
  - Kansas City Plant
  - Sandia National Laboratories
  - Savannah River Site
  - Y-12 National Security Complex
  - Pantex Plant
- ESN Two-factor authentication implemented
- Implemented Need-to-Know restrictions on ESN
- Began ESN Classified Network monitoring
- Delivered Pilot Applications
  - Stockpile Dismantlement Db (Sandia)
  - Whitepages (Pantex)
  - Order Management (Kansas City)
  - Spares (Sandia)
  - Datamarts (Pantex)
  - Product Characterization System (Y-12)
- Developed Sight Assisted Visit Plan and Toolkit
- IARC Data Warehouse Completed Build-out

Information Technology Accomplishments

- Published NNSA OCIO Strategic Plan with a five-year time horizon.
- Successfully completed the Headquarters transition to DOE OCIO-sponsored IT Common Operating Environment, in response to OMB's A-76 for IT directive.

- Currently engaged in migrating Federal sector field sites of NNSA to the DOE COE model as described above (projected completion FY09).
- Designated by the NNSA Administrator as the primary approver for activities for the IT sub-activity of the NNSA Multi-Site Initiative. Activities have included: cross-site communication; coordination; goal setting across all eight M&O contractors; and, review and approval through the NNSA OCIO. Objectives focus on economies of scale, cost reduction, cost avoidance; as well as increased efficiencies across the enterprise. Incident awards will be granted, based on performance results.
- Enterprise Architecture efforts -- OCIO has coordinated with NNSA Program Offices to support their EA activities, example: PRIDE initiative; NNSA EA contributions to the DOE EA have resulted in OMB Green rating.
- CPIC – OCIO expertise has guided NNSA field elements to successful OMB Exhibits 53 and 300 submissions and maintained Green ratings.
- IT Program has established and improved communications and information exchange
  - Headquarters-based IT Steering Committee which provides standardization and coordination across the Headquarters elements for their IT needs.
  - Likewise, the IT Program has established a comparable Enterprise-level IT Steering Committee with representatives from each of the Federal Site Offices to ensure greater coordination, communication and standardization across the enterprise.
  - Through the CIO Forum, the IT Program conducts regular meetings and semi-annual face-to-face sessions with all NNSA M&O CIO's and Federal site IT points of contact.

Leadership Challenges

- Challenges facing the leadership at NNSA, many of which are shared by other Federal Agencies and Departments in an integrated computing environment, include assured information sharing, managing risk, identity assurance, network resilience for mission assurance and building and sustaining a superior cyber security workforce. IT & Cyber Management:
  - Improvement to better monitor threats reflects the changing technology
  - Strengthen information sharing, which in turn will help NNSA respond to multiple cyber attacks across critical cyber infrastructure
  - Maintaining and upgrading legacy systems, both hardware and software
  - Improving the insight and oversight of agency-wide IT investments
- Termination of Secure Net and management of ESN Interfaces
- Support for consolidation of Software applications to NNSA chosen solutions
- Effectively developing and implementing enterprise-wide IT solutions

Key Strategies and Timing

Key strategies involve dealing with metrics and analysis methodology, information sharing, integration of cyber security and information technology planning into NNSA's PPBE process, and will implementing consistent and effective policies, management, and processes for NNSA cyber security programs, projects, and services.

Cyber Security Critical Events and Action Items

- **3-month Events**
  - February 2009 – Complete Enterprise Security Network (ESN) Enhancements
  - March 2009 – NAP version C implementation
  - April 2009 – ESN roll-out to additional DOE sites (PNNL, Oak Ridge)
- **12-month Events**
  - Developed the Information Sharing Engine (Need-to-Know) and SIPRNet Gateway to allow access and information sharing across Departments.

Information Technology Critical Events and Action Items

- **3-month Events**
  - March 2009 – completion of Field implementation of Department of Energy Common Operating Environment (DOE COE)
  - April 2009 – sustaining and improving DOE COE IT services, agency-wide
- **12-month Events**

Hot Issues

- Developing and enhancing NNSA cyber security analysis and warning activities
- Reducing cyberspace threats and vulnerabilities
- Promoting awareness of and training in information security issues
- Strengthening cyber security cooperation across the department

Funding Profile

Cyber Security

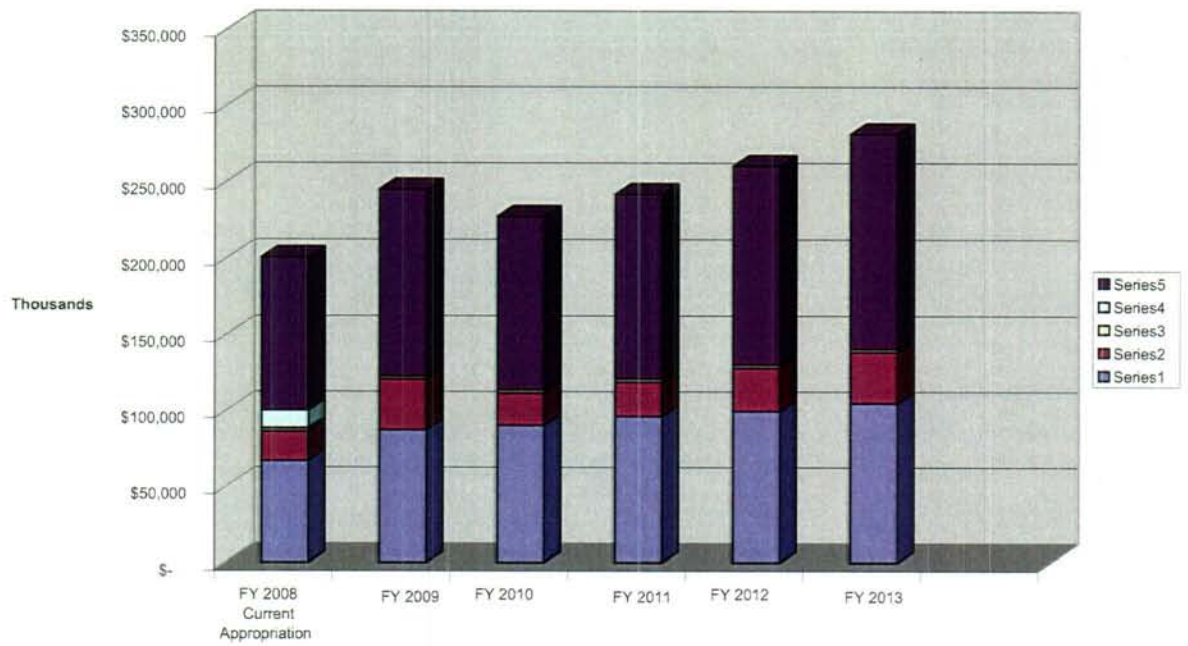


Figure 5. Cyber Security - Homeland Security

Table 1. Cyber Security Funding

	Cyber Security (Homeland Security) *(dollars in thousands)*					
	FY 2008 Current Appropriation	FY 2009 Congressional Request	FY 2010	FY 2011	FY 2012	FY 2013
Infrastructure Program	66,777	87,326	90,150	96,314	99,521	104,971
Enterprise Secure Computing	19,500	33,175	21,500	22,500	28,500	33,500
Technology Application Development	2,010	2,010	2,040	2,060	2,100	2,150
Classified Diskless Workstation Operations	12,000	0	0	0	0	0
TOTAL Cyber Security (Homeland Security)	100,287	122,511	113,690	120,874	130,121	140,621

Information Technology

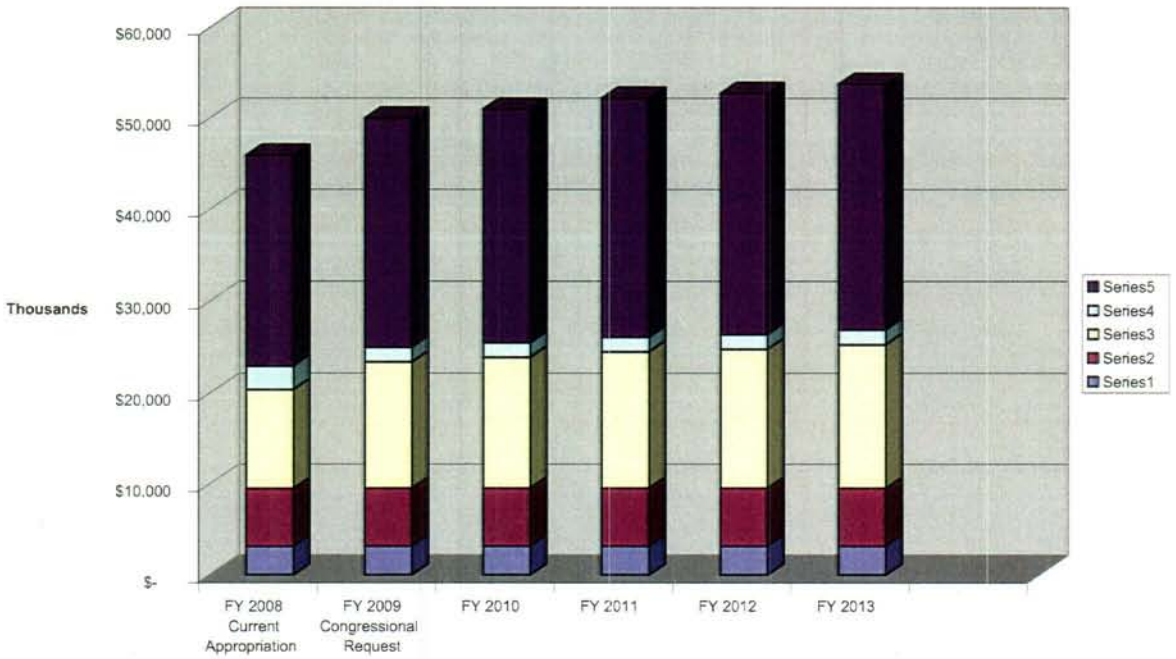
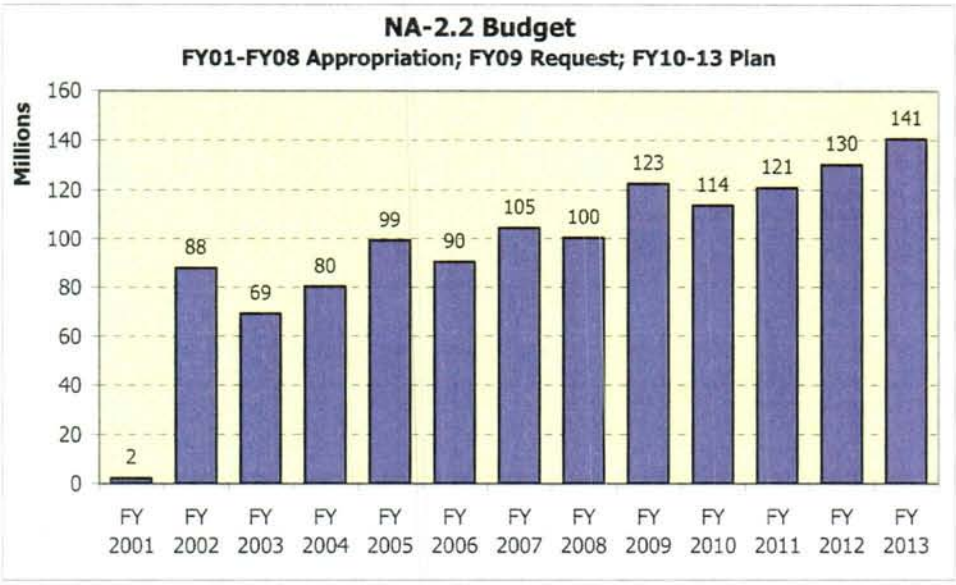


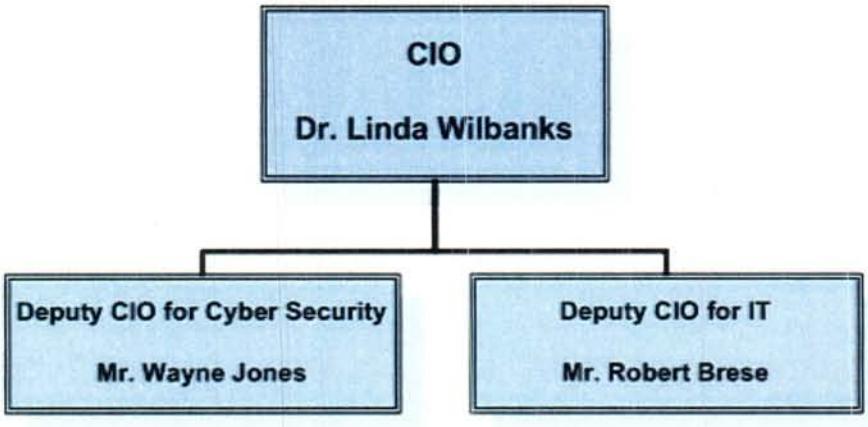
Figure 6. Information Technology (Program Direction)

Table 2. IT Program Direction Funding

	IT Program Direction Funding *(dollars in thousands)*					
	FY 2008 Current Appropriation	FY 2009 Congressional Request	FY 2010	FY 2011	FY 2012	FY 2013
HQ OCIO Services	3,100	3,150	3,150	3,150	3,150	3,150
Legacy Appl./Maint.	6,300	6,310	6,310	6,310	6,310	6,310
DOE COE	10,908	13,889	14,388	14,999	15,259	15,786
Non-labor OCD's	2,600	1,600	1,600	1,600	1,600	1,600
TOTAL – IT	22,908	24,949	25,448	26,059	26,319	26,846



Current Organizational Chart



National Nuclear Security Administration
Office of Counterterrorism (NA-4)

Organization Information

Organization Name:

National Nuclear Security Administration (NNSA)
Office of Counterterrorism (NA-4)

Address:

1000 Independence Avenue, SW, Room 6A-093, Washington, DC 20585

Organization Phone Number:

(202) 586-1734

Organization Website:

http://nnsa.energy.gov/about/1922.htm

POC E-mail Address:

Kimberly Mickus, Director, Office of Counterterrorism
Kimberly.Mickus@nnsa.doe.gov

Supporting the DOE Mission

Strategic Theme 2.2 Weapons of Mass Destruction
Many of the Department of Energy's (DOE's) counterterrorism efforts originated in the nuclear weapons complex. Today, this responsibility cuts across many organizations in DOE. Employing a "defense in depth" strategy, DOE contributions include:

- securing weapons and dangerous materials;
- restricting access to nuclear expertise and design information;
- ensuring Intelligence Community awareness of the technical improvised nuclear device (IND) threat;
- building interdiction capability;
- maintaining the national render safe capability;
- comprehensive consequence management programs;
- technical nuclear forensics;
- coordinating the protection of critical energy assets; and,
- supporting a national laboratory complex that provides unparalleled scientific expertise across the homeland and national security spectrum.

Mission Statement

The Office of the Deputy Under Secretary for Counterterrorism was created to coordinate activities within the NNSA, to facilitate marshaling resources across all of DOE, and to be the DOE's principal point of contact with other U.S. Government agencies and foreign governments

on counterterrorism matters. The office acts as the senior point of contact to the Department of Homeland Security (DHS). It also represents DOE at National Security Council/Homeland Security Council-chaired policy meetings and supervises subject matter experts detailed to other agencies.

Status

Budget:

The Office of Counterterrorism's budget is contained with the NNSA Office of the Administrator budget.

People:

Estimated number of Federal FTEs: 10 at Headquarters

Estimated number of contractor FTEs: 4 at Headquarters

In addition to the above people, NA-4 oversees the detail assignments of roughly a dozen Federal and contractor personnel to other agencies, including, DHS, the National Counterterrorism Center, and U.S. Special Operations Command.

Facilities: None

Performance: The Office of Counterterrorism does not receive a separate PART rating.

History

The Office of Counterterrorism was established in May 2003. The Office of the Deputy Under Secretary for Counterterrorism was created to coordinate counterterrorism activities within NNSA, to facilitate marshaling resources across all of DOE, and to be the Department's principal point of contact with other U.S. Government agencies and foreign governments on counterterrorism matters.

Nuclear terrorism has become an increasing concern to the Nation and an important focus for DOE programs. NNSA's core expertise in nuclear sciences is central to the national effort to deter, detect, defeat, or attribute an attempted or actual nuclear or radiological terrorist attack. NNSA's counterterrorism programs have evolved since the 9/11 terrorist attacks and play a crucial role in protecting homeland security. DOE and other agencies rely on the national laboratories' knowledge of nuclear weapons design to identify novel and unconventional nuclear threats; to support the design and evaluation of radiation detection systems; to design technologies to disarm a terrorist nuclear device; and, to evaluate safeguards and security of existing and future nuclear facilities.

NNSA's nonproliferation programs secure nuclear weapons and weapons of mass destruction (WMD) materials in other countries. These programs strengthen international nuclear safeguards and foreign export control capabilities, halt nuclear smuggling, and provide ground-based, air-based, and space-based solutions to identify, locate, and track WMD materials, processes, and facilities. In addition to aiding in preventing the spread of nuclear weapons to hostile national states, these activities also reduce the danger that terrorists could obtain WMD weapons, materials, or technologies.

NNSA works with other nations to develop emergency management programs and infrastructure to reduce the risk of nuclear and radiological events and to mitigate the consequences of such an event. Working with other agencies, NNSA is expanding the overseas detection and interception tripwires to find and stop nuclear materials in transit.

NNSA response teams provide the Nation's last line of defense to search for, and render safe, a nuclear device, and to provide consequence management support in the event of an incident.

Along with other members of the U.S. intelligence community, DOE's Office of Intelligence and Counterintelligence recognizes the urgency of the nuclear terrorism threat. A terrorist organization's acquisition of an improvised nuclear device would be an event of unprecedented significance. It would give terrorists a weapon genuinely capable of producing mass casualties. DOE's Office of Intelligence and Counterintelligence has made preventing nuclear terrorism a top priority and has reallocated resources to increase support for key nuclear counterterrorism initiatives.

DOE's ongoing efforts to ensure the Nation's energy supply and protect critical energy infrastructure are critical contributions to homeland security. Viewed comprehensively, these programs and related support to other agencies comprise the elements of a multi-layered defense of the Nation against the nuclear terrorism threat.

Critical Operating Procedures

The Office of Counterterrorism is guided by the DOE Strategic Plan; NNSA Strategic Planning Guidance; DOE Orders; the National Strategy for Combating Terrorism, September 2006; the National Strategy for Homeland Security, October 2007; and, applicable National Security Presidential Directives and Homeland Security Presidential Directives. Temporary assignments of DOE personnel to other agencies are under Memorandums of Agreement with the Department of Defense, U.S. Special Operations Command; DHS, Domestic Nuclear Detection Office; and, the National Counterterrorism Center.

Recent Organizational Accomplishments and Strengths

- Worked with other agencies to define roles and responsibilities for technical nuclear forensics; and,
- Established cooperation on nuclear counterterrorism with key foreign partners, including negotiation of an agreement for information exchange with France.

Leadership Challenges

Many U.S. Government agencies have roles and responsibilities, real or manufactured, which include nuclear and radiological matters. Although partnerships have been formed in many instances where there is a legitimate overlap, struggle over jurisdiction will continue to arise.

Key Strategies and Timing

1. Strengthen coordination of counterterrorism cooperation among DOE, Department of Defense, DHS, and intelligence community components. This includes establishing control

of sensitive Improvised Nuclear Device (IND) design information scaled to appropriately meet the mission needs of each agency.

2. Advance Technical Nuclear Forensics capabilities. Ensure that DOE's overall contributions—in research and development, operational capabilities and supporting infrastructure—to all three mission areas of technical nuclear forensics (pre-detonation materials, pre-detonation device, and post-detonation) are fully integrated with other agencies' efforts to develop and sustain a national nuclear attribution capability. Identify any gaps in national capabilities and advise the Administrator of actions necessary to address DOE's role in closing gaps.

3. Facilitate cooperation with international partners to prevent nuclear terrorism. Develop new international agreements and programmatic relationships as required to advance this agenda.

4. Assess new national security challenges for the national laboratories. Work with other NNSA offices to address appropriate investments in scientific expertise to ensure the capability of the national laboratory system to support vital national security missions including nuclear counterterrorism.

5. Coordinate counterterrorism activities across DOE. Represent DOE in interagency activities, including the National Counterterrorism Center Directorate for Strategic Operational Planning and provide strategic guidance to its efforts.

6. Establish procedures to coordinate IND and radiation detection research being conducted by the national laboratories, regardless of funding source. This includes, among other things, policy, and procedures for resolving programmatic conflicts between other agencies and DOE.

7. Manage the DOE's counterterrorism exercises program.

Critical Events and Action Items

None

Hot Issues

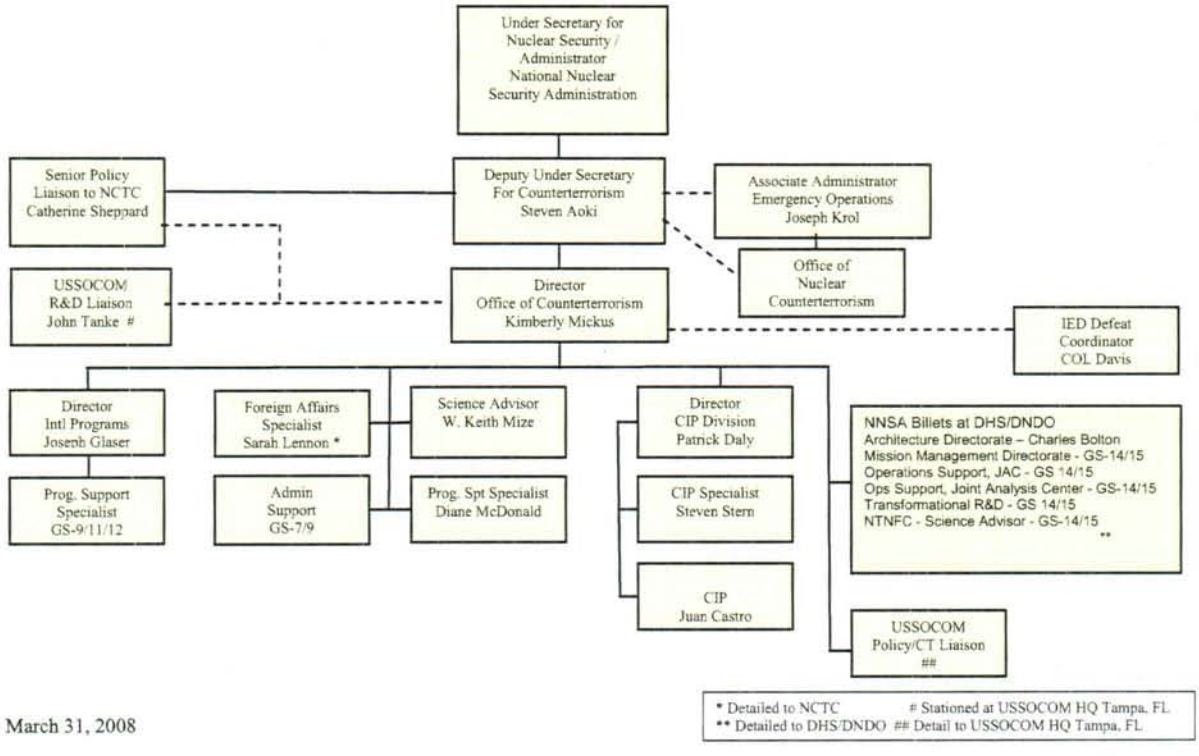
None

Funding Profile

The Office of Counterterrorism's funding is contained with the NNSA Office of the Administrator funding.

Current Organizational Chart

NNSA Counterterrorism Organization



March 31, 2008

National Nuclear Security Administration
Office of Defense Programs (NA-10)

Organization Information

Organization Name:

National Nuclear Security Administration (NNSA)
Office of Defense Programs (NA-10)

Address:

1000 Independence Avenue, SW, Room 4A-019,Washington, DC 20585

Organization Phone Number:

202-586-2179

Organization Website:

http://nnsa.energy.gov/defense_programs/index.htm

POC E-mail Address:

Jeff Davis, Executive Assistant
Jeffrey.davis@nnsa.doe.gov

Supporting the DOE Mission

The Office of Defense Programs (DP) supports the Department's Strategic Theme 2, Nuclear Security: Ensuring America's nuclear security. Specifically, the Office of Defense Programs has a vital role in:

Strategic Goal 2.1, Nuclear Deterrent: Transform the Nation's nuclear weapons stockpile and supporting infrastructure to be more responsive to the threats of the 21st century.

The key activities under this goal include:

- Meet the immediate needs of the stockpile, including W76-1 Life Extension Program (LEP) commitments.
- Advance Nuclear Weapons Complex Transformation.
- Transform stockpile surveillance.
- Demonstrate a responsive infrastructure while sustaining long-term leadership and vitality in science, engineering, and production to support national security.
- Provide safe, secure transportation of nuclear warheads, components, and SNM for DOE, Department of Defense (DoD), and others.
- Enable the future stockpile.
- Implement Advanced Certification Campaign.
- Meet warhead dismantlement milestones.

The Office of Defense Programs also contributes to other DOE Strategic Themes and their related Strategic Goal(s):

Strategic Theme 2, Nuclear Security: Ensuring America's nuclear security. The related Strategic Goal is:

> Strategic Goal 2.2, Prevent the acquisition of nuclear and radiological materials for use in weapons of mass destruction and in other acts of terrorism.

To support the accomplishment of this goal, DP will support the NNSA Office of Defense Nuclear Nonproliferation in minimizing the risk of proliferation from the U.S. nuclear weapons stockpile, providing support for secure transportation of nuclear materials, and other aspects of related strategies (see DOE 2006 Strategic Plan).

Strategic Theme 3, Scientific Discovery and Innovation: Strengthening U.S. scientific discovery, economic competitiveness, and improving quality of life through innovations in science and technology. The related Strategic Goals are:

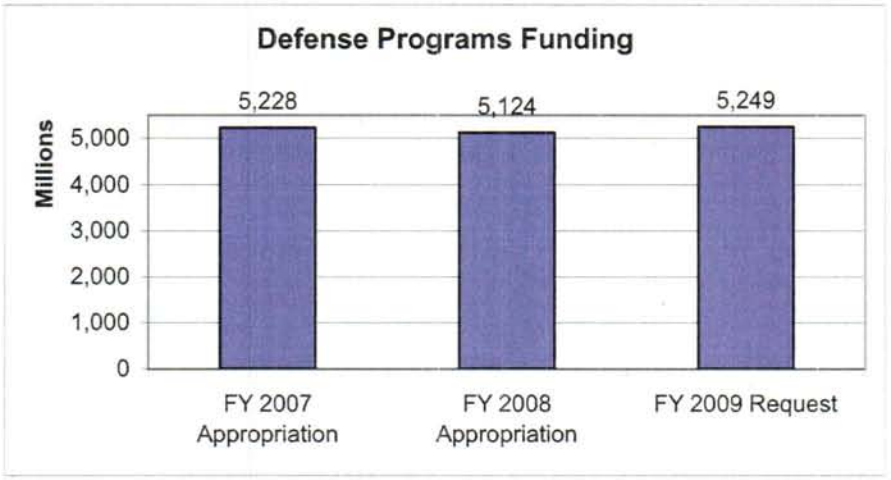
> Strategic Goal 3.1, Scientific Breakthroughs: Achieve the major scientific discoveries that will drive U.S. competitiveness, inspire America, and revolutionize approaches to the Nation's energy, national security, and environmental quality challenges.
>
> Strategic Goal 3.2, Foundations of Science: Deliver the scientific facilities, train the next generation of scientists and engineers, and provide the laboratory capabilities and infrastructure required for U.S. scientific primacy.
>
> Strategic Goal 3.3, Research Integration: Integrate basic and applied research to accelerate innovation and to create transformational solutions for energy and other U.S. needs.

DP Mission Statement

DP's core mission is to provide a safe, secure, reliable, and effective stockpile for the Nation. This is accomplished through scientific competencies in the physical sciences, simulation, and integrated experiments by a motivated, highly skilled workforce and utilizing NNSA's unique research and manufacturing infrastructure.

Status

Budget:



FY2009 Congressional Request: $ 5,249,143,000

People:

	Federal Employment		
	FY 2007 Actual	FY 2008 Projected	FY 2009 Request
Defense Programs			
Headquarters	173	180	189
Site Offices	610	625	670
Secure Transportation	536	585	647
	1,319	**1,390**	**1,506**

	Contractor Employment 2008	
	Support Services	M&O Detailees
Headquarters	63	24

Facilities:

The DP nuclear weapons enterprise consists of eight geographically separated sites that comprise the R&D and production capabilities of the complex. There are three nuclear weapons design laboratories, four production facilities (which have undergone significant downsizing since the end of the Cold War) and one test site:

The United States Nuclear Weapons Complex

Sandia National Laboratories

Mission: Responsible for the development, testing, and production of specialized nonnuclear components and quality assurance and systems engineering for all nuclear weapons.
Location: Albuquerque, New Mexico; Livermore, California; Kauai, Hawaii; Tonopah, Nevada

Lawrence Livermore National Laboratory

Mission: Design laboratory responsible for the safety and reliability of the nuclear explosives package in the nuclear weapons. Supports surveillance, assessment, and refurbishment of stockpile weapons. Possesses unique high-energy-density physics capabilities and scientific computing assets.
Location: Livermore, California

Los Alamos National Laboratory

Mission: Design laboratory responsible for the safety and reliability of the nuclear explosives package in the nuclear weapons. This laboratory possesses unique capabilities in neutron scattering, enhanced surveillance, radiography, and plutonium science and engineering.
Location: Los Alamos, New Mexico

Nevada Test Site

Mission: Safely conducts high-hazard operations, testing, and training in support of NNSA, DoD, and other federal agencies. Provides the government with the capability to return to underground nuclear testing should the President deem it necessary.
Location: Las Vegas, Nevada

Pantex Plant

Mission: Fabrication of chemical explosives, development work in support of design laboratories, and nuclear weapons assembly, disassembly, testing, quality assurance, repair, retirement, and final disposition.
Location: Amarillo, Texas

Y-12 National Security Complex

Mission: Fabrication and assembly of precision parts and components for SNMs and other materials for nuclear weapons.
Location: Oak Ridge, Tennessee

Kansas City Plant

Mission: Manufacture and procurement of nonnuclear components for nuclear weapons. This includes electrical, electronic, electromechanical, mechanical, plastic, and nonfissionable metal components.
Location: Kansas City, Missouri

Savannah River Site

Mission: Loads tritium and non-tritium reservoirs to meet requirements of the Nuclear Weapons Stockpile Plan; conducts reservoir surveillance operations and gas transfer system testing; and, manages tritium inventories and facilities.
Location: Aiken, South Carolina

Performance:

NA-10 FY 2008 PART/Joule Performance Measures
3rd Quarter Summary

SUMMARY BY TARGETS	NUMBER	REMARK(S)
GREEN	36	Directed Stockpile Work (4), Science (6), Engineering (5), Inertial Confinement Fusion (4), Advanced Simulation and Computing Campaign (4), Pit (2), Readiness (3), Readiness in Technical Base and Facilities (3), Secure Transportation Asset (5)
YELLOW	2	Inertial Confinement Fusion (1), Pit (1)
RED	3	Directed Stockpile Work (1), Pit (1), Readiness in Technical Base and Facilities (1)
TOTAL	41	

OMB PART Reviews:

FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Advanced Simulation and Computing Campaign – *Effective*	Inertial Confinement Fusion Ignition & High Yield Campaign and National Ignition Facility – *Moderately Effective*	Directed Stockpile Work – *Moderately Effective*	Science Campaign – *Moderately Effective*	Engineering Campaign – *Moderately Effective*	Advanced Simulation and Computing Campaign – *Effective*

History

Following the end of the Cold War, the United States discontinued production of new nuclear warheads and voluntarily ended underground nuclear testing. Today, NNSA uses and oversees a wide range of breakthrough science experiments, engineering audits and high-tech computer simulations, including extensive laboratory and flight tests of warhead components and subsystems, to keep the existing warheads reliable, secure, and safe. Every year, the Secretaries of Energy and Defense have been able to certify the reliability of the stockpile without the U.S.'s conduct of an underground nuclear test. NNSA's use of science-based research and development in the absence of underground nuclear testing in order to maintain the portion of the Nation's nuclear deterrent for which Department of Energy is responsible is known as the Stockpile Stewardship Program.

NNSA's nuclear weapons activities are carried out in a nationwide complex of government-owned, contractor-operated nuclear weapons design laboratories, production facilities, and a test site. These sites, collectively known as NNSA's nuclear weapons complex, provide the

necessary research, development, and production capabilities needed to maintain the safety, security, and reliability of the nuclear weapons stockpile.

Part of keeping the U.S. nuclear weapons stockpile safe and reliable includes working with DoD to maintain the quantity and quality of weapons necessary for U.S. national security needs. Under the Moscow Treaty between the United States and Russia, the United States agreed to reduce the size of its operationally deployed nuclear weapons to 1,700 - 2,200 by 2012. In addition to this treaty, President Bush directed in 2004 that the size of the overall nuclear weapons stockpile (both reserve and operationally deployed) be reduced nearly 50 percent by 2012. This goal was met in 2007 - five years early. This allowed President Bush to direct that an additional reduction of nearly 15 percent take place by 2012. Because of these actions, the stockpile is the smallest it has been since the Eisenhower Administration. DP is actively working to meet the reduced stockpile quantity levels by safely dismantling and disposing of those nuclear weapons that have been designated in excess of U.S. national security needs.

NNSA's national security enterprise is a national asset and the weapons laboratories are among the pinnacle of American scientific, engineering, and technical expertise. Development and maintenance of the nuclear deterrent force has made possible American leadership in nuclear nonproliferation, nuclear counterterrorism, advanced computing, and high-energy density physics. None of these programs would likely exist without the technical advances made by the weapons program. As NNSA continues transforming the infrastructure and maintaining the nuclear deterrent force into the 21st century, the goal is to do so without jeopardizing the advancements in other vital NNSA national security programs made possible by the investment in weapon activities.

Critical Operating Procedures

To achieve the vision of operating an efficient and agile nuclear security enterprise recognized for world-class technical leadership and program management, the organizations within NNSA continue to use an operating philosophy supported by new business systems and practices throughout the complex. The key concept is that all four stages of the Planning, Programming, Budgeting and Evaluation Process are linked into a continuous cycle. Through planning, everyone understands how individual contributions help accomplish overall goals; through programming and budgeting, program and project managers set priorities, plans, cost and schedules for budget and performance integration; and, through evaluation, progress is assessed, feedback is provided for future planning, and achievement is truly rewarded so that people recognize the advantage in performing well. In addition, the DP Program Management Manual guides how the organization operates. Other guidance specific to DP's various programs are developed and managed by the M&O contractors.

Recent Organizational Accomplishments and Strengths

DP is committed to building confidence in the Complex Transformation process and demonstrating the ability to achieve near-term actions surrounding its core mission. Thus, the "Getting the Job Done" list was developed starting in FY 2006 to demonstrate that DP is moving forward in the execution of key activities. Below is the DP list for FY 2008 along with a status.

DP "Getting the Job Done" in FY 2008

- Delivered limited life components and alteration kits to the DoD and completed all scheduled surveillance activities on schedule.
- Down-selected the W76 Life Extension Program (LEP) canned sub-assembly.
- Delivered B61-7/11 LEP units to the Air Force on time.
- Exceeded the scheduled weapon dismantlement quantities at Pantex and secondaries at Y-12, and approve the W88 SS-21 Hazard Analysis Reports by September 2008.
- Manufactured at least six new W88 pits and installed equipment in FY 2008 to increase pit capacity to 80 pits per year by the operational date of the Chemistry and Metallurgy Research Replacement Nuclear Facility.
- Complete and apply the Microsystems and Engineering Sciences Applications Project (2008), the Dual-Axis Radiographic Hydrodynamic Test Facility (2008), Omega Extended Performance (2008), the Criticality Experiments Facility (2010), and, the National Ignition Facility (2010) to support the science basis for warhead design, assessment, and certification.
- Incorporated a new physics-based model to reduce uncertainty in weapons performance.

Complex Transformation Implementation:

- Removed 12 metric tons of SNM from NNSA sites for disposition.
- Completed the Final Complex Transformation Supplemental Programmatic Environmental Impact Statement in September 2008.
- Completed construction of the Highly Enriched Uranium Materials Facility in September 2008.

In addition, DP is committed to managing nuclear weapons activities and costs more uniformly, including developing a National Work Breakdown Structure in FY 2008.

Leadership Challenges

NNSA has identified Special Focus Areas for the NNSA management team to concentrate on through FY 2009. Not all items that are inclusive to these various management and programmatic areas require corrective actions, but require significant management attention beyond what is normally required for efficient management and in order to achieve Agency goals.

- Stockpile Stewardship

The Stockpile Stewardship Program (SSP) was established to ensure that the nuclear weapons stockpile is safe, secure, and reliable without underground testing. The complexity and breadth of the program makes Stockpile Stewardship a significant management challenge. This program is composed of discreet elements, the success of which makes Stockpile Stewardship a viable program. These discreet elements are reviewed, audited, and subjected to independent oversight—with corresponding corrective action plans being developed and implemented. Our Planning, Programming, Budgeting and Evaluation process (and associated Five-Year planning)

ensures that the SSP will meet the Nation's nuclear weapons mission. The discreet elements include, but are not limited to: Project Management; Oversight of Contractors/Contract Administration; Safety and Security; Human Capital Management; and, Complex Transformation. Additionally, NNSA has six Special Focus Areas that target the most pressing needs of the Department. One of these Special Focus Areas, all of which will be discussed later, is stockpile planning.

- Oversight of Contractors/Contract Administration

As with Stockpile Stewardship, Contract Administration is a significant management challenge because roughly 80 percent of NNSA's budget is provided to Management and Operating Contractors (three nuclear weapons laboratories, four production facilities, and the test site). In addition to topic specific reviews (Purchasing, Property, and Subcontracting) implemented by NNSA's Senior Procurement Executive, there are some tools that provide Federal managers with quality metrics in various areas. These tools include a balanced scorecard/objectives matrix and A-123 entity controls testing as prescribed by the Office of Management and Budget.

The most important element of our contractor oversight is the Contractor Assurance Systems put in place by our contractors and the integrated Federal oversight process at the sites and NNSA Headquarters level. This allows NNSA, through dynamic transparency, to manage risks and ensures that the contractors take accountability for their actions and operations. As with Stockpile Stewardship, NNSA has a Special Focus Area aimed at ensuring the overall effectiveness of the interface between Federal Oversight and Contractor Assurance Systems for nuclear safety, physical, and cyber security.

- Project Management

The Department's and NNSA's contract and project management activities have been designated by the Government Accountability Office as a high-risk area that is vulnerable to waste, fraud, and abuse. NNSA has a Special Focus Area to integrate project management best practices throughout the NNSA complex and to further enhance our credibility by increasing the likelihood of project success. Through the efforts of this Special Focus Area, NNSA is, or has:

  - Ensured the number of Federal contracting and project staff with the skills to plan, direct, and oversee project execution is adequate;
  - Developed an effective front-end planning process for projects;
  - Ensuring that NNSA has consistent and effective independent Government estimates;
  - Improved our project-related acquisition planning/contracting capability;
  - Ensuring that NNSA improves its capability to identify and manage project risks; and, clarified roles, responsibilities, authorities, and accountability in project management.

- Organizational Management

Always a significant management challenge is ensuring that the optimum management structure is in place to effect change, implementation, and integration of programs. Within NNSA, DP has been reorganized to refine lines of accountability and oversight in the areas of Site Management and Nuclear Safety.

Key Strategies and Timing

DP has defined general program-related priorities that are critical to the mission and support DOE Strategic Goal accomplishments. The numbered priority listing of these elements is meant as a guide (e.g., 1 is more important than 8) to decision makers as they balance program requirements across the institution. The lead program(s) responsible are included. DP's success requires management attention to each element and adherence to good management practices with respect to safety, security, cost effectiveness, and environmental concerns.

While accomplishing the DP mission for national security and nuclear deterrence, DP personnel will emphasize the importance of Quality Assurance; Project Management; Integrated Safety Management; Environment, Safety, and Health; Integrated Safeguards and Security Management; improved business practices; and, workforce development in all activities.

1. ***Meet the immediate needs of the stockpile, including W76-1 LEP commitments:*** Maintain the safety, security, and reliability of the stockpile; replace limited life components and repair warheads; and, conduct stockpile assessment and surveillance activities. Execute the plan to refurbish the W76-1 warheads currently in the stockpile to extend their service lives, and incorporate modern technologies and enhanced surety features as required. Meet planning milestones and phase 1 and 2 objectives for the Stockpile Life Extension Program.

2. ***Advance Nuclear Weapons Complex Transformation:*** Execute Complex Transformation milestones, including mission realignments, facility turnovers, staffing levels; Chemistry and Metallurgy Research Replacement; Uranium Processing Facility; and, Kansas City Responsive Infrastructure Manufacturing and Sourcing milestones. Support consolidation of SNM, other materials/operations across the complex. Enhance nuclear weapons complex integration and interdependence by implementing actions to standardize technical processes, develop uniform business practices, and implement approaches to mitigate and manage risk more effectively.

3. ***Transform stockpile surveillance:*** Transition to methodologies more appropriate for a reduced and aging stockpile emphasizing more component evaluation and transition from destructive tests to nondestructive tests and predictive methods.

4. ***Demonstrate a responsive infrastructure while sustaining long-term leadership and vitality in science, engineering, and production to support national security:*** Achieve goals of Science Technology Roadmapping and the Boost Initiative; continue to improve/apply methods, plans, and tools for qualification, assessment, and certification; and, conduct the first National Ignition Campaign experiment aimed at the achievement of ignition in FY 2010.

5. ***Provide safe, secure transportation of nuclear warheads, components, and SNM for DOE, DoD, and others.***

6. ***Enable the future stockpile:*** Establish consensus between the Administration and Congress on completing key studies to assess its potential role in the future stockpile.

7. ***Implement Advanced Certification Campaign:*** Build on work started in FY 2008 under the Advanced Certification Campaign to address plans and processes to certify options, including future LEPs, without nuclear testing. Examine new technologies and systems to improve stockpile surety.

8. ***Meet warhead dismantlement milestones:*** Return, store, and dismantle retired warheads and disposition components removed from the stockpile at the rates established in the Production and Planning Directive.

Critical Events and Action Items

3-month events

February 2009

- Begin implementing the Complex Transformation Supplemental Programmatic Environmental Impact Statement Record(s) of Decision.
- Complete the Annual Assessment of the safety, security, and reliability of the stockpile and provide the required assessments report to the Secretary for submission to the President.

March 2009

- Obtain approval to begin NIF operations.
- Submit Report on Stockpile Assessment.
- Complete the acquisition strategy for recompeting the management and operating contracts for the Pantex Plant, the Y-12 National Security Complex, and the Kansas City Plant and begin the acquisition process.

12-month events

The following major programmatic milestones are due to be completed by October 1, 2009:

- Annually, prepare and execute and integrated, comprehensive facilities plan to ensure a flexible, responsive, and robust infrastructure.

- Complete modern baseline of all enduring stockpile systems with Advanced Simulation and Computing codes.

- Complete production and delivery of the B61 life extension refurbished units (Alternation 357) to the DoD in accordance with the Approved Directive Schedules.

Hot Issues

Stockpile Transformation: The nuclear weapons in the current U.S. nuclear weapons stockpile were designed during the Cold War. Since that time, there have been major advances in materials science, component design, and the understanding of weapons physics through the Stockpile Stewardship Program. In addition, there have been significant changes in the geopolitical environment. As a consequence, it is prudent that the U.S. current stockpile be modernized and improved in terms of reliability, maintainability, security, and safety, and that the overall size of the stockpile be reduced.

Nuclear Weapons Complex Transformation: While NNSA is meeting its stockpile requirements, the current nuclear weapons complex with its eight major sites is too large, too old, and too expensive. Complex Transformation represents a major effort to move from a Cold War complex to a 21st century enterprise that is at the forefront of science and technology, responsive to future national security requirements, and affordable. The Congress has set expectations for the program which include: the replacement of the Cold War era strategies with a 21st century nuclear deterrent strategy which is sharply focused on today's and tomorrow's threats without the need for nuclear testing; a determination of the size and nature of the nuclear stockpile sufficient to serve that strategy; and, a determination of the size and nature of the complex needed to support that future stockpile. However, many of the proposed Transformation actions, including the planned Records of Decision (RODs) (expected in the fall of 2008) informed by the Complex Transformation Supplemental Programmatic Environmental Impact Statement, are required now to maintain a viable nuclear capability regardless of the stockpile size and composition. Implementation of the RODs will begin in 2009. A parallel effort to review the contracting strategy at the nuclear weapons complex sites could also have significant impacts on the program. An expected decline in "Weapons Activities" funding will make Complex Transformation both more necessary and more challenging.

Pit Disassembly and Conversion Facility (PDCF): The mission of PDCF is to convert plutonium pits from nuclear weapons into feedstock for the Mixed Oxide Fuel (MOX) Facility. NNSA is preparing for a Departmental decision to approve the project's baseline cost, scope, and schedule in the first half of 2009.

Plutonium Research, Processing, and Manufacturing Facilities at Los Alamos National Laboratory (LANL): Subsequent to the planned de-inventory of plutonium at the Lawrence Livermore National Laboratory in 2012, the Nation's sole plutonium capability will reside at LANL. However, LANL nuclear facilities are aging and increasingly expensive to maintain, especially the Chemistry and Metallurgy Research (CMR) Facility. Ongoing CMR operations are under review by the Defense Nuclear Facilities Safety Board (DNFSB) due to facility seismic and safety concerns. The Chemistry and Metallurgy Research – Replacement (CMR-R) Project is a multi-billion dollar line item project currently in design. This project is under review by the Congress due to the high costs of nuclear facility construction and related national security

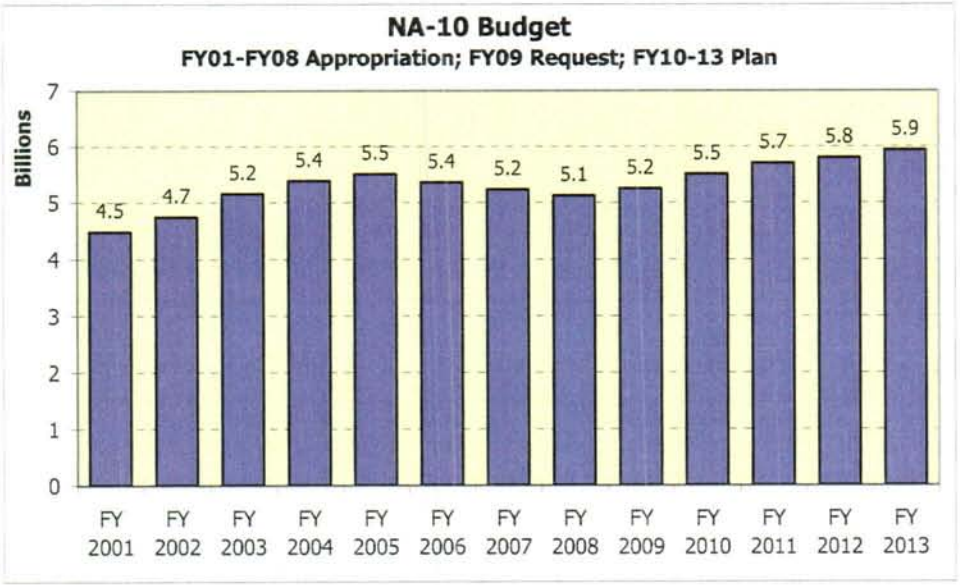
policy questions regarding the Nation's enduring plutonium mission and how many and what types of plutonium pits should be produced for the nuclear weapons stockpile.

Annual Assessment of the Stockpile: Following the Annual Assessment of the warheads in the stockpile, the Directors of the three defense nuclear weapons laboratories and the Commander of the U.S. Strategic Command submit independent letters to the Secretaries of Defense and Energy on the results of the Assessment process no later than December 1 of each year. The Secretaries then send a Report on Stockpile Assessment to the President by March 1, and the President forwards the Assessment and accompanying laboratory director letters to the Congress by March 15.

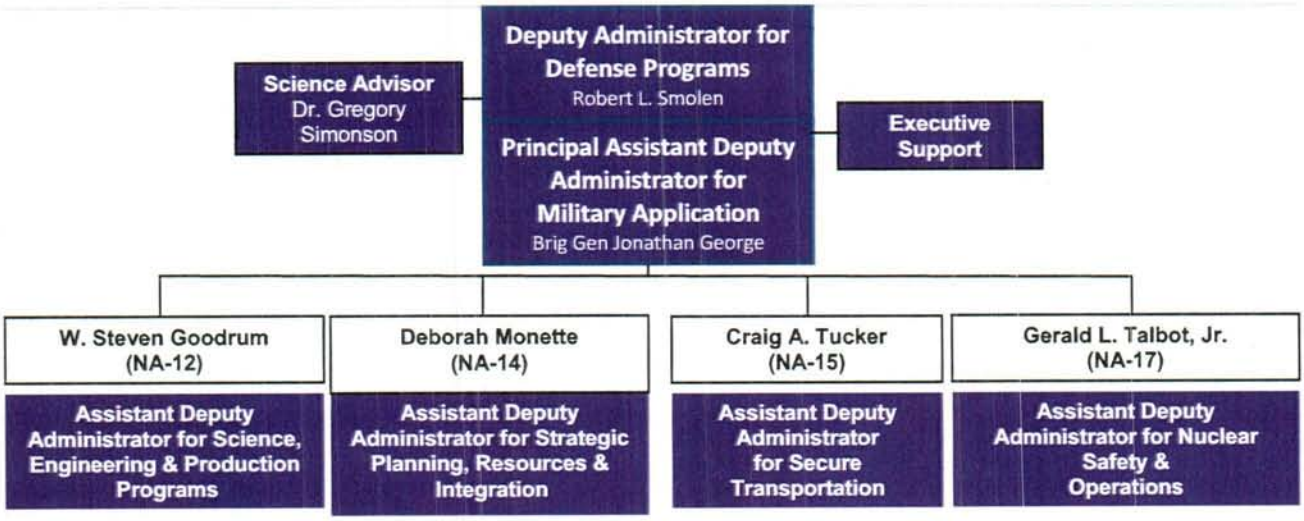
Funding Profile

(dollars in thousands)

	FY 2008 Current Appropriation	FY 2009 Congressional Request	FY 2010	FY 2011	FY 2012	FY 2013
Defense Programs						
Directed Stockpile Work	1,401,252	1,675,715	1,762,079	1,789,979	1,760,218	1,776,388
Science Campaign	287,624	323,070	309,091	295,192	296,662	299,902
Engineering Campaign	169,548	142,742	148,863	146,565	150,475	153,907
Inertial Confinement Fusion Ignition and High Yield Campaign	470,206	421,242	434,007	381,173	373,005	377,762
Advanced Simulation and Computing Campaign	574,537	561,742	526,373	510,808	514,405	520,645
Pit Manufacturing and Certification Campaign	213,831	0	0	0	0	0
Readiness Campaign	158,088	183,037	170,003	161,139	161,130	164,295
Readiness in Technical Base and Facilities	1,637,381	1,720,523	1,904,398	2,153,557	2,275,909	2,372,916
Secure Transportation Asset	211,523	221,072	249,555	261,543	268,134	269,325
Total, Defense Programs	**5,123,990**	**5,249,143**	**5,504,369**	**5,699,956**	**5,799,938**	**5,935,140**



Current DP Organizational Chart



National Nuclear Security Administration
Office of Defense Nuclear Nonproliferation (NA-20)

Organizational Information

Organization Name:

National Nuclear Security Administration (NNSA)
Office of Defense Nuclear Nonproliferation (DNN)

Address:

1000 Independence Ave., SW, Room 7A-049, Washington, DC 20585

Organization Phone Number:

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Organization Website:

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Supporting the DOE Mission

Strategic Theme 2 – Nuclear Security

Strategic Goal 2.2 Weapons of Mass Destruction **(Primary Goal)**

Key Activities: DNN's primary mission is to detect, prevent, and reverse the spread of materials, technology, and expertise related to weapons of mass destruction (WMD). DNN's focus is on preventing hostile nations or terrorist groups from acquiring WMD or weapons-usable material, dual-use production or technology, or WMD expertise. DNN's nonproliferation programs strengthen international safeguards and export controls, secure or eliminate vulnerable stockpiles of weapon-usable materials, secure the associated technology and expertise in Russia and other countries of concern, and promote best practices worldwide in nuclear safeguards, security and nonproliferation. DNN brings to bear the world-class technical expertise of the National Laboratories to improve design, development, testing, and fielding capabilities crucial for the Nation's nonproliferation needs. DNN provides real-time technical and policy support to the U.S. Government in a wide range of nonproliferation and counterterrorism interdiction efforts. Additionally, DNN works with many other U.S. agencies and Departments, international organizations, and non-governmental organizations to further nonproliferation goals.

Strategic Theme 1 – Energy Security

Strategic Goal 1.1 Energy Diversity (Secondary Goal)

Key Activities: DNN facilitates energy diversity by minimizing the proliferation and terrorism risks of expanded nuclear energy through the development of nuclear safeguards technologies, engaging in international safeguards cooperation, and by creating international fuel supply arrangements that induce other countries to forego development of their own enrichment and reprocessing capabilities. The program also plays a supporting role in U.S. negotiations for, and management of, bilateral Agreements for Cooperation in the Peaceful Uses of Nuclear Energy (under Atomic Energy Act Section 123). DNN also provides technical leadership and policy support on nuclear export control, and administers Secretarial authorizations for the transfer of U.S. nuclear energy technology to other countries, as required under the Atomic Energy Act, and in implementing regulations under 10 CFR Part 810. These activities collectively comprise roughly 2 percent of the DNN budget, but they are essential to the execution of export control requirements unique to the Department and play a critical role in important elements of diplomatic and international economic strategy.

Strategic Theme 2 – Nuclear Security

Strategic Goal 2.1 Nuclear Deterrent (Secondary Goal)

Key Activities: DNN manages and oversees the construction of a Mixed Oxide (MOX) Fuel Fabrication Facility at the Savannah River Site (SRS). This facility will be essential to U.S. nonproliferation plans to eliminate plutonium from dismantled U.S. nuclear weapons. The facility under construction and the effort to disposition excess plutonium are also critical to the Department's plan to reduce the number of sites where special nuclear materials are stored. Therefore, the MOX Program plays a major role in transforming the nuclear weapons complex into a smaller, more agile set of world-class scientific research, development, and manufacturing facilities appropriate to a post-Cold War world.

Strategic Theme 3 – Scientific Discovery and Innovation

Strategic Goal 3.1 Scientific Breakthroughs (Secondary Goal)

Key Activities: DNN sponsors fundamental and applied research in materials sciences, advanced computing and simulation, physics and chemical sciences in support of nonproliferation, homeland security, and national security needs. The new tools, technologies, and techniques are among the scientific breakthroughs that comprise one of the Department's strategic goals.

Strategic Goal 3.2 Foundations of Science (Secondary Goal)

Key Activities: DNN funds the construction of new scientific facilities, and provides training opportunities for new scientists and engineers, thus providing the basic infrastructure needed to maintain U.S. scientific primacy. In addition, DNN supports a joint effort between the Department of Energy (DOE) Office of Science and the Department of Homeland Security (DHS) to construct approximately 200,000 gross square feet of laboratories, offices, and facilities collectively known as the Physical Sciences Facility at Pacific Northwest National Laboratory.

Strategic Goal 3.3 Research Integration (Secondary Goal)

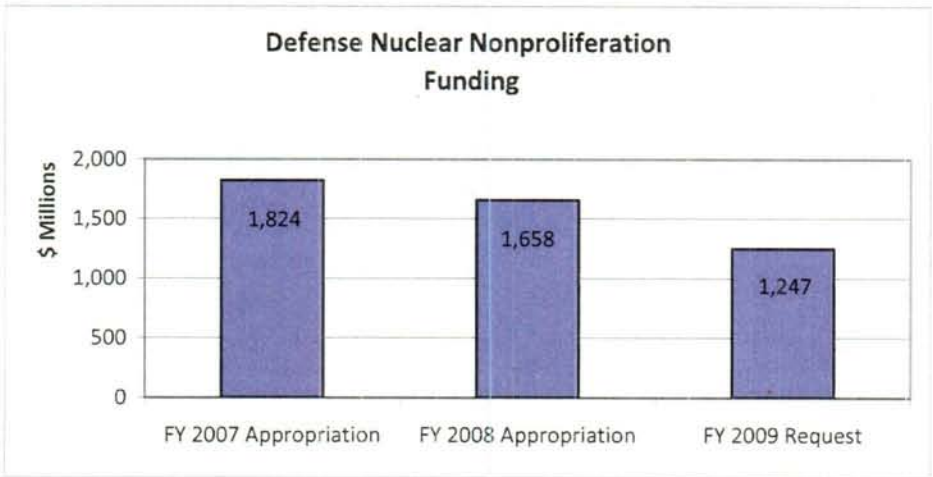
Key Activities: DNN strives to achieve meaningful integration between the basic and applied research communities through its relationship with the National Laboratories and collaboration with academia, industry, and other Federal research programs. Specifically, DNN funds basic and applied research in advanced materials for radiation detection sensors, special nuclear material movement, uranium enrichment detection, and plutonium reprocessing/production detection. These multi-use technologies were designed to support the nonproliferation mission, but also provide valuable benefits to the Departments of Defense and Homeland Security. DNN coordinates its research and development portfolio with many government agencies including the Defense Threat Reduction Agency, DHS, and the Director of National Intelligence. DNN also participates in White House level coordinating bodies under the President's Office of Science and Technology Policy. DNN is also leading an effort to revitalize the U.S. safeguards technology and human capital base to ensure that the International Atomic Energy Agency (IAEA) has the authorities, capabilities, technologies, expertise, and resources needed to meet current and future challenges

Mission Statement

To provide policy and technical leadership to limit or prevent the spread of materials, technology, and expertise relating to weapons of mass destruction; advance technologies to detect the proliferation of weapons of mass destruction worldwide; and, eliminate or secure inventories of surplus materials and infrastructure usable for nuclear weapons.

Status

Budget:



FY 2009 Congressional Request: $1,247,048,000

People:

	Federal Employment		
	FY 2007 Actual	FY 2008 Projected	FY 2009 Request
Defense Nuclear Nonproliferation			
Headquarters	229	237	249
Site Offices	0	13	35
International	12	12	12
	241	**262**	**296**

	Contractor Employment 2008	
	Support Services	M&O Detailees
Headquarters	80	36

Facilities:

NNSA is currently overseeing construction of the Mixed Oxide (MOX) Fuel Fabrication Facility located near Aiken, South Carolina, at the SRS. As of August 2008, design, procurement, and construction activities remain on schedule to be completed in 2014. Operations are set to begin at the MOX Facility in 2016, following extensive inspection and testing of the facility.

- MOX Fuel Fabrication Facility at SRS. The MOX Facility will be responsible for mixing plutonium with depleted uranium to produce nuclear reactor fuel.
- Waste Solidification Building at SRS. This facility will be responsible for processing liquid waste streams from the MOX Facility and an associated Pit Disassembly and Conversion Facility.

Performance:

NA-20 FY 2008 PART/Joule Performance Measures
3rd Quarter Summary

SUMMARY BY TARGETS	NUMBER	REMARK(S)
GREEN	25	NN R&D (6), EWGPP (2), NIS (5), INMP&C (5), FMD (2), GTRI (5)
YELLOW	1	EWGPP (1)
RED	0	
TOTAL	26	

History

DNN was created when NNSA was established in 2000 but the nonproliferation mission is rooted in many U.S. national security policies and requirements extending as far back as the Atomic Energy Act (1946, amended in 1954). The office works with over 100 foreign countries and international groups (such as the International Atomic Energy Agency -- IAEA), nearly all U.S. Departments and agencies involved in national security issues, all U.S. national laboratories, and the private sector to detect, secure, and dispose of dangerous nuclear and radiological material, as well as related WMD technology and expertise.

The Department's nonproliferation work is influenced by legal requirements and policy commitments stemming from (1) the Atomic Energy Act of 1954, as amended; (2) the Treaty on the Non-Proliferation of Nuclear Weapons (NPT, 1970); (3) the breakup of the Soviet Union in 1991, and (4) the September 11th attacks in 2001. The Atomic Energy Act created the original export control requirements for the nuclear technologies of which the Department is steward. The NPT created new obligations for the United States, which the Department fulfills primarily by providing funding, staffing, training, and technology to the IAEA's nuclear safeguards inspectorate. The nuclear safeguards inspectorate plays an increasingly important role in investigating suspect nuclear programs worldwide and will be critical to any expansion of civil nuclear power.

Over the last decade and a half, the Department has upgraded nuclear security at hundreds of buildings throughout Russia and other former Soviet republics. In addition, under the Highly Enriched Uranium (HEU) Purchase Agreement, over 322 metric tons of uranium from Russia's dismantled nuclear weapons—enough material for more than 12,000 nuclear weapons—has been downblended for use in commercial power reactors in the United States. DNN is currently in the process of finishing this work, and has begun to transition from assistance to cooperation on programs that fulfill shared nonproliferation and national security goals.

Finally, since September 11, 2001, DNN has designed a multi-layered strategy that creates ever-larger concentric defense perimeters as far from U.S. shores as possible. We have deployed over a thousand radiation detection monitors at foreign border crossings, seaports, and airports around the world; trained foreign export control and customs experts to interdict WMD materials and technologies at their borders; strengthened the international safeguards system; accelerated longstanding effort to convert research reactor cores from highly enriched uranium (HEU) to low enriched uranium (LEU); improved security for, and disposition of, thousands of radiological materials that could be used in dirty bombs; shut down foreign plutonium production reactors; and, increased research into new technologies, techniques, and materials to help prevent the spread of WMD to hostile countries or terrorist groups.

Critical Operating Procedures

The DNN mission is executed from and managed by Federal officials at Headquarters in Washington, DC, and at the SRS near Aiken, SC. It does not own facilities in the nuclear complex, although it is funding the construction of some facilities and is in the process of

overseeing the construction of the MOX Fuel Fabrication Facility and the Waste Solidification Building at SRS.

DNN maintains roughly a dozen personnel in critical overseas positions (Moscow, Beijing, Vienna, Tokyo, and Kiev). Several other offices in the Department also have personnel stationed overseas, and the DOE is in the process of expanding its overseas presence. DNN manages this overseas presence for the Department, although the resource burdens (funding and personnel) associated with maintaining an overseas presence are shared.

Authority to negotiate and sign international agreements regarding cooperation between foreign governments and DOE has been delegated by the Secretary to the Administrator of the NNSA for all activities that fall under NNSA's purview. The Administrator further delegates authority to sign agreements for nonproliferation work. All work done in foreign countries is cooperative in nature and is consistent with U.S. foreign policy and legal requirements. DNN personnel from action officers up to the Deputy Administrator enjoy close working relationships with their counterparts in the Departments of State, Defense, Commerce, Homeland Security, Justice, the Nuclear Regulatory Commission, and the U.S. intelligence community, as well as with foreign counterparts in over 100 countries.

Recent Organizational Accomplishments and Strengths

DNN works with more than 100 countries and the IAEA to prevent the proliferation of WMD materials, technology, and expertise.

Through August 2008, DNN has:

Secured civilian nuclear and radiological material worldwide

- Converted 52 reactors in 31 countries from HEU to LEU (an additional four reactors shutdown).
- Repatriated over 600 kilograms of Russian origin HEU; over 1,145 kilograms of U.S. HEU; and, over 140 kilograms of other HEU material.
- Secured over 635 vulnerable radiological sites overseas (over 9 million curies' worth); and
- Recovered over 18,000 radiological sources in the U.S. (over 440,000 curies).

Secured Russian nuclear weapons material

- Secured 85 percent of Russian nuclear weapons sites of concern; much of this work has been accelerated and will be completed by the end of 2008.
- Promulgated a new U.S.-Russian plan that identifies requirements for Russia to sustain security upgrades installed over the past 14 years.

Detected and deterred illicit international nuclear transfers

- In 2006, the United States and Russia agreed to equip all of Russia's border crossings with radiation detection devices by 2011 (six years ahead of schedule), building on the approximately 120 crossings already equipped. An additional 53 sites outside of Russia are also being equipped.
- Radiation detection equipment is now operational at "megaports" in 12 countries, with work underway in 25 other locations.

- Reviewed over 7,000 export licenses/requests for proliferation risk last year, recommending denial of 227.

Strengthened and expanded international nonproliferation efforts

- Launched a new initiative to strengthen nuclear safeguards applied by the IAEA; strengthened the Nuclear Suppliers Group export control guidelines and control lists.
- Oversaw initial disablement of North Korean facilities and working to verify denuclearization; dismantled Libya's WMD program.
- Engaged thousands of former weapons scientists and engineers in the former Soviet Union, Libya, and Iraq, helping redirect their talents to civilian pursuits while preventing the flow of WMD expertise to countries of proliferation concern and terrorist groups.
- Leading the U.S. Government and international effort to revise and strengthen the guidance contained in the IAEA INFCIRC/225/Rev 4, *The Physical Protection of Nuclear Material and Nuclear Facilities* to ensure security of nuclear material and nuclear facilities.
- Providing technical policy recommendations and support in the development of the IAEA Nuclear Security Series guidance documents.
- Trained 5,900 domestic export enforcement officials in WMD awareness and over 10,500 international export control officials on WMD identification and strategic trade controls since 9/11; in FY08, DNN expects to train 1,000 U.S. officials in WMD export controls.
- Annually trained over 250 foreign officials on physical protection of nuclear materials and facilities, and trained over 1,000 foreign facility operators on nuclear material control and accounting procedures. Held 2 regional safeguards infrastructure development workshops in 2008 for nuclear energy aspirants.

Eliminated weapons-usable material

- Monitored the downblending of over 337 metric tons of former Soviet weapons-origin HEU (approximately 13,000 weapons' worth) for use in U.S. nuclear power plants, providing 10% of U.S. electricity.
- Downblended over 10 metric tons of Russian civilian HEU.
- Downblended over 100 metric tons (approximately 2,200 nuclear weapons) of surplus U.S. HEU into LEU for use as nuclear reactor fuel, with an additional 15 metric tons packaged and shipped for downblending (total of nearly 115 metric tons).
- Initiated downblending of an additional 17.4 metric tons of HEU for the Reliable Fuel Supply Initiative, which will be used as an incentive to other countries to forego their own enrichment and reprocessing capabilities.
- Working to dispose of more than 68 metric tons of U.S. and Russian weapons-grade plutonium.
- Began construction of the MOX Fuel Fabrication Facility (over 30,000 cubic yards of reinforced concrete has been poured and 5,000 tons of rebar installed as of August 2008), which will fabricate 34 metric tons of surplus U.S. weapon-grade plutonium into MOX fuel for commercial power reactors; an additional 9 metric tons of recently-declared surplus U.S. plutonium is also available for MOX fuel fabrication.
- Ended 43 years of weapons-grade plutonium production in Seversk by shutting down two Russian weapons-grade plutonium production reactors; actively pursuing the closure of the

Zheleznogorsk Reactor ahead of the projected 2010 schedule, thereby completely eliminating weapons-grade plutonium production in Russia.
- Continued monitoring the safe storage of over 9 metric tons of Russian weapons-grade plutonium (nearly 1,125 warheads) to ensure it is not used in the Russian nuclear weapons program.

Conducts cutting-edge research and development
- Advanced the state-of-the-art in timely and accurate analysis of nuclear proliferation related materials.
- Developed novel materials to significantly improve detection of smuggled nuclear materials or improvised devices.
- Delivered new ground and space based systems to better detect underground and atmospheric nuclear detonations.
- Transferred 40 advanced safeguards technologies to foreign partners to strengthen IAEA safeguards; initiated 85 ongoing collaborative nuclear safeguards research and development projects in 15 countries.

Leadership Challenges

In FY 2008, the Consolidated Appropriations Act provided no funding for MOX fuel qualification and irradiation, procurement of depleted uranium diluent and transportation activities – a cut of $38 million. In addition, the FY 2009 House Appropriations markup provided funding for MOX, but in a DOE-Nuclear Energy account.

Key Strategies and Timing

None

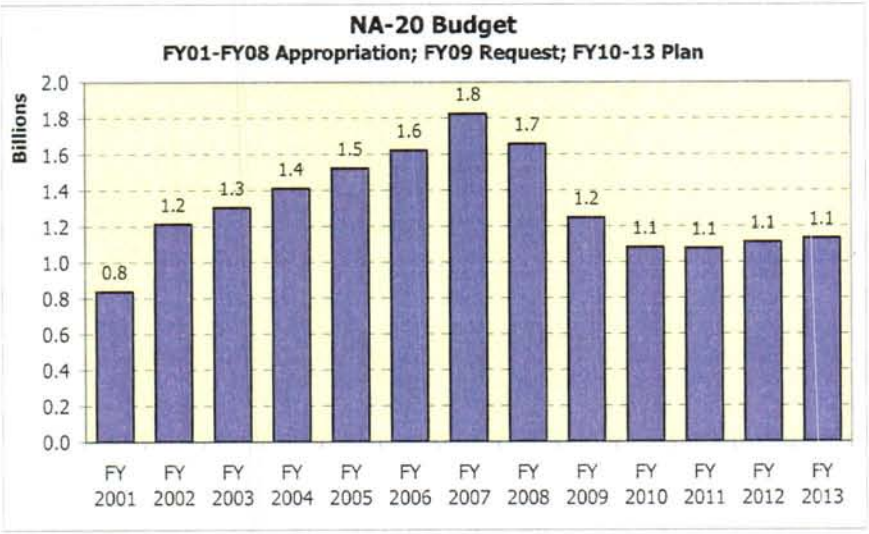
Critical Events and Action Items

Hot Issues

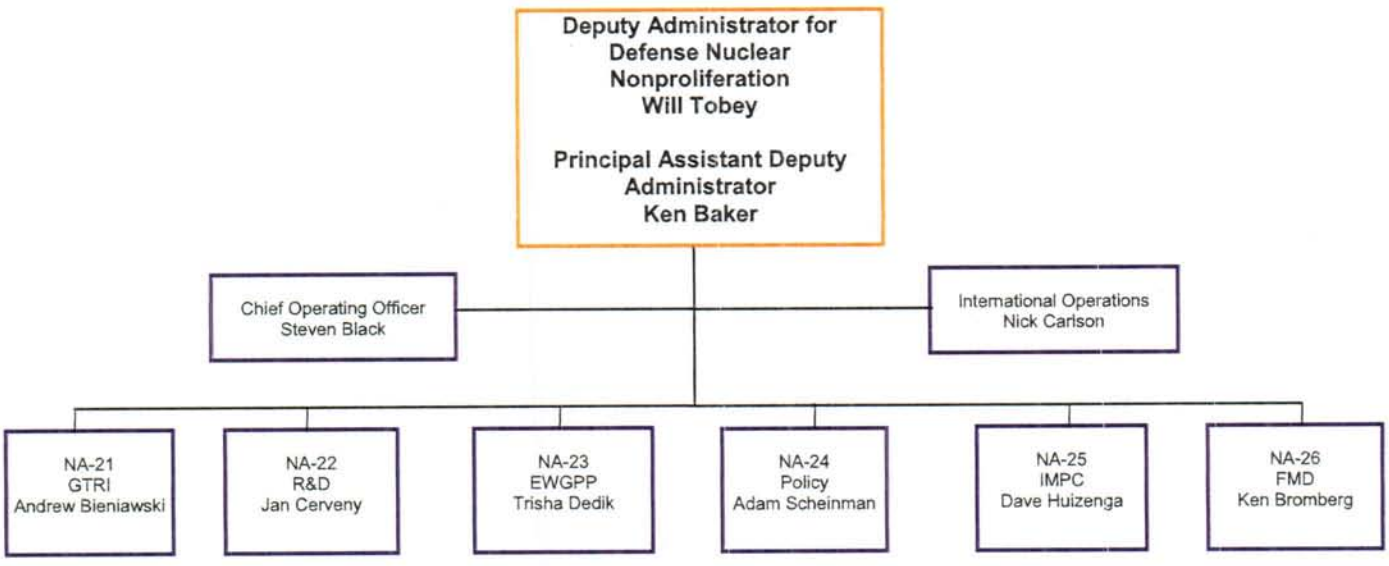
The Department of Energy (DOE) has proposed an expansion of its overseas presence to more effectively meet emerging needs related to nonproliferation, nuclear energy, and energy security. NNSA is coordinating a long-range overseas presence expansion plan that would satisfy immediate requirements and provide long-term solutions to multiple needs for global coverage in nonproliferation and energy matters. Please see the Hot Topic Paper: Expansion of DOE's Overseas Presence.

Funding Profile

	(dollars in thousands)					
	FY 2008 Current Appropriation	FY 2009 Congressional Request	FY 2010	FY 2011	FY 2012	FY 2013
Defense Nuclear Nonproliferation						
Nonproliferation and Verification Research and Development	387,196	275,091	318,620	334,182	343,397	351,098
Nonproliferation and International Security	149,993	140,467	151,052	158,711	171,108	175,368
International Nuclear Materials Protection and Cooperation	624,482	429,694	400,511	394,626	395,225	404,064
Elimination of Weapons-Grade Plutonium Production	179,940	141,299	24,507	0	0	0
Fissile Materials Disposition	66,235	41,774	37,691	27,985	28,435	26,000
Global Threat Reduction Initiative	193,225	219,641	150,299	161,074	173,172	177,452
International Nuclear Fuel Bank	49,545	0	0	0	0	0
Congressional Directed Projects	7,380	0	0	0	0	0
Subtotal, Defense Nuclear Nonproliferation	**1,657,996**	**1,247,966**	**1,082,680**	**1,076,578**	**1,111,337**	**1,133,982**
Use of Prior Year Balances	0	-918	0	0	0	0
Total, Defense Nuclear Nonproliferation	**1,657,996**	**1,247,048**	**1,082,680**	**1,076,578**	**1,111,337**	**1,133,982**
Rescission of Prior Year Balances	-322,000	0	0	0	0	0
Total, Defense Nuclear Nonproliferation	**1,335,996**	**1,247,048**	**1,082,680**	**1,076,578**	**1,111,337**	**1,133,982**



Current Organization Chart



NA-21 - Global Threat Reduction Initiative (GTRI)
NA-22 - Research and Development (R&D)
NA-23 – Elimination of Weapons Grade Plutonium Project (EWGPP)
NA-24 - Nonproliferation and International Security (Policy)
NA-25 - International Material Protection and Cooperation (IMPC)
NA-26 - Fissile Material Disposition (FMD)

National Nuclear Security Administration
Office of Naval Reactors (NA-30)

Organizational Information

Organization Name:

National Nuclear Security Administration (NNSA)
Office of Naval Reactors

Address:

1240 Isaac Hull Ave SE, Washington Navy Yard, DC 20376-8022

Organization Phone Number:

202-781-6198

Organization Website:

http://nnsa.energy.gov_naval_reactors_index.htm

POC E-mail Address:

Thomas.Minvielle@navy.mil

Supporting the DOE Mission

Strategic Theme 2 – Nuclear Security
Strategic Goal 2.3, Nuclear Propulsion Plants: Provide safe, militarily effective nuclear propulsion plants to the U.S. Navy and ensure their continued safe and reliable operation.

Key Activities

- Development of a high-energy reactor and propulsion plant for the new GERALD R. FORD-class aircraft carrier.
- Development of an alternative lower cost submarine core for VIRGINIA-class in support of Navy shipbuilding tempos and acquisition cost reduction goals.
- Support operational nuclear Fleet, which includes 53 attack submarines, 14 *Trident* ballistic missile submarines, four guided-missile submarines, and ten aircraft carriers.
- Transfer of naval spent nuclear fuel from wet to dry storage in preparation for shipment to a geologic repository.
- Support of new externally driven requirements as discussed below – associated funding requirements increase over the five-year plan:

($M)	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Naval Reactors Funding Requirements	828	1,044	1,139	1,252	1,350

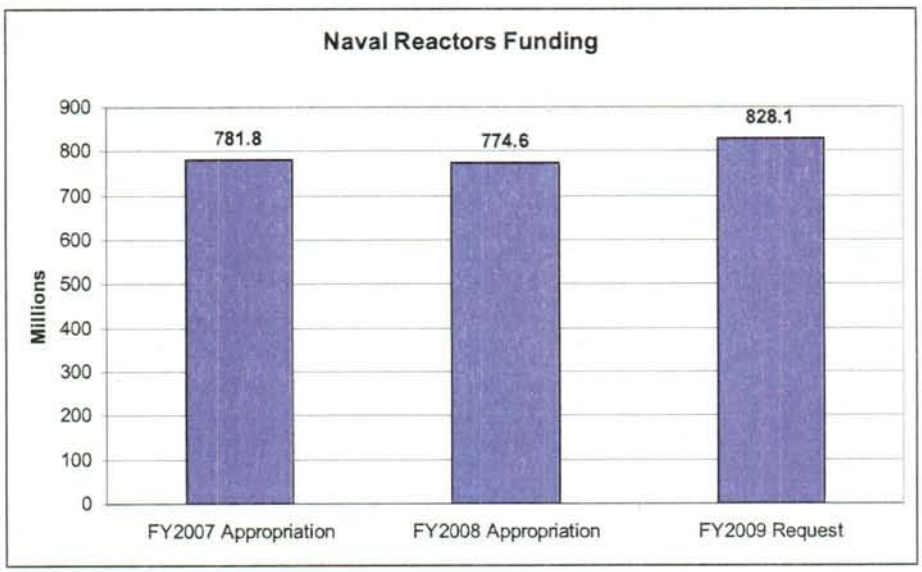
Note: The profile above is in then-year dollars and represents the needed funding to support new Navy requirements

Mission Statement

The Naval Reactors Program is solely responsible for all naval nuclear propulsion work, beginning with reactor technology development, continuing through reactor operation, and ending with reactor plant disposal. The Program ensures the safe and reliable operation of reactor plants in nuclear-powered submarines and aircraft carriers (constituting 40 percent of the Navy's major combatants), and fulfills the Navy's requirements for new and affordable nuclear propulsion plants that meet current and future national defense requirements; delivered on schedule and within budget.

Status

Budget:



FY 2009 Congressional Request: $828,054,000

People:

Estimated number of Federal FTEs: 207

Estimated number of contractor FTEs: 6,800

Estimated number of Headquarters FTEs: 71

Estimated number of field site FTEs: 136

Facilities:

Bettis Laboratory, Pittsburgh, PA (government-owned, contractor-operated dedicated laboratory)

Knolls Atomic Power Laboratory, Schenectady, NY (government-owned, contractor-operated dedicated laboratory)

Kesselring Site, West Milton, NY (government-owned, contractor-operated site that supports operations of two R&D/training reactors)

Naval Reactors Facility, Idaho National Laboratory, ID (government-owned, contractor-operated site that supports naval spent nuclear fuel management and spent core and irradiated specimen examination)

Bechtel Plant & Machinery Inc., Pittsburgh, PA (dedicated equipment prime contractor)

Four public shipyards: Norfolk Naval Shipyard, Portsmouth, VA; Pearl Harbor Naval Shipyard, Pearl Harbor, HI; Portsmouth Naval Shipyard, Kittery, ME; and, Puget Sound Naval Shipyard, Bremerton, WA

Two private shipyards: Electric Boat, Groton, CT, and Northrop Grumman Newport News, Newport News, VA

Performance:

PART rating: EFFECTIVE

FY05 PART measure status: 4 met, 0 unmet, 0 unknown

FY07 4th Quarter Joule status: 6 Green, 0 Yellow, 0 Red

NA-30 FY 2008 PART/Joule Performance Measures
3rd Quarter Summary

SUMMARY BY TARGETS	NUMBER	REMARK(S)
GREEN	5	Naval Reactors (5)
YELLOW	0	
RED	0	
TOTAL	5	

History

In 1946, shortly after the end of World War II, Congress passed the Atomic Energy Act, which established the Atomic Energy Commission (AEC) to succeed the wartime Manhattan Project, and gave it sole responsibility for developing atomic energy. At this time, Captain Rickover recognized the military implications of successfully harnessing atomic power for submarine propulsion and knew it would be necessary for the Navy to work with the AEC to develop such a

program. By 1949, Captain Rickover had forged an agreement between the AEC and the Navy, and Rickover's new organization contracted with Westinghouse to develop a facility—the Bettis Atomic Power Laboratory—to work on the pressurized-water design. Similarly, in 1950, Rickover contracted with General Electric to determine whether a liquid-metal reactor design, which General Electric was developing at the AEC's Knolls Atomic Power Laboratory, could be applied to naval propulsion.

USS NAUTILUS, using the pressurized-water design, and USS SEAWOLF, using the liquid-metal design, were built, tested, commissioned, and put to sea in 1955 and 1957, respectively. While SEAWOLF successfully operated at sea until her first refueling, experience demonstrated that pressurized-water technology was preferable for naval applications. USS NAUTILUS thus became the basis for all subsequent U.S. nuclear-powered warship designs. In less than seven years, Captain Rickover obtained Congressional support to develop an industrial base in a new technology; pioneered new materials; designed, built, and operated a prototype reactor; established a training program; and took a nuclear-powered submarine to sea. The success and speed of development revolutionized naval warfare and has ensured America undersea and nuclear propulsion superiority ever since.

For more than 34 years, Admiral Rickover headed the Naval Nuclear Propulsion Program. Upon retirement in 1982, he left behind a tradition of technical excellence and an organization staffed by experienced professionals dedicated to designing, building, and operating naval nuclear propulsion plants safely and in a manner that protects people and the environment—legacies continued by his successors. The result is a fleet of nuclear-powered warships unparalleled in capability and a mature, highly disciplined infrastructure of Government and private organizations that continue to build on Admiral Rickover's legacy.

In the 1970s, Government restructuring moved the Naval Nuclear Propulsion Program from the AEC (which was disestablished) to what became the Department of Energy (DOE). In 2000, the Program became a part of the newly formed National Nuclear Security Administration within DOE. During these transitions, the Program retained its dual agency responsibility and has maintained its basic organization, responsibilities, and technical discipline much as when it was first established.

A strong Navy is crucial to the security of the United States, a nation with world-wide interests that receives the vast majority of its trade and energy via trans-oceanic shipment. Navy warships are deployed around the world every hour of every day to provide a credible "forward presence," ready to respond on-the-scene wherever America's interests are threatened. Nuclear propulsion plays an essential role in this, providing the mobility, flexibility, and endurance that today's smaller Navy requires to meet a growing number of missions. Over forty percent of the Navy's major combatants are nuclear-powered, including 10 aircraft carriers, 53 attack submarines, 14 strategic submarines (the Nation's most survivable strategic deterrent), and four covert, high-volume, precision strike submarines.

The mission of the Naval Nuclear Propulsion Program, also known as Naval Reactors, is to provide militarily effective nuclear propulsion plants and ensure their safe, reliable, and long-lived operation. This mission requires the combination of fully trained U.S. Navy men and women with ships that excel in speed, endurance, stealth, and independence from logistics supply chains.

Presidential Executive Order 12344 and Public Laws 98-525 and 106-65 set forth the total responsibility of Naval Reactors for all aspects of the Navy's nuclear propulsion, including research, design, construction, testing, operation, maintenance, and ultimate disposition of Naval nuclear propulsion plants. The Program's responsibility includes all related facilities, radiological controls, and environmental, safety, and health matters, as well as selection, training, and assignment of personnel. All of this work is accomplished by a lean network of dedicated research labs, nuclear-capable shipyards, equipment contractors and suppliers, and training facilities which are centrally controlled by a small headquarters staff. The Director of Naval Reactors is Admiral Kirkland H. Donald; he also serves as a Deputy Administrator in the National Nuclear Security Administration.

Naval Reactors maintains an outstanding record of over 139 million miles safely steamed on nuclear power. The Program currently operates 103 reactors and has accumulated over 6,000 reactor-years of operations. A leader in environmental protection, the Program has published annual environmental reports since the 1960s, which report that the Program has not had an adverse effect on human health or the quality of the environment. Because of the Program's demonstrated reliability, U.S. nuclear-powered warships are welcome in more than 150 ports of call in over 50 foreign countries and dependencies.

Since USS NAUTILUS (SSN 571) first signaled "Underway on nuclear power" in 1955, our nuclear-powered ships have demonstrated their superiority in defending the country – from the start of the Cold War, to today's unconventional threats, and beyond to future advances that will ensure the dominance of American sea power well into the future.

Critical Operating Procedures

The Naval Reactors (NR) Program will use various means and strategies to achieve its program goals, including performing collaborative activities. The Program does not believe there are major external factors that could adversely affect our ability to achieve this goal. However, given the unique nature of the Program's responsibilities, commitments to both DOE and the U.S. Navy must be considered at all times. Therefore, any external factor seriously affecting either organization's policies may have an impact on the NR Program.

The Program uses two Government-owned, contractor-operated laboratories, the Bettis Laboratory and Knolls Atomic Power Laboratory, which are predominately involved with the design, development and operational oversight of nuclear propulsion plants for naval vessels. Through these laboratories, and through testing conducted at the Advanced Test Reactor (ATR) located at the Idaho National Laboratory (INL), the Program will complete scheduled design, analysis and testing of reactor plant components and systems, and will conduct planned development, testing, examination, and evaluation of nuclear fuel systems, materials, and manufacturing and inspection methods necessary to ensure the continued safety and reliability of reactor plants in Navy warships. The Program will also accomplish planned testing, maintenance and servicing at land-based prototype nuclear propulsion plants, and will execute planned inactivation of shutdown, land-based reactor plants in support of environmental cleanup goals. Finally, the Program will carry out the radiological, environmental and safety monitoring and ongoing cleanup of facilities necessary to protect people, minimize release of hazardous effluents to the environment, and comply with all applicable regulations.

Industry-specific business conditions, external technological developments, and Department of Navy decisions all impact the performance of naval nuclear propulsion work. Naval nuclear propulsion work is an integrated effort involving the DOE and the Navy, which are full partners in the Naval Nuclear Propulsion Program.

Naval Reactors evaluates the effectiveness, relevance, and progress towards achieving its goals, objectives, and targets by conducting various internal and external reviews and audits. NR Headquarters provides continuous oversight and direction for all elements of Program work. A dedicated Government Headquarters professional staff expert in nuclear technology makes all major technical decisions regarding design, procurement, operations, maintenance, training, and logistics. Headquarters engineers set standards and specifications for all Naval Nuclear Propulsion Program work, while on-site Headquarters representatives monitor the work at the laboratories, prototypes, shipyards, and prime contractors.

NR has a fully integrated long-range planning, budgeting, and execution system. Through this system, NR determines general work direction and associated funding needs; balances competing work priorities against available funds; and, establishes, monitors, and enforces performance measures and controls. Work and funding priorities are established in relation to core mission. The Program uses this focused, multi-year planning process to evaluate any deficiencies. The resulting review process validates 100 percent of the budget twice a year and serves as NR change control process.

Recent Organizational Accomplishments and Strengths

Since Fiscal Year 2005, four new VIRGINIA-class submarines have been commissioned and are in service. A fifth VIRGINIA-class submarine, the USS NEW HAMPSHIRE, is currently undergoing sea trials and is on-track for commissioning by October 2008. Similarly, sea trials for the last NIMITZ-class aircraft carrier, the USS GEORGE H.W. BUSH, concluded in July 2008, and the vessel is on-track for commissioning by January 2009. Further, the construction contract for the first-of-a-class GERALD R. FORD aircraft carrier was awarded on July 16, 2008, for a planned commissioning date of 2015.

Research and development efforts are on track to support the delivery of a low-cost alternative core for VIRIGINIA-class submarines (VAFF) in support of Navy shipbuilding and associated cost reduction goals.

Full dry storage operations commenced in late FY 2006 at the Naval Reactors Facility (NRF) in Idaho. This involves the packaging of naval spent nuclear fuel from wet to dry storage for ultimate shipment to a geologic repository in support of external agreements. As such, a continuing shift in resources from Program laboratories to NRF is expected.

Naval Reactors is currently addressing the aging infrastructure at all four Program sites by establishing facility inspection plans, refocusing facility maintenance resources, and developing healthy recapitalization and construction plans. In 2006, the Program formally established the Facilities Condition Index (FCI) as an OMB performance measure, which is widely used by DOE to ensure deferral of required maintenance is minimized. Since that time, NR has maintained and FCI of below 5%.

To carefully manage the Program's infrastructure footprint, and to reduce environmental liabilities and future caretaking costs, NR has established an aggressive decontamination and

demolition (D&D) plan for the next 30 years. Increased D&D work efforts at four NR sites have supported completion of several projects. For example, the S1C Site in Windsor, Connecticut, including the S1C Nuclear Prototype was permanently shutdown, given unrestricted radiological and chemical release, returned to green grass, and formally turned over to the State of Connecticut in October 2006.

Consistent with ongoing efforts to generate efficiencies in light of growing requirements and constrained budgets, the Program issued a request for proposals in February 2008 to consolidate the operations of the Program's two government-owned, contractor operated laboratories into a single Management and Operating (M&O) contract. In September 2008, Bechtel Marine Propulsion was selected to be the M&O contractor for the Bettis and KAPL laboratories. Similarly, Program field offices at the two laboratories were consolidated in early 2008.

Key Activities and Timing

OHIO-Class Ballistic Missile Submarine Replacement: The OHIO-class nuclear-powered ballistic missile submarines (SSBN) provide the most survivable leg of the US Strategic Forces. They are approaching the end of their service lives, and need to be replaced. The Navy recently completed required capability studies for a follow-on replacement to the OHIO-class, and concluded that construction of the lead ship needs to begin in 2019. The Navy's shipbuilding plan and associated budget programming supports this timeline. To meet required milestones, address future threats, and satisfy required capabilities, DOE-cognizant reactor core and propulsion plant design and development efforts must begin by 2010.

Nuclear-Powered Surface Combatant: The National Defense Authorization Act for 2008 (P.L. 110-181) directs the Navy to construct all future major combatant vessels with integrated nuclear power systems. The recently completed Analysis of Alternatives for the Navy's next generation cruiser demonstrates the attractiveness of nuclear power as oil prices increase and demands for energy and operational flexibility grow. For instance, the next generation cruiser will likely require more than six times the electrical power compared to today's surface combatants to support an advanced radar and associated technology. The Navy's shipbuilding plan and associated budget programming identifies construction authorization of the first next generation cruiser to begin in 2016. The reactor plant components are the earliest components loaded into the ship during construction. To support this timeline, and to enable increased energy output for advanced military features and capabilities, DOE-cognizant reactor core and propulsion plant design and development efforts (while maximizing reuse of FORD-class aircraft carrier propulsion technology) must begin by 2010.

Land-Based Prototype Refueling: The S8G Prototype (located in upstate New York) has provided the opportunity to test required changes or improvements to reactor plant components and systems prior to installation in operational ships. During that time, the prototype has also provided critical training for new sailors preparing to operate the Nation's nuclear-powered vessels.

The S8G Prototype will run out of fuel and require a refueling overhaul starting in 2018. This overhaul will enable continued research and development capability, which is required to support both the active Fleet and future designs. To support the refueling overhaul schedule, concept studies and systems design and development efforts must begin by 2010.

Spent Nuclear Fuel Infrastructure Recapitalization: The Expended Core Facility (ECF), located at the Naval Reactors Facility on the Idaho National Laboratory, is the central location for Naval spent nuclear fuel receipt, inspection, dissection, packaging for dry storage, and temporary storage, as well as detailed examination of spent cores and irradiation specimens. The existing facility and related infrastructure is 50+ years old, and requires recapitalization. To ensure long–term support of the nuclear Fleet based on a business case analysis and the risks associated with facility downtime, construction start is required by 2015. The mission need for sustaining this capability long-term has been approved, and conceptual design efforts must begin by 2010 to support construction.

Supercritical Carbon Dioxide Technology: The Program continues a small effort to explore and develop potentially high-value technologies that will deliver a compellingly better warship. Supercritical carbon dioxide (S-CO2) energy conversion as a replacement for the steam cycle potentially offers the next major step change in plant technology. An S-CO2 system is envisioned to be significantly smaller (up to 40%), simpler (hundreds fewer components), more automated, and more affordable (up to a 20% reduction in cost). Leveraging existing university, industry, and DOE-laboratory work in this technology, conceptual development and small-scale testing is underway to support megawatt-scale testing and potential prototyping beginning in 2010.

Leadership Challenges

Potential FY 2009 Continuing Resolution (CR): Starting in FY 2006, NR embarked upon a large-scale Strategic Review of Resources and Requirements. The driver for the Strategic Review was the recognition that the Program was not providing enough resources to spent fuel management, cleanup of inactivated sites, and facility recapitalization. The results of the review included reductions in planned technology and design work of more than $270M over the FYNSP. These reductions were judged to have an acceptable level of risk given two assumptions: 1) the time frame would be short until new near-term projects begin (OHIO-class replacement, nuclear-powered surface combatant, refueling of the S8G prototype nearing its end-of-life, recapitalization of the Expended Core Facility); and, 2) there would be predictable funding for validated requirements. Subsequent to the Strategic Review, NR funding in the FY 2007 and FY 2008 Appropriations were cut by a total of ~$47M. A long-term CR in FY 2009 at the FY 2008 level would result in an additional reduction of ~$54M. While the nuclear Fleet has not been directly impacted, the FY 2008 and FY 2007 reductions in funding have had a real impact on the Program's technical work, as well as efforts to recapitalize 50+ year old facilities and perform D&D work, and a potential reduction in FY 2009 will impact the Program's ability to readily meet near-term demands for new plant designs along with sustaining critical capabilities (e.g., prototype operations, spent fuel management).

Hot Issues

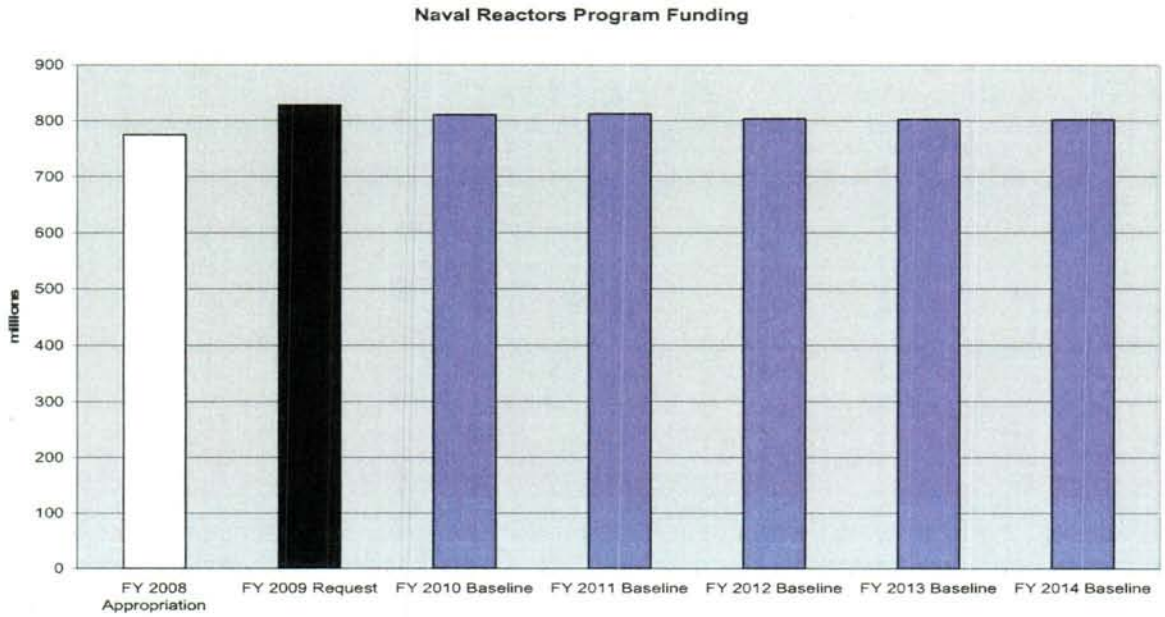
NNSA recently completed the FY 2010-2014 budget programming phase of the Planning, Programming, Budgeting, and Evaluation Process. As discussed above, the NNSA Administrator's Final Recommendation memorandum, dated July 7, 2008, identifies the following as NNSA above-target needs in support national security requirements and sustainment of critical capabilities:

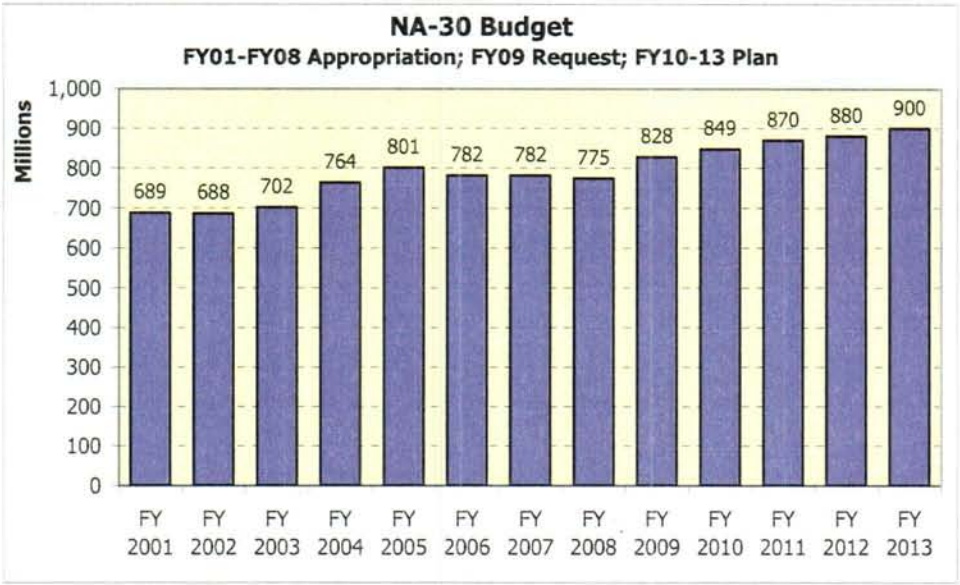
- Propulsion plant development for the OHIO-class ballistic missile submarine replacement;
- Propulsion plant development for a nuclear-powered surface combatant;
- Recapitalization of the Program's 50+ year old spent nuclear fuel infrastructure located at the Naval Reactors Facility on the Idaho National Laboratory;
- Refueling of a land-based prototype, located in upstate New York State; and,
- Development of supercritical carbon dioxide energy conversion technology for future fleet applications.

Funding Profile

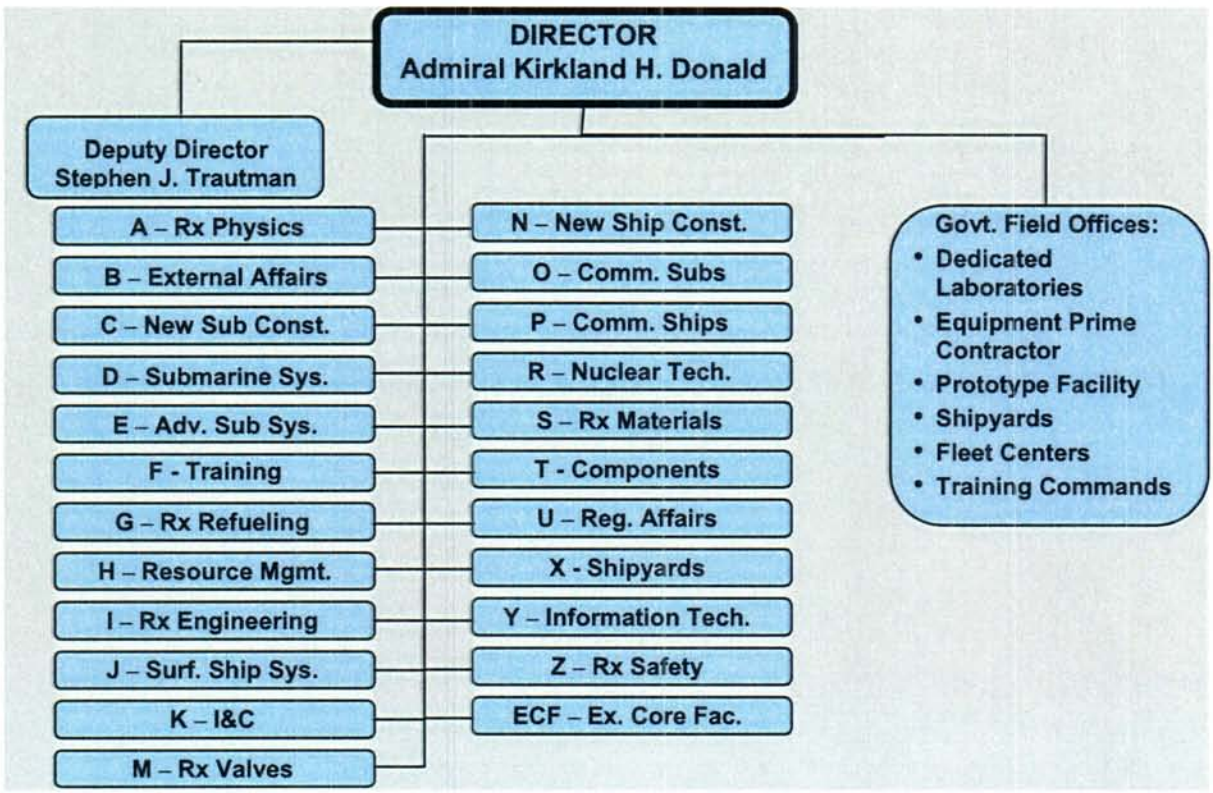
Office or Program Area	FY2008 Current Appropriation	FY2009 Congressional Request	FY2010 Baseline Budget	FY2011 Baseline Budget	FY2012 Baseline Budget	FY2013 Baseline Budget
Naval Reactors	774,668	828,054	810,667	812,039	803,453	802,622

Note: The above profile is in FY08 dollars and does not reflect the required funding to support the new Navy requirements as discussed above.





Organizational Chart



National Nuclear Security Administration
Office of Emergency Operations (NA-40)

Organization Information

Organization Name:

National Nuclear Security Administration (NNSA)
Office of Emergency Operations (NA-40)

Address:

1000 Independence Avenue, SW, Room GH-060, Washington, DC 20585

Organization Phone Number:

202-586-9892

Organization Website:

http://nnsa.energy.gov/emergency_ops/index.htm

POC E-mail Address:

Carl Pavetto, Deputy Associate Administrator
carl.pavetto@nnsa.doe.gov

Supporting the DOE Mission

Emergency Operations supports the Department of Energy (DOE) Strategic Plan Goal 2.1, Nuclear Deterrent, and NNSA Strategic Plan Goal 2, Nuclear Nonproliferation.

Emergency Operations provides the Secretary of Energy's highly-technical and highly-trained specialized emergency response assets. Responsibilities that fall under the Associate Administrator for Emergency Operations include:

- Serving as the Secretary's Emergency Management Officer.
- Emergency Response teams are the pre-eminent national capability to respond to incidents or accidents involving radiological materials, nuclear weapons or improvised nuclear devices.
- Continuity—assuring that DOE will be able to carry out its mission essential functions in the event of a disaster or major continuity event.
- Communications—assuring the Secretary's communications capabilities in case of an emergency, incident, or disaster.
- Emergency Management—assuring that the DOE facilities have standard operational procedures in place for managing emergencies anywhere in the DOE complex. This

includes an oversight and technical assistance component, whereby NNSA's Sites are evaluated for compliance with emergency management requirements.

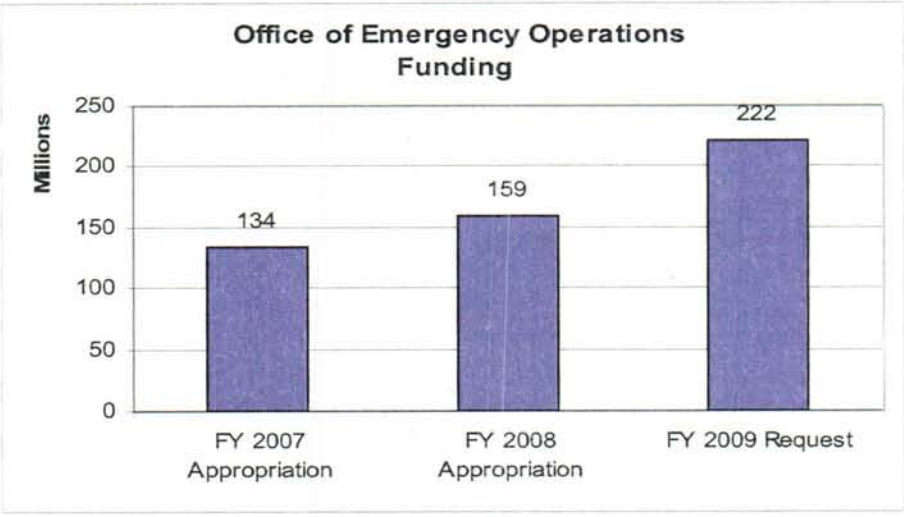
- Technical Nuclear Forensics – providing the nation's technical attribution capability, through the DOE laboratory system, in event of a nuclear attack.

Mission Statement

Assuring the capability to respond to any DOE facility emergency.

Status

Budget:



The FY 2009 proposed budget for the Office of Emergency Operations is $221,936,000.

People:

	Federal Employment		
	FY 2007 Actual	FY 2008 Projected	FY 2009 Request
Emergency Operations			
Headquarters	80	90	90
	Contractor Employment 2008		
	Support Services		M&O Detailees
Headquarters			5

Facilities:

Emergency Operations maintains several facilities including Headquarters operations and ten sites across the country at DOE laboratories and field offices where deployable teams are housed.

Radiological Assistance Program (RAP) teams are housed at:

Andrews Air Force Base, Maryland

Brookhaven National Laboratory, New York

Oak Ridge, Tennessee

Savannah River, South Carolina

Albuquerque, New Mexico

Argonne National Laboratory, Illinois

Idaho Falls, Idaho

Lawrence Livermore National Laboratory, California

Richland, Washington

Performance:

OMB PART Rating: 2008 Moderately Effective
FY07 PART measure status: 1, met
FY07 4th Quarter Joule status: 1, green

NA-40 FY 2008 PART/Joule Performance Measures
3rd Quarter Summary

SUMMARY BY TARGETS	NUMBER	REMARK(S)
GREEN	1	NWIR (1)
YELLOW	0	
RED	0	
TOTAL	1	

History

Since the tragic events of September 11, 2001, the Office of Emergency Operations has witnessed steady growth in its missions and accompanying budget and staffing. NA-40 has responsibility for expanding the nuclear render-safe program to include developing methods for stabilizing a nuclear or radiological device to allow more time for response personnel to perform

their render-safe functions. Emergency Operations has both a national and international customer base oriented toward nuclear/radiological emergency response.

Critical Operating Procedures

If a disaster or other major incident affects the Department of Energy's Headquarters or other facility, mission essential functions must continue to be carried out by being able to relocate key personnel to an alternate facility. Accordingly, each component of the Department is required to have a continuity plan that specifies the critical operating procedures that would be carried out in a continuity event.

In the event of an accident or incident involving a U.S. nuclear weapon or a terrorist nuclear or radiological device, NA-40 will deploy a specialized team to conduct render safe activities. Details of these procedures are classified and the incoming Secretary of Energy and senior staff will be fully briefed at the appropriate time on these activities, as well as the Secretary's role in communicating with the Attorney General and the President.

Recent Organizational Accomplishments and Strengths

Emergency Operations maintains the cadre of pre-eminent technical experts in nuclear counterterrorism, radiation safety, and other expertise necessary for accomplishing its mission. Recent accomplishments include establishment of radiological triage, whereby a first responder team (local, state, Federal, or international) having access to the Internet can obtain advice from DOE's Emergency Operations radiological experts.

Leadership Challenges

The challenge for NA-40 management is to leverage the population of technical expertise resident in NNSA, but not solely dedicated to the emergency response mission, as well as the existing physical infrastructure to fulfill its mission.

Key Strategies and Timing

Key strategies are premised on readiness to respond. Accordingly, the strategies revolve around maintaining appropriate response teams, training and keeping staff members trained, and practicing and exercising to make sure that all team members can carry out their duties and responsibilities in the event of any accident, incident, disaster, or threat involving radiological or nuclear materials.

Critical Events and Action Items

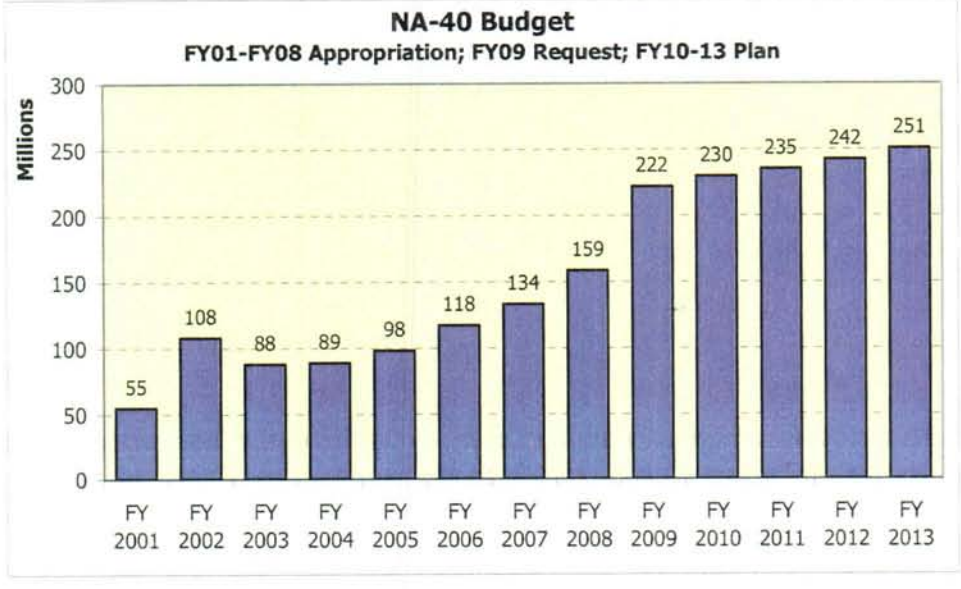
As soon as possible, the incoming Secretary of Energy will be briefed on the Department's mission essential functions and the render-safe procedures for an accident or incident involving a U.S. nuclear weapon or terrorist nuclear or radiological device.

Hot Issues

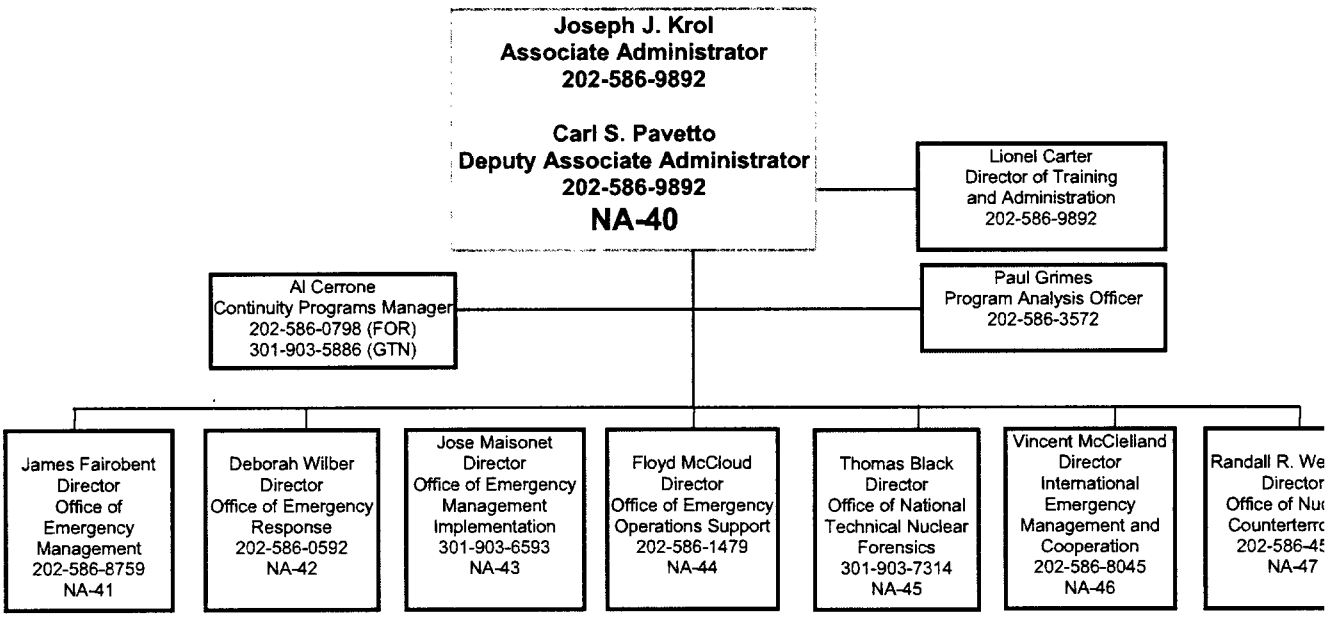
See Nuclear Incident Response Teams Hot Issues transition paper.

Funding Profile

	(dollars in thousands)					
	FY 2008 Current Appropriation	FY 2009 Congressional Request	FY 2010	FY 2011	FY 2012	FY 2013
Nuclear Weapons Incident Response						
Emergency Response (Homeland Security)	131,455	136,448	143,556	149,210	155,644	163,195
Emergency Management (Homeland Security)	6,479	7,658	8,340	8,759	9,192	9,654
National Technical Nuclear Forensics (Homeland Security)	12,000	12,945	13,592	14,272	14,985	15,735
Operations Support (Homeland Security)	8,721	8,461	8,963	9,411	9,882	10,377
International Emergency Management and Cooperation	0	4,655	4,730	4,730	4,730	4,730
Nuclear Counterterrorism (Homeland Security)	0	51,769	50,480	48,829	47,992	47,256
Total, Nuclear Weapons Incident Response	**158,655**	**221,936**	**229,661**	**235,211**	**242,425**	**250,947**



Current Organizational Chart



National Nuclear Security Administration
Office of Infrastructure and Environment (NA-50)

Organization Information

Organization Name:

National Nuclear Security Administration (NNSA)
Office of Infrastructure and Environment (NA-50)

Address:

1000 Independence Avenue, SW
Room: GA-007
Washington, DC 20585

Organization Phone Number:

202-586-7349

Organization Website:

http://www.nnsa.energy.gov/infrastructure/index.htm

POC E-mail Address:

Floyd Thomas, Assistant Deputy Associate Administrator
floyd.thomas@nnsa.doe.gov

Supporting the DOE Mission

Strategic Goal 2.1 – Nuclear Deterrent

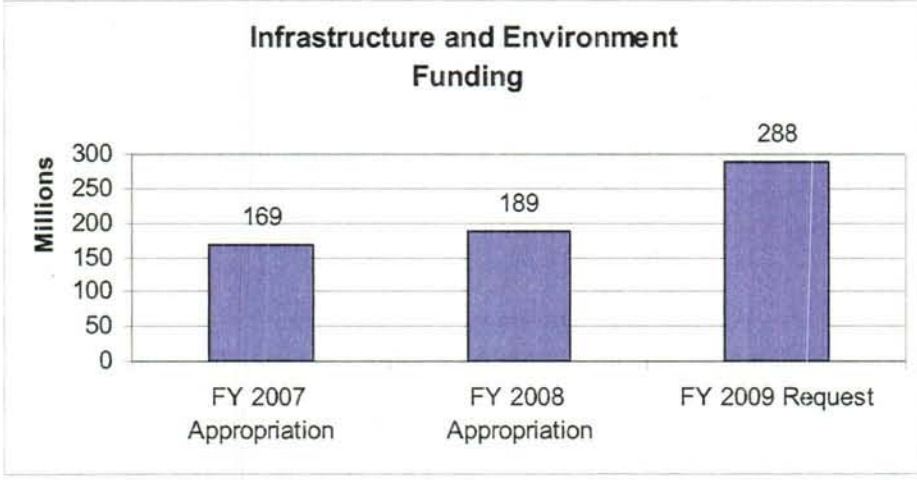
Transform the Nation's nuclear weapons stockpile and supporting infrastructure to be more responsive to the threats of the 21st century.

Mission Statement

The Associate Administrator for Infrastructure and Environment provides the leadership and corporate integration for the development and execution of the NNSA's facilities management policies and programs, project management systems, environmental management programs, and nuclear materials disposition and consolidation.

Status

Budget:



FY 2009 Congressional Request: $287,527,000

People:

	Federal Employment		
	FY 2007 Actual	**FY 2008 Projected**	**FY 2009 Request**
Infrastructure and Environment			
Headquarters	28	31	31
	Contractor Employment 2008		
	Support Services		**M&O Detailees**
Headquarters	5		1

Facilities:

Number and type of major facilities = N/A

Performance:

OMB Part: 2004 Moderately Effective (FIRP)

NA-50 FY 2008 PART/Joule Performance Measures
3rd Quarter Summary

SUMMARY BY TARGETS	NUMBER	REMARK(S)
GREEN	6	FIRP (4), EPO (2)
YELLOW	0	
RED	0	
TOTAL	6	

History

One of NNSA's key goals is to ensure the vitality and readiness of the NNSA nuclear security enterprise. The nuclear weapons enterprise must be efficient, appropriately sized, flexible, and professionally managed. The enterprise must maintain, enhance, and provide a credible nuclear deterrent.

In 2002, NNSA created the Office of Infrastructure and Operations. Later, the name was changed to the Office of Infrastructure and Environment with the following functions:

1) Manage the Facilities and Infrastructure Recapitalization Program (FIRP) to restore, rebuild, and revitalize the physical infrastructure.

2) Integrate project management best practices with Program Facilities Planning and Acquisition.

3) Establish and implement plans for the consolidation and disposition of nuclear materials excess to national security needs.

4) Establish and implement environmental management and regulatory compliance policies within the Department of Energy (DOE) as they relate to NNSA sites.

Critical Operating Procedures

The four subgroups within the Office of Infrastructure and Environment are the offices of:

1. Infrastructure and Facilities Management (NA-52)
2. Project Management and Systems Support (NA-54)
3. Environmental Projects and Operations (NA-56)
4. Nuclear Materials Integration (NA-58)

The Office of the Associate Administrator for Infrastructure and Environment (AAI&E) provides the leadership to assure that the industrial and laboratory infrastructure is able to meet immediate

and long-term operational needs of the NNSA in an environmentally sound and cost effective manner. The critical operating procedures for the AAI&E include but are not limited to weekly reviews to assure the recapitalization of the nuclear weapons complex infrastructure thereby restoring it to accepted industry standards; to oversee the execution of environmental restoration and waste management projects; integrate the consolidation and disposition and waste management projects; integrate the consolidation and disposition of excess nuclear materials and institutional professional and accountable policies, processes, and best practices regarding project and facilities management across the enterprise. The AAI&E staff participates in conference calls and visits to the sites.

The Infrastructure and Facilities Management Office (NA-52) established a specific square foot of facility footprint (3,000,000 sq ft) to be demolished by 2009, and will reach that goal ahead of schedule. Also, an effort to reduce deferred maintenance backlog in the nuclear weapons complex by $900 million is on schedule for the year of 2013.

The Project Management and Systems Support Office (NA-54) continues to conduct Independent Project Reviews (IPRs). Additionally, NA-54 is the Secretariat for the Energy Systems Acquisition Advisory Board (ESAAB) and provides a brief snapshot of the status of projects within NNSA coded Red, Yellow, and Green. This information is provided to the Administrator through the Associate Administrator on a monthly basis.

The Environmental Projects and Operations Office (NA-56) activities for the NNSA Long-Term Stewardship (LTS) Program include project closeout processes for sites where legacy cleanup has been completed and new sites where closeout processes are ongoing. NA-56 also manages the NNSA Waste Management (WM) Program, which identifies existing urgent issues in WM for NNSA sites

The Office of Nuclear Materials Integration (NA-58) is a newly established office (July 2008), and is being organized at this time.

Each office has a director and staff for a total for NA-50 of 31 staff members. Currently, NA-52 and NA-58 are located in the Forrestal building. The two other groups, NA-54 and NA-56, are located in the Forrestal building and in the Germantown facility.

Recent Organizational Accomplishments and Strengths

As of June 30, 2008, (over a 12-month period) 11 metric tons of special nuclear materials were removed from NNSA sites. A majority (approximately 12 tons of plutonium and highly-enriched uranium) of special nuclear materials was shipped from the Y-12 Plant in Oak Ridge, TN, with contributions from Sandia, Los Alamos, and Lawrence Livermore National Laboratories, to the Savannah River Site.

As of August 2008, the disposition of 3 million square feet of facility footprint was completed. This accomplishment has resulted in a significant savings. The Facilities and Infrastructure Recapitalization Program, as of August 2008, reduced over $600 million of legacy-deferred maintenance contributing to the overall commitment of $900 million reduction.

Leadership Challenges

Meeting the requirements of the State of New Mexico Cleanup Order on Consent for Los Alamos National Laboratory (LANL) legacy environmental cleanup will continue to be a significant challenge due to technical and funding constraints.

Key Strategies and Timing

The Office of Environmental Management (EM) and the NNSA will collaborate to develop in the near term a revision to the project baseline and prepare a baseline change request for submittal to the EM Acquisition Executive by mid-January 2009. Impacts of the baseline change are planned to be discussed with the Los Alamos regulators in May 2009, to form the basis for restructure of the cleanup Consent Order.

Alternatives are currently being identified within NNSA in consultation with the Nevada Site Office to address the State's concerns. Development of a strategy and timetable to address this challenge is awaiting substantial completion of vetting the identified alternatives. It is anticipated that this process will be completed by the end of calendar year 2008.

Critical Events and Action Items

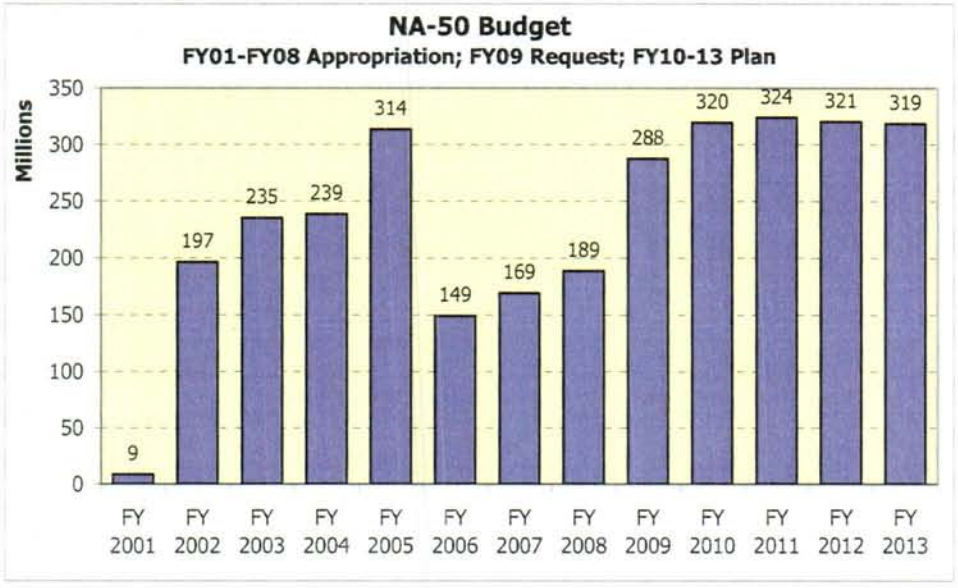
None

Hot Issues

- State of New Mexico Cleanup Order on Consent for Los Alamos National Laboratory legacy environmental cleanup; and,
- Nuclear materials integration.

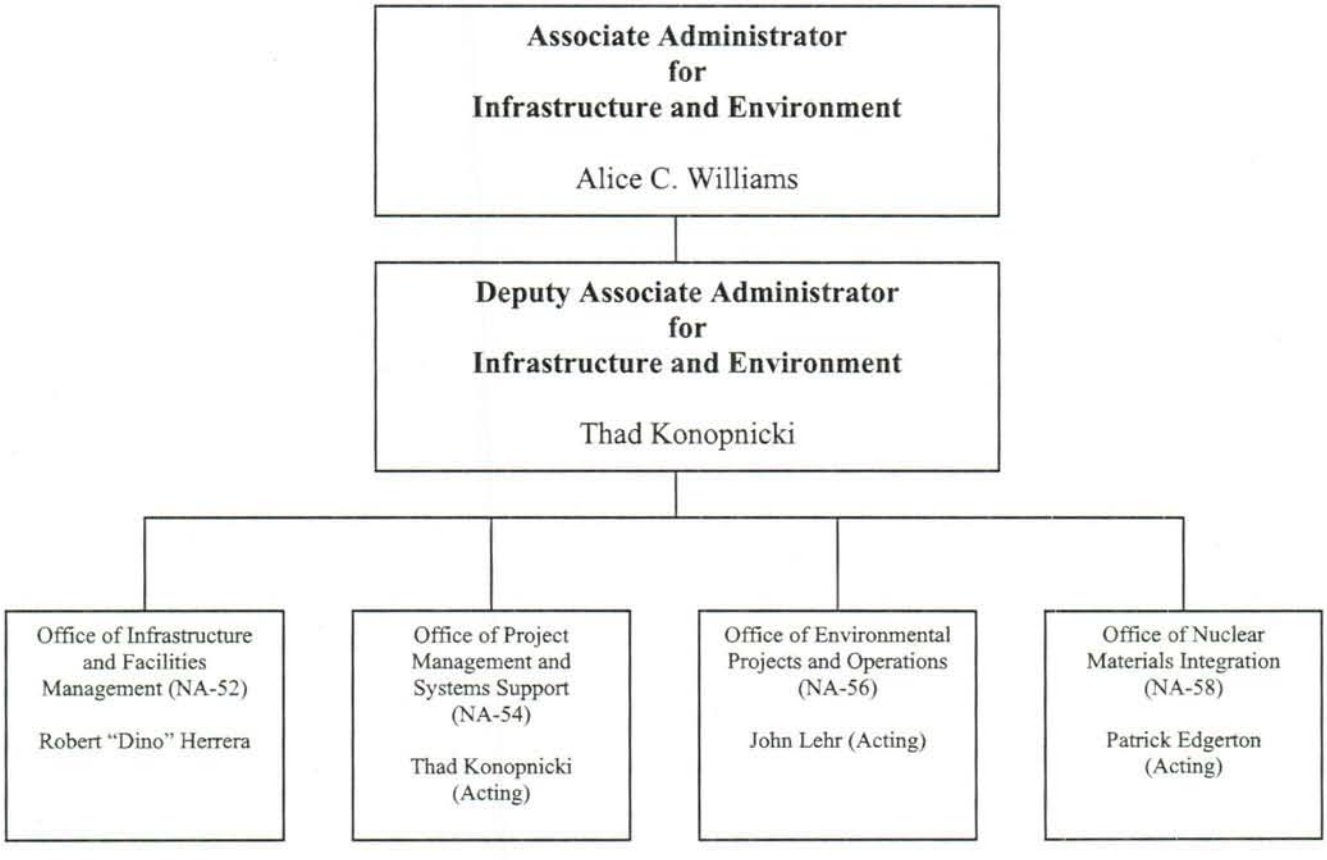
Funding Profile

	(dollars in thousands)					
	FY 2008 Current Appropriation	FY 2009 Congressional Request	FY 2010	FY 2011	FY 2012	FY 2013
Facilities and Infrastructure Recapitalization Program						
Operations and Maintenance (O&M)						
Recapitalization	85,471	86,292	163,723	180,396	178,775	192,315
Facility Disposition	25,000	0	0	0	0	0
Infrastructure Planning	8,000	13,258	19,259	15,983	16,321	2,464
Subtotal, Operations and Maintenance (O&M)	**118,471**	**99,550**	**182,982**	**196,379**	**195,096**	**194,779**
Construction	61,520	69,999	9,963	0	0	0
Total, Facilities and Infrastructure Recapitalization Program	**179,991**	**169,549**	**192,945**	**196,379**	**195,096**	**194,779**
Environmental Projects and Operations						
Long-Term Stewardship	8,592	40,587	37,288	39,026	37,468	36,040
Total, Environmental Projects and Operations	**8,592**	**40,587**	**37,288**	**39,026**	**37,468**	**36,040**
Transformation Disposition						
Facility & Infrastructure Disposition	0	77,391	89,457	88,589	88,008	87,863
Total, Transformation Disposition	**0**	**77,391**	**89,457**	**88,589**	**88,008**	**87,863**
Total, Office of Infrastructure and Environment	**188,583**	**287,527**	**319,690**	**323,994**	**320,572**	**318,682**



Current Organizational Chart for NA-50

The overall organization structure for NA-50 includes four subgroup offices as indicated below:



National Nuclear Security Administration
Office of Management and Administration (NA-60)

Organization Information

Organization Name:
National Nuclear Security Administration (NNSA)
Office of Management and Administration (NA-60)

Address:
1000 Independence Avenue, SW, Room: GB-096, Washington, DC 20585

Organization Phone Number:
202-586-3060

Organization Website:
http: nnsa.energy.gov management

POC E-mail Address:
John Trainor, Deputy Director, Office of Business Operations
John.trainor@nnsa.doe.gov

Supporting the DOE Mission

Strategic Theme 5: Management Excellence

- Enabling the mission through sound management and functional accountability.

Strategic Goal 5.4: Resources

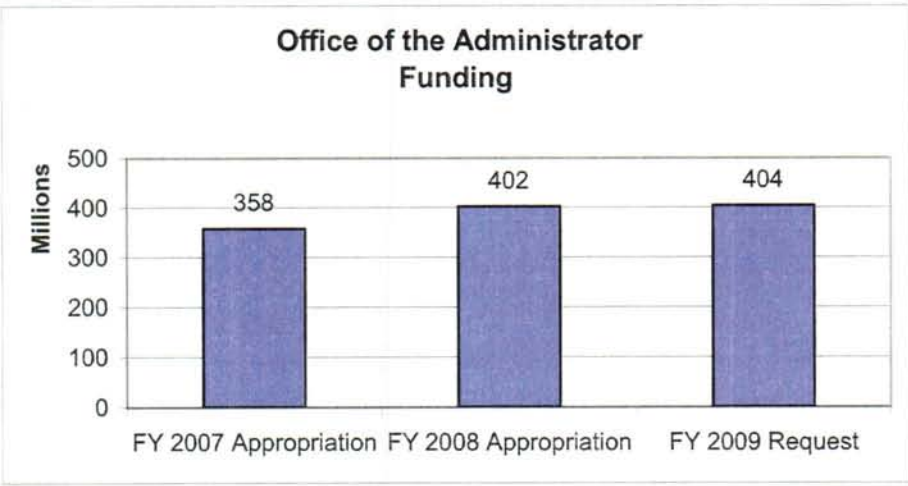
- Institutionalize a fully integrated resource management strategy that supports mission needs and postures the Department for continuous business process improvement.

Mission Statement

To create a well-managed, inclusive, responsive, and accountable organization through the strategic management of human capital; enhanced cost-effective utilization of information technology; and, greater integration of budget and performance.

Status

Budget:



FY 2009 Congressional Request: $404,081,000.

People:

	Federal Employment		
	FY 2007 Actual	FY 2008 Projected	FY 2009 Request
Management and Administration			
Headquarters	88	90	90
Service Center	433	443	466
Future Leaders Program	53	54	57
	574	**587**	**613**

	Contractor Employment 2008	
	Support Services	M&O Detailees
Headquarters	21	0

Facilities:

Headquarters

Forrestal and L'Enfant Plaza (Washington, DC)
Germantown (Germantown, Maryland)

Performance:

PART rating: Not applicable (Program Direction accounts have not been scored in the past); Self Assessed PART rating of 74.

FY07 PART measure status:

Annual average National Nuclear Security Administration (NNSA) program score on the Office of Management and Budget (OMB) PART

assessment indicating progress in budget performance integration and results. The FY07 4th Quarter JOULE status was Green, at 84.3 percent using the cumulative PART scores.

NA-60 FY 2008 PART/Joule Performance Measures
3rd Quarter Summary

SUMMARY BY TARGETS	NUMBER	REMARK(S)
GREEN	0	
YELLOW	1	OA (1)
RED	0	
TOTAL	1	

History

The Associate Administrator for Management and Administration was established when NNSA was created in 2000 pursuant to the National Nuclear Security Administration Act.

During the NNSA re-engineering of the Federal workforce from December 2002 to September 2004, the Operations Offices at Albuquerque, Nevada, and Oakland were disestablished and the business functions went to the Office of Management and Administration. Eight Site Offices were created in connection to the newly established NNSA Service Center in Albuquerque.

The NNSA workforce has been significantly re-engineered over the past 8-years. By the end of 2004, over 300 NNSA Federal staff had been reduced. The next period, critical skills were being restored and highly qualified young employees were added through the "Future Leaders" Intern Program.

The Office of Management and Administration has two functions:

(1) provides administrative staff support in five major areas for Headquarters and field elements; and,
(2) provides corporate budget and financial management oversight for the Office of the Administrator Appropriation.

Critical Operating Procedures

Business Operating Procedures for NNSA have been developed and are available online at the NNSA intranet site (http://hq.na.gov). Business Operating Procedures exist for areas such as: Planning, Programming, Budgeting, and Evaluation; Human Capital Management; Procurement; Project Management; and, other miscellaneous business practices.

Recent Organizational Accomplishments and Strengths

The NNSA Pay-for-Performance and Pay Banding Demonstration Project with the Office of Personnel Management was initiated in March 2008, and will be in effect for 5 years.

The NNSA "Future Leaders" Intern Program has hired almost 120 new employees in the technical and business professions since 2005.

The Historically Black Colleges and Universities Program has developed ongoing funding arrangements with schools of higher learning to provide mission-related research and development, as well as to facilitate curriculum development and internships with NNSA facilities.

NNSA's planning, programming, budgeting and evaluation processes are the only fully functional multi-year financial management structure in DOE. The structure is used as a model for DOE's implementation process.

Leadership Challenges

Succession and workforce planning for Federal staff;

Recruiting and retaining top intellectual talent to support NNSA programs; and,

Constraining staffing levels of Federal and contractor employees.

Key Strategies and Timing

Provide leadership to implement functional accountability (FY 2008 Performance Agreement for shared activities of Management and Administration and the NNSA Service Center).

Ensure integration among functional areas (FY 2008 Performance Agreement for shared activities of Management and Administration and the NNSA Service Center).

Strengthen communication with the NNSA program offices, Site Offices, and other DOE elements (FY 2008 Performance Agreement for shared activities of Management and Administration and the NNSA Service Center).

Continue to develop and strengthen program managers' competencies and accountability in the Pay-for-Performance and Pay Banding Demonstration Project environment.

Critical Events and Action Items

3-month events

Submit FY 2010 Congressional Budget Request (February 2009).

12-month events

Coordinate NNSA's internal programming process to update multi-year plans and budgets for FY 2011 through 2015 (February 2009 through June 2009).

Write and submit the FY 2011 through 2015 OMB Budget Request (September 2009).

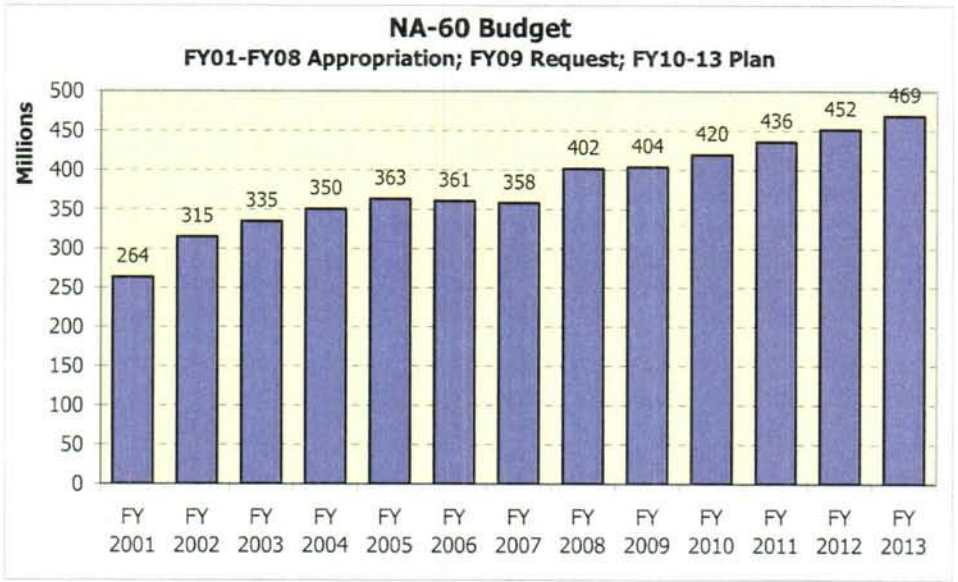
Complete first full performance period under the Pay-for-Performance and Pay Banding Demonstration Project (October 2009)

Hot Issue

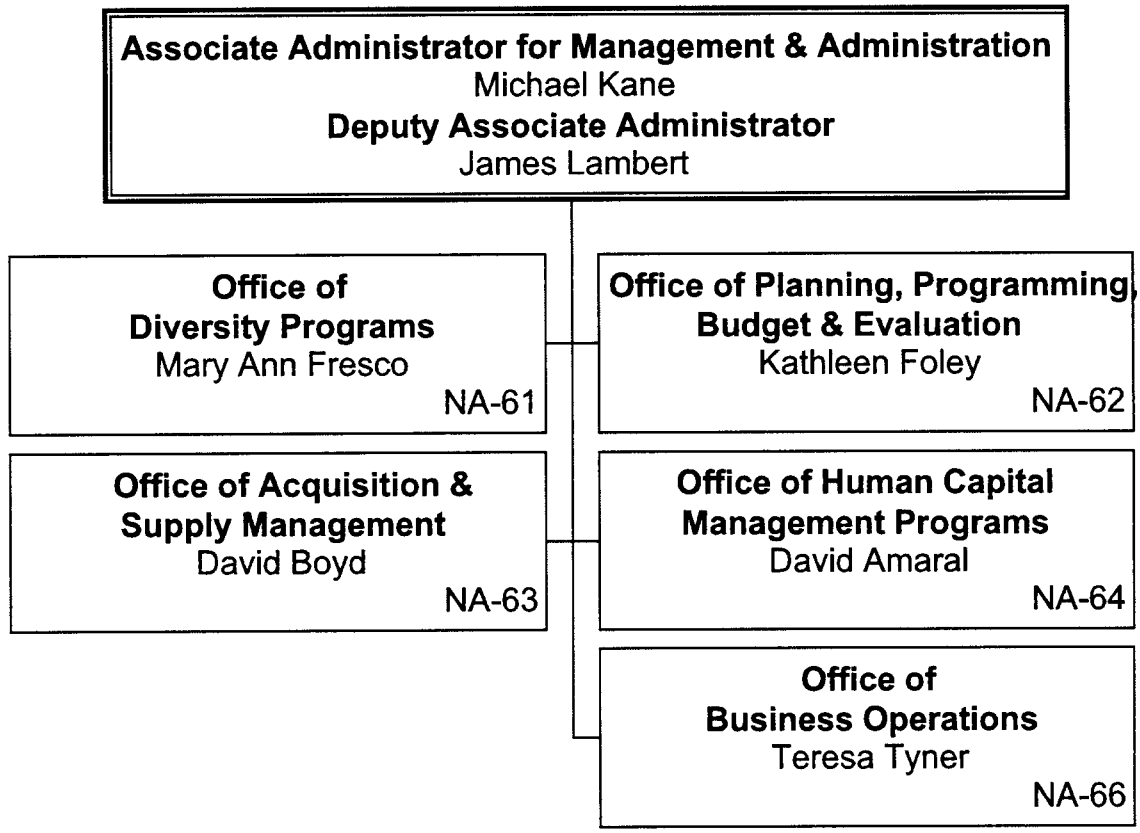
None.

Funding Profile

	(dollars in thousands)					
	FY 2008 Current Appropriation	FY 2009 Congressional Request	FY 2010	FY 2011	FY 2012	FY 2013
Office of the Administrator						
Office of the Administrator	379,997	404,081	419,848	436,266	451,771	469,173
Congressional Directed Projects	22,140	0	0	0	0	0
Total, Office of the Administrator	**402,137**	**404,081**	**419,848**	**436,266**	**451,771**	**469,173**



Current Organizational Chart



National Nuclear Security Administration
Defense Nuclear Security (NA-70)

Organization Information

Organization Name:

National Nuclear Security Administration (NNSA)
Defense Nuclear Security (NA-70)

Address:

1000 Independence Ave, SW, Room 3F-070, Washington, DC 20585

Organization Phone Number:

202-586-8900

Organization Website:

http://nnsa.energy.gov/nuclear_security/index.htm

POC E-mail Address:

Bradley Peterson, Acting Associate Administrator for Defense Nuclear Security
Bradley.Peterson@hq.doe.gov

Supporting the DOE Mission

The Department of Energy (DOE) Strategic theme directly associated with the Defense Nuclear Security (DNS) mission is as follows:

Strategic Theme 2: Ensuring America's Nuclear Security.

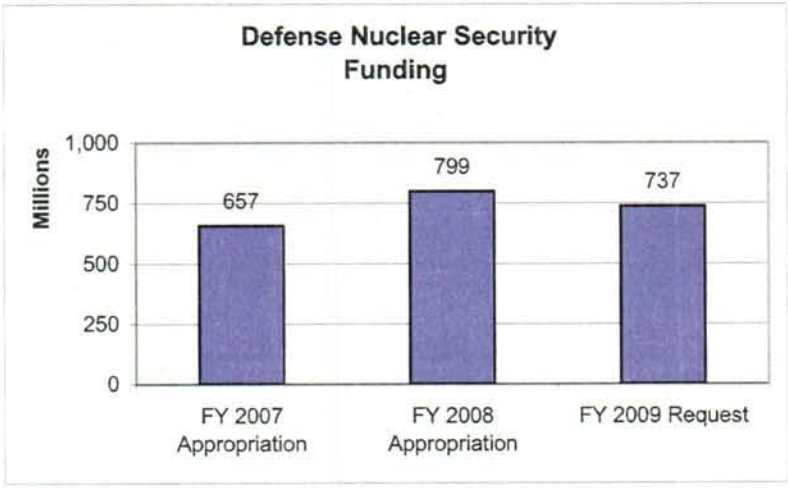
Goal 2.1: Nuclear Deterrent. Transform the Nation's nuclear weapons stockpile and supporting infrastructure to be more responsive to the threats of the 21st Century.

Mission Statement

To protect NNSA capabilities, facilities, materials, information, and employees.

Status

Budget:



FY 2009 Congressional Request: $737,328,000

People:

	Federal Employment		
	FY 2007 Actual	FY 2008 Projected	FY 2009 Request
Defense Nuclear Security			
Headquarters	24	26	29

	Contractor Employment 2008	
	Support Services	M&O Detailees
Headquarters	18	0

Facilities:

Headquarters Forrestal (Washington, DC)

Germantown (Germantown, MD)

Performance:

PART rating: OMB PART ratings 2004: Adequate; 2006: Moderately Effective

FY08 3rd Quarter Joule status: 3 Green

NA-70 FY 2008 PART/Joule Performance Measures
3rd Quarter Summary

SUMMARY BY TARGETS	NUMBER	REMARK(S)
GREEN	2	DNS (Physical Security) (2)
YELLOW	0	
RED	0	
TOTAL	2	

History

DNS was created in August 2000 and has undergone several organizational changes since its creation. The program began as a direct report organization to the Under Secretary for Nuclear Security. The office then became an office reporting to the Office for Infrastructure and Operations. Afterward, the DNS Office became an Associate Administrator level office—where it remains today.

Critical Operating Procedures

DNS issues the Program Execution Guidance, which includes performance and budget targets for NNSA Sites. Each Site develops an Annual Operating Plan and then submit the plan to DNS for concurrence.

Recent Organizational Accomplishments and Strengths

DNS completed many major achievements in FY 2007. These include:

- DNS, with assistance from the Idaho National Laboratory, conducted a Vault-Type Room (VTR) Assessment of the NNSA Complex from February through to June 2007. The physical security assessment of the VTR Program centered on oversight activities, physical security compliance, and access control operations. The assessment included an evaluation of physical security compliance through a sample of 42 of the 952 certified and approved VTRs at NNSA sites. The assessment assisted in strengthening the overall security posture and demonstrated effective oversight.

- Cyber Security Research and Development Assessments were conducted at the Los Alamos, Sandia, and Lawrence Livermore National Laboratories. Interagency Red Team members and DNS personnel accomplished physical security assessments, in conjunction with cyber assessments, to determine if plausible pathways exist allowing an adversary to access critical cyber assets. The team conducted a study of network infrastructure vulnerabilities and provided recommendations for appropriate improvements.

- DNS conducted Performance Assurance Program (PAP) Reviews at the Nevada Test Site, Y-12 Plant, Savannah River Site, Lawrence Livermore and Los Alamos National Laboratories in accordance with DOE directives, the DNS Program Execution Guide, and the DNS PAP Guide. The objective was to determine the effectiveness of the Federal management oversight in executing established processes, plans, and procedures. The reviews were conducted through documentation reviews, observations, and interviews with the Site Offices, security program managers, and contractor employees.

- DNS piloted the Safeguards First Principles Initiative (SFPI) to develop a principle-based standard for Nuclear Material Control and Accountability (MC&A) Programs. The objective of the SFPI is to create a model/standard for developing, implementing, and evaluating MC&A Programs to be adopted NNSA-wide. SFPI also facilitates program implementation that is defensible from a risk management perspective with measurable performance, and provides a basis for designing MC&A Programs in the context of nuclear material inventory holdings, operations, and missions. The SFPI has assisted in reducing the overall cost of the MC&A Program by $5.6M annually at one facility, and increased MC&A system effectiveness.

- The two largest NNSA protective force unions—the Pantex Guards Union and the Y-12 International Guards Union of America—ratified new collective bargaining agreements during FY 2007. During a 6-week protective force work stoppage at Pantex, BWXT-Pantex executed a successful contingency force plan that ensured uninterrupted security without disruption of plant operations or a reduction in the safety and security of nuclear activities. Each of the NNSA Sites, the Office of Secure Transportation, and other DOE protective force contractors, made significant contributions in support of the critical security needs at the Pantex Plant. The noteworthy success of contingency force planning and execution provided valuable lessons learned for NNSA and other DOE organizations.

- DNS continued a robust and expanding relationship with the United Kingdom's Ministry of Defence (MoD) and Atomic Weapons Establishment (AWE) in furtherance of the 2006 Memorandum of Agreement between DNS and the Director General, Security and Safety. During FY 2007, DNS coordinated MoD and AWE senior management meetings at Sandia National Laboratories, Los Alamos National Laboratory, and the Y-12 Plant. These meetings were part of the United Kingdom's review of the Ministry of Defence Police's (MDP) capabilities and joint reviews of security construction management, security technology integration, and cyber security enhancements in support of the Trident II D5 Life Extension and Enhanced Collaboration Programs. DNS also participated in a Home Office sponsored counterterrorism exercise focused on security and emergency operations at Her Majesty's Naval Base Clyde.

Leadership Challenges

The current state of the NNSA security program warrants continued attention on nuclear security issues. While important improvements have been made in recent years, sustainment of these improvements and the resolution of long-standing issues must remain a very high priority.

In the area of nuclear material protection, NNSA will continue to consolidate the locations where the materials are used and stored, while at the same time, invest in modern facilities that provide "built-in" security features that improve the protection posture while reducing security costs. New approaches are also needed in the protective forces program to ensure NNSA is capable of recruiting and retaining the most capable force possible. For the protection of classified information, NNSA will continue to limit the amount of classified material in use and reduce the number of areas where the information is handled. The physical security for classified workspaces must be improved. The continued investment in classified networks is needed to eliminate the vulnerability of moving large amounts of classified information within, and between, sites. In addition, NNSA will continue to work on resolving long-standing concerns with the size and qualifications of the Federal security staff overseeing the NNSA field security mission.

Key Strategies and Timing

Support Complex Transformation.

The Complex Transformation Plan is NNSA's vision to establish a smaller, more efficient Nuclear Weapons Complex that is able to respond to changing national and global security challenges. By 2030, NNSA will be the steward of a smaller, safer, and more secure nuclear weapons stockpile that has assured reliability over the long-term. It is backed by the industrial and design capabilities needed to respond to changing technical, geopolitical, or military needs. The future complex must be secure, with security built-in to the projects undertaken to implement the Complex Transformation Plan.

Build an elite force and tactical response.

A large portion of the NNSA security budget is directed to its protective forces, a primary threat deterrent. NNSA protective forces must be well trained to deal with current and emerging terrorist threats. They do this by employing advanced techniques and procedures that enable the protective forces to defeat a determined adversary through the application of overwhelming force.

Deploy technology as force multipliers.

DNS will continue to identify and deploy cost-effective technology to hold or reduce the cost to attain or maintain a high level of protection effectiveness.

Secure Information.

The security of classified and sensitive unclassified matter is of paramount importance to protect the Nation and fulfill DOE responsibility for handling sensitive data. DNS is committed to ensuring that NNSA information and matter are secure from theft and unauthorized disclosure.

Improve Personnel Security.

DOE's most important asset is its people, but security requires confidence, integrity, honor, and reliability. DNS will continue to effectively and efficiently screen personnel on a recurring basis. Additionally, for certain operations of exceptional safety and security concern, DNS will continue rigorous implementation of the Human Reliability Program to provide increased assurance that high hazard activities can be conducted with confidence.

Employ risk management.

Risk will be consistently evaluated as a function of the relative likelihood of various threats, protection system effectiveness, and consequence. Articulation of risk to leadership remains a challenge. DNS will articulate risk using unambiguous and uniform criteria wherever possible.

Conduct vulnerability analyses.

Consistent assessment of protection system risk (effectiveness) will be accomplished through a vulnerability analysis framework. Use of this type of framework permits risk-based decision making at a single site, within a single functional area, across the complex, or across functional lines complex-wide.

Critically analyze policy.

To implement a cost effective DNS program, DOE must understand the cost, scope, and schedule consequences of policies. This understanding will allow use of the information as part of a risk-based decision-making approach to ensure the mission's success.

Instill an individual sense of security awareness.

The DNS is committed to ensuring all employees understand the importance of security, take ownership for security in the workplace, and integrate security into their day-to-day operational responsibilities, as well as in their planning for future operations and projects. DNS will implement programs with added value which meet environmental and safety objectives. An integrated security program is used to integrate security into management and work practices. One of the key components of an integrated security program is line management responsibility for security.

Conduct cost/benefit analyses and ensure cost efficiencies.

DNS reduces the cost of security improvements by leveraging analyses, lessons learned, and best practices of other NNSA, DOE, Department of Defense, and industrial activities. DNS will strive to eliminate redundant analyses in the evaluation and implementation of security technologies and other improvements.

Ensure clear roles and responsibilities.

A clear understanding of roles and responsibilities is imperative for the success of national security. This is accomplished through clearly communicated functions, responsibilities, and authorities. Security professionals are held accountable to execute responsibilities to the DNS Program.

Improve the budget process.

DNS will fully implement the NNSA Planning, Programming, Budgeting, and Evaluation process. The office engages Site offices in the national security process while exercising line management decision authority.

Continually improve the program.

Organizations learn from successes and failures. DNS gains knowledge from past DNS success and failure along with the success and failure of other DOE and NNSA entities, other Federal agencies, and the private sector. DNS strives to learn from critical mistakes by effectively communicating lessons learned.

Critical Events and Action Items

3-month events

Design Basis Threat (DBT)/Graded Security Program (GSP) Implementation Strategy: From the strong foundation provided by the 2003 DBT upgrades, NNSA is continuing to invest in physical security upgrades improvements designed to keep NNSA sites among the best-defended and most secure facilities in the world. Analysis will occur over the next 6-9 months to determine site-specific implementation strategies.

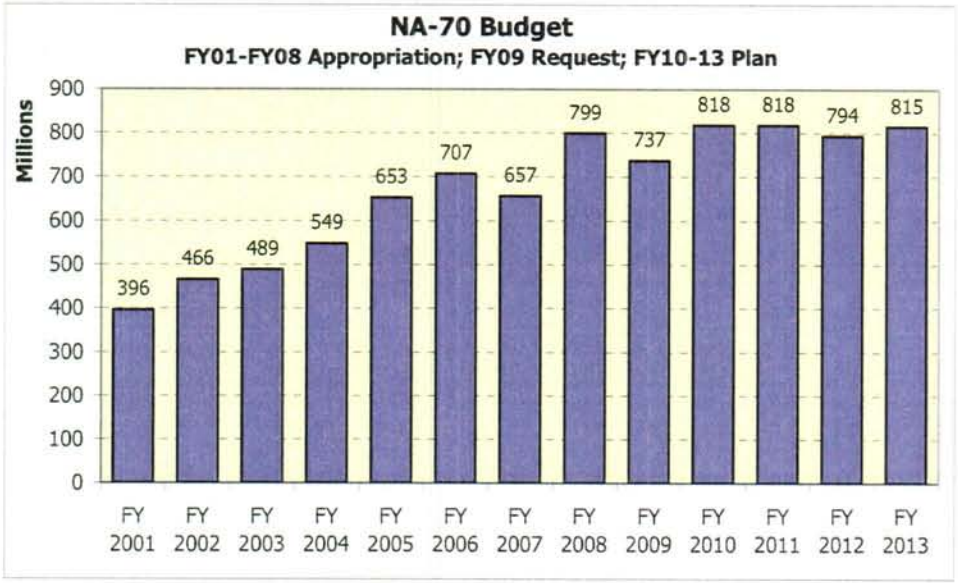
Hot Issues

There is currently heightened concern associated with nuclear security resulting from recent highly publicized incidents including: the Air Force's unauthorized transportation of six nuclear weapons from Minot Air Force Base in North Dakota to Barksdale Air Force Base in Louisiana; nuclear weapons parts that were mistakenly sent to Taiwan by the Air Force.

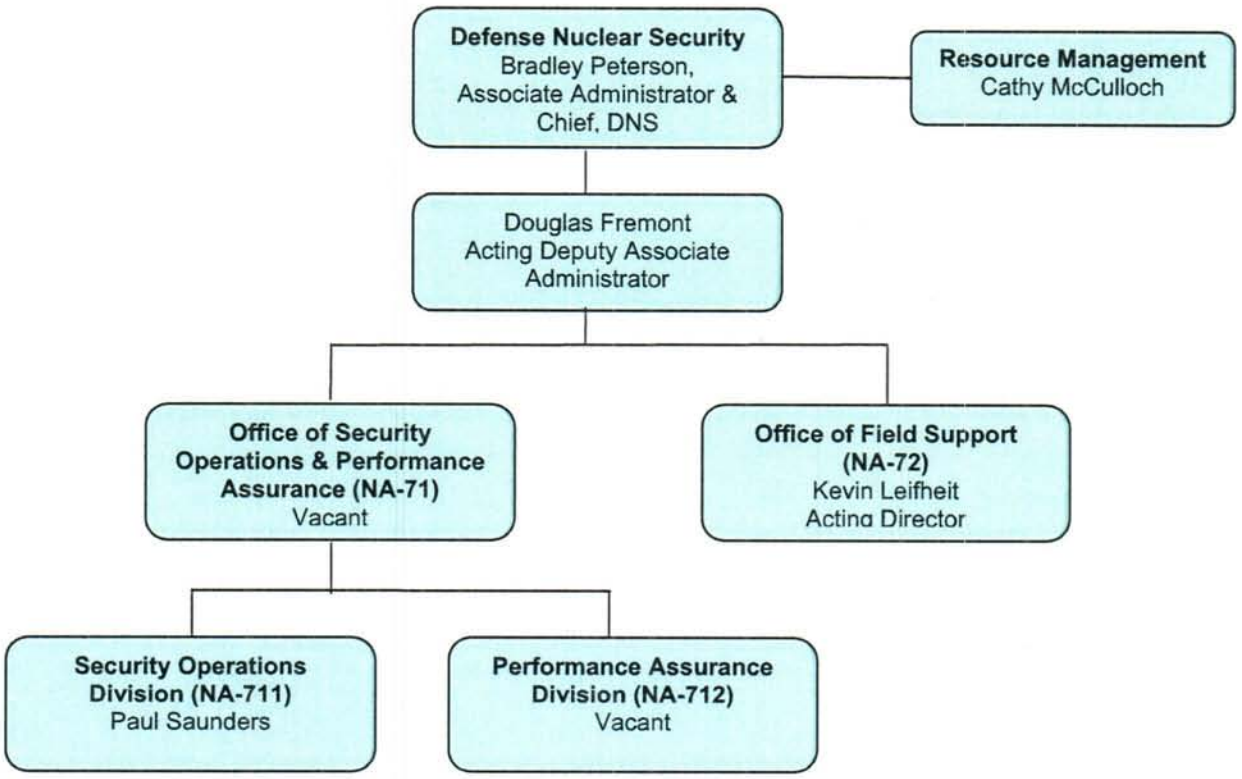
The control and accountability of nuclear weapons and sensitive nuclear weapons related parts is a matter of critical important and must not be subject to error. The policies, procedures, and implementation for the control and accountability of such material must be clearly established and consistently implemented across the NNSA. There is a HOT issue paper entitled, "**Review of Nuclear Weapons and Sensitive Nuclear Weapons Related Parts Control and Accountability**" which addresses this issue.

Funding Profile

	(dollars in thousands)					
	FY 2008 Current Appropriation	FY 2009 Congressional Request	FY 2010	FY 2011	FY 2012	FY 2013
Defense Nuclear Security (Homeland Security)						
Operations and Maintenance	728,123	690,217	763,285	786,469	793,856	814,928
Construction	71,110	47,111	55,000	31,340	0	0
Subtotal, Defense Nuclear Security	**799,233**	**737,328**	**818,285**	**817,809**	**793,856**	**814,928**
Offset for S&S Work for Others	(34,000)	0	0	0	0	0
Total, Defense Nuclear Security	**765,233**	**737,328**	**818,285**	**817,809**	**793,856**	**814,928**



Current Organizational Chart



Lawrence Livermore National Laboratory (LLNL)

Mission Statement

LLNL is a Department of Energy (DOE) multi-program national security laboratory that applies multidisciplinary science and technology through safe, secure, and cost-efficient operations to address significant challenges to national and global security. The Laboratory is responsible for ensuring that the Nation's nuclear weapons are safe, secure, and reliable and effecting transformation of the U.S. nuclear weapons complex to meet 21st century deterrence needs. In addition, LLNL provides integrated analyses, advanced technologies, and operational capabilities to detect and prevent the spread and use of weapons of mass destruction. LLNL also strengthens global security through research and development for advanced defense systems, abundant energy and environmental quality, biotechnology to improve human health, and basic science and advanced technology for U.S. industrial competitiveness.

History

Established in 1952 to augment the Nation's nuclear weapons design capability, LLNL made the major advance in the 1950s of designing a small thermonuclear weapon that could be launched from submarines. From its beginning, LLNL has emphasized advanced computers and fully integrated simulations as a key part of its research activities. Environmental and bioscience programs began in the 1960s and have contributed to understanding global warming and the launch of the Human Genome Project. Since the 1970s, LLNL has been at the forefront of laser science with the construction of ever-larger lasers to explore fusion for national security and civilian applications. In the 1990s, LLNL helped with the development of the Stockpile Stewardship Program. In addition, LLNL expanded its intelligence support, arms control, and emergency response efforts to focus on proliferation and the use of weapons of mass destruction (WMD) by terrorists or a nation state.

Lab-at-a-Glance

Location: Livermore, CA

Type: Multi-program Lab

Contract Operator: Lawrence Livermore National Security, LLC (LLNS)

Responsible Site Office: Livermore Site Office

Website: www.llnl.gov

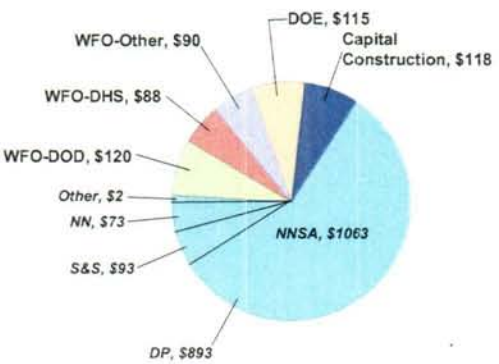
Physical Assets (end of FY07 data):

- Main Site: 459 facilities on 820 acres; Site 300: 189 facilities on 7,000 acres
- 7.0M GSF in active operational buildings
- 67K GSF in non-operational buildings
- Replacement plant value: $4.3B
- Deferred maintenance: $313M
- Asset Condition 92.7%
  - Mission Critical: 35 facilities
  - Mission Dependent: 577 facilities
- Asset Utilization Index: 85.8%

Human Capital:

- 7560 employee FTEs (including "term" employees and post-docs)
- 279 facility users, visiting scientists, and students in FY 2007

FY 2007 Total Funding: $1592M



FY 2007 Total DOE Funding: $1294M
FY 2007 Total Non-DOE Funding: $298M

Multi-program Laboratory

LLNL has several priority programs and missions that support the Federal government. These include the following:

- ***Stockpile Stewardship and Weapons Complex Transformation*** [DOE/National Nuclear Security Administration (NNSA)]. LLNL provides innovative technologies and approaches to sustain the Nation's nuclear weapons stockpile while working to transform the stockpile and weapons complex to meet 21st Century requirements. LLNL has unique facilities and special skills that ar applied to meet pressing national needs and threats to global security.
- ***International Security*** [DOE/NNSA, Department of Defense (DoD), and the intelligence community]. LLNL pursues programs in nonproliferation, counterterrorism, intelligence support directed-energy weapons such as lasers, and counters to asymmetric threats (e.g., cyber security, biosecurity, and space defense).
- ***Energy and Environmental Security*** [DOE]. LLNL works on programs in advanced nuclear fue cycle and fission/fusion energy (for proliferation-resistant nuclear energy), climate change modeling, and carbon cycle management–carbon sequestration.
- ***Advanced Technology and Basic Science*** [DOE, DHS, NASA, and industrial partners]. LLNL applies its unique capabilities in areas such as advanced scientific computing, materials science and engineering, and lasers to advance basic sciences and enhance U.S. economic competitiveness.

Core Competencies

- ***Nuclear Science and Technology.*** Understanding in detail all aspects of nuclear weapons performance in support of Stockpile Stewardship and Stockpile Transformation, the nuclear fuel cycle for proliferation-resistant nuclear energy, and nuclear/WMD forensics for terrorist emergency response.
- ***High-Energy Density Physics.*** Achieving fusion ignition and burn at the National Ignition Facility (NIF), making NIF a premier user facility for discovery-class science, and exploring fusion and fission/fusion approaches as a clean, inexhaustible source of civilian energy.
- ***High-Performance Computing.*** Continuing LLNL's leadership in integrating all aspects of high-performance scientific computing: computer architectures, simulations to achieve scientific discoveries, tools for knowledge extraction, and new algorithms and codes for applications.
- ***Materials Science.*** Combining experiments and simulations to better understand materials—from nano- to macroscales—for Stockpile Stewardship and other mission applications, the advance of basic science, and new products for U.S. industrial competitiveness.
- ***Advanced Lasers and Diagnostics.*** Developing high-average power lasers for defense, energy security, and industrial applications; adaptive optics for healthcare and astronomy; and, picosecond-nanoscale diagnostics and sensors for national security and fundamental scientific discovery.
- ***Engineering Development and Systems Technologies.*** Developing and applying the world's most advanced lasers and two of the most powerful computers, and developing end-to-end systems solutions to prevent, detect, and respond to WMD proliferation and terrorism.

Major Laboratory Facilities

- ***The Terascale Simulation Facility (TSF).*** A user facility for the NNSA laboratories and home to two of the world's most powerful computers, the Advanced Simulation and Computing (ASC) Purple and BlueGene/L (700 trillion operations per second combined speed), and the future home o Sequoia (14 quadrillion operations per second).

- ***The National Ignition Facility (NIF).*** With 192 beams, the world's most energetic laser. NIF will begin fusion ignition experiments in FY 2010, carry out key experiments for Stockpile Stewardship, and transition to a uniquely capable user facility for high-energy-density physics in FY 2012.
- ***The High Explosives Applications Facility (HEAF).*** NNSA's Center of Excellence for high-explosives research and development with state-of-the-art capabilities for formulating, characterizing, and testing energetic materials for stockpile stewardship and defense applications.
- ***Superblock.*** Currently one of the plutonium research facilities in the U.S., used to better understand plutonium behavior in weapons and develop improved processes for manufacturing plutonium parts (large-scale amounts of special nuclear materials planned are to be removed by 2012).
- ***Site 300.*** Remote site for high-explosive processing and testing, with the Contained Firing Facility (CFF) for hydrodynamic testing of mock weapon primaries and other large-scale experiments.
- ***The Center for Accelerator Mass Spectrometry (CAMS).*** The world's most versatile and productive AMS facility, used to detect trace amounts of isotopes in support of national-security, environmental, biological (as a National Institute of Health-designated center), archaeology, and climate-change programs.
- ***Global Security Operational Facilities.*** Unique capabilities that provide operational support to DOE/NNSA, Department of Homeland Security, and DoD, including the National Atmospheric Release Advisory Center for predicting the spread of released hazardous materials, the Nuclear Incident Response Program, the Forensic Science Center (the only U.S. facility currently certified by the Organization for the Prohibition of Chemical Weapons), the Biodefense Knowledge Center, the Homeland Defense Operational Planning System, and the Counterproliferation Analysis and Planning System.

Science and Technology Challenges

- ***Fusion Ignition and Burn at NIF.*** Achieving fusion ignition and burn at NIF could be a future-defining accomplishment: it may open paths to clean inexhaustible energy, Stockpile Stewardship with no reliance on nuclear testing, and exploration of the science of the cosmos in a laboratory setting.
- ***Nuclear Weapons Without Nuclear Testing.*** Through the use of advanced simulations on peta- to exa-scale computers, the results of simulation-validating experiments on NIF, and advanced methodologies to quantify uncertainties, laboratory scientists and engineers aim to be able to resolve any technical issue arising in the stockpile without resorting to nuclear tests.
- ***Nuclear Stockpile/Complex Transformation.*** Laboratory scientists and engineers are working to provide the Nation options to meet future nuclear deterrence needs—ranging from incremental life-extension programs to reuse of weapon components and/or modern replacement warheads—to best achieve the goal of a safe, secure, and cost effective nuclear deterrent and nuclear weapons complex.
- ***Counter Nuclear/WMD Terrorism and Other Security Threats.*** Laboratory researchers are working to vastly improve technical capabilities to detect threats, provide more accurate situational awareness to inform decision-making, deter attacks, and defend the homeland.
- ***Clean Energy.*** LLNL researchers are developing proliferation-resistant fission, fission/fusion, and fusion energy concepts, carbon sequestration technologies, hydrogen storage for transportation, and underground coal gasification.

- ***Climate Change.*** LLNL provides both standards and expertise within its Program for Climate Model Diagnosis and Intercomparison, as well as provide leadership in climate model analysis, notably in the areas of high-resolution regional climate modeling and reconciliation of climate mod predictions with historical data.
- ***Computer Usage for Predictive Science and Knowledge Extraction.*** Computers are poised to provide powerful new capabilities to make scientific discoveries through scientific simulations base on first principles (e.g., the atomic and quantum mechanical simulations already being performed at LLNL) and to extract knowledge from vast amounts of disparate data (e.g., for intelligence).

Leadership Challenges

- ***Workforce.*** Ensure the recruitment and retention of a world-class workforce at the laboratory in the face of the high-cost of living and mobility of the workforce within the San Francisco Bay Area, an anticipated demographics for scientific and technical talent in the U.S.
- ***Science and Technology (S&T) Base.*** Sustain the laboratory's unique capabilities and broad S&T base—necessary for long-term success in Stockpile Stewardship and other national security missions—within budgetary constraints.
- ***Security.*** Maintain the necessary high level of physical and cyber security in view of mandated improvements, budget limitations, uncertain and growing threats, and daunting challenges in evaluating the risks and benefits to best choose options to improve security.
- ***Environment, Safety, Health, and Quality (ESH&Q).*** Apply the strong commitment of all laboratory employees to ESH&Q to achieve a greener laboratory and markedly improved safety performance, and institute a best-in-class Quality Assurance Program.
- ***Operations.*** Revamp laboratory operations—using best practices from LLNS parent organizations—to employ "best practices" consistently through standardization and centralization, improve the quality of operations and business functions, and dramatically lower laboratory costs.
- ***Mission Direction.*** Provide approaches and technology options to help NNSA successfully transform the weapons complex within the expected budget and to help the Federal system focus or the defining security issues of the 21st Century.

Recent Accomplishments

- ***First Warhead Life-Extension Program (certified in 2001) and Reliable Replacement Warhead (selected in 2007).*** LLNL teamed with Sandia National Laboratories to successfully complete the first Life Extension Program without nuclear testing (the W87 ICBM warhead) and was selected to develop the Reliable Replacement Warhead for the Navy (with work currently halted).
- ***First 3-D Simulation of Nuclear Weapon Performance (2001).*** In 2001, LLNL completed the firs ever 3-D simulation of a full-system nuclear weapon explosion, and in 2007 simulations at unprecedented levels of resolution using the ASC Purple Supercomputer revealed phenomena in nuclear weapons performance that had not been previously known.
- ***Weapon Plutonium Studies (2006-7).*** In 2006, a long-term study by LLNL and Los Alamos National Laboratory concluded that the performance of plutonium pits in U.S. nuclear weapons wil not sharply decline due to aging effects. In 2007, LLNL researchers completed development of a new description of plutonium—an "equation of state"—based on advanced theory and simulation and very accurate experimental data.

- ***First NIF Experiments and Progress Toward Project Completion (2003-Present).*** Experiments conducted in 2003-4 using the first four NIF laser beams point toward success in achieving fusion ignition and burn in NIF experiments. NIF is meeting operational and performance qualification requirements and is on schedule for completion of construction in March 2009 with initial ignition experiments in 2010.
- ***Advanced Sensors for Biological, Chemical, and Nuclear Detection (2002-Present).*** Since September 11, 2001, eight LLNL-developed technologies to protect against terrorist threats have won R&D100 awards. These include the Adaptable Radiation Area Monitor, the Sonoma airborne persistent surveillance system, the Autonomous Pathogen Detection System, and a pocket-size explosives detector.
- ***Honors for Climate Modeling (2007).*** The Intergovernmental Panel on Climate Change (IPCC), co-winner of the 2007 Nobel Peace Prize, honored LLNL researchers in 2007 for their "extraordinary contributions to the Fourth Assessment Report" and their years of assessment support to the IPCC.
- ***Adaptive Optics for Astronomy (2002-Present).*** LLNL-developed adaptive optics and laser guide star technologies were installed in the Keck Observatory (2002) and other large telescopes, enhancing image clarity by a factor of 50 or more. LLNL leads the development of Gemini Planet Imager, the world's most advanced adaptive optics system, to detect planets 30 to 150 light years away.
- ***Discovery of New Elements (1998-2006).*** LLNL researchers teamed with colleagues in Dubna, Russia, to discover superheavy elements 113, 114, 115, 116, and 118 (in 2006).
- ***Proton Therapy (2007).*** LLNL, a partner in the University of California Davis Cancer Center (a designated National Cancer Institute facility), entered into agreement with an industrial partner to develop the first compact proton therapy system, which will be affordable and fit in any major cancer center.

Awards

- 1 Nobel Prize for Physics (Robert Laughlin, 1998).
- 1 Presidential Medal of Freedom (Edward Teller, 2003).
- 6 Enrico Fermi Awards (1957, 1962, 1992, 1992, 2000, 2003)
- 25 Ernest O. Lawrence Awards (1960-present).
- 1 MacArthur Foundation Fellowship (Benjamin Santer, 1998).
- 118 R&D100 Awards (1978-present).
- 6 Gordon Bell Prizes (1999 (2), 2005, 2006 (2), 2007).
- 3 Nano 50 Awards (2007)
- 4 DOE Distinguished Associate Awards (1978, 1982, 1990, 2001).
- 4 DOE's Gold Awards (2002, 2003, 2004, 2006)
- 15 Presidential Early Career Awards for Scientists and Engineers (1996-present).
- 4 James Clerk Maxwell Prizes for Plasma Physics (1978, 1981, 1990, 2007).
- 1 American Physical Society Hans A. Bethe Prize (James Wilson, 2007).
- 1 American Physical Society George E. Pake Prize (Cherry Murray, 2005).
- 1 American Astronomical Society Beatrice M. Tinley Prize (Charles Alcock, 2000).
- 29 Federal Laboratory Consortium Awards for Excellence in Technology Transfer (1985-present).

Los Alamos
NATIONAL LABORATORY
EST. 1943

Mission Statement

Los Alamos National Laboratory (LANL) is a premier national security science laboratory whose mission is to develop and apply science, technology, and engineering solutions to:

- ensure the safety, security, and reliability of the U.S. nuclear deterrent;
- reduce global threats; and,
- solve emerging national security challenges.

Los Alamos serves as a security science resource to the National Nuclear Security Administration (NNSA) and the U.S. Government, as a collaborator with national laboratories and universities, and a partner with industry. The Laboratory addresses problems that require multiple disciplines with an ability to deliver breakthrough ideas and solutions.

To strengthen and develop the unique capabilities needed to meet its national security mission, LANL tackles the most challenging problems in basic and applied science, with programs in advanced and actinide materials, energy, earth and environment, defense and intelligence, biosciences, and advanced scientific computing.

History

Los Alamos has an unparalleled history of scientific discovery and technical innovation. The Laboratory was established at the height of World War II to design and build the atomic bomb. In just over two years Los Alamos scientists, led by the legendary theoretical physicist J. Robert Oppenheimer, developed the weapon that ended the war in the Pacific. Throughout the ensuing Cold War, LANL played a key role in national security by refining fission devices, developing thermonuclear weapons, and conducting hundreds of tests to ensure the dependability of the Nation's nuclear deterrent. Since the end of the Cold War, LANL has spearheaded efforts to maintain the reliability of the nuclear weapons stockpile, employing unique tools such as the Dual Axis Radiographic Hydrodynamic Test Facility and Roadrunner, the world's fastest supercomputer.

Multi-Program Laboratory

Los Alamos' role is to anticipate, innovate, and deliver to meet a broad range of national security challenges, including maintaining the effectiveness of the Nation's nuclear deterrent, supporting the Nation's nonproliferation and threat reduction priorities, and addressing emerging national security issues with urgency and agility. A strong basic research program interweaves the multidisciplinary talents of our scientists and unique facilities to meet the multi-program needs of the Laboratory's diverse mission.

Lab-at-a-Glance

Location: Los Alamos, New Mexico

Type: Multi-program NNSA Laboratory

Contract Operator: Los Alamos National Security, LLC (LANS)

Responsible Site Office: Los Alamos Site Office

Website: www.lanl.gov

Physical Assets:

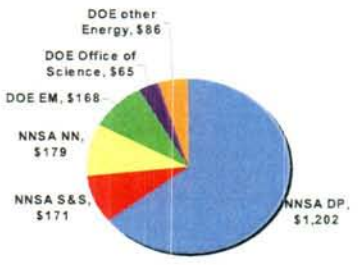
- ~25,500 acres and 1,300 buildings
- ~9M GSF in active operational buildings (includes leased space) (8.6M not including leased space)
- ~430K GSF in non-operational buildings
- Replacement plant value: ~$7.6B
- Deferred maintenance: ~$874M
- Asset Condition Index
  - Mission Critical: 95.7%
  - Mission Dependent: 85.7%
- Asset Utilization Index: 93.1%

Human Capital:

- 8,301 FTEs (412 limited term, 334 post-docs, 7,555 regular)
- 1,200 facility users, over 500 visiting scientists, and 1,115 students in FY08

FY 2008 Total DOE Funding: $1,871M

FY 2008 DOE Funding by Source *(BA in Millions):*



FY 2008 Total Non-DOE Funding: $298M

FY 2008 Breakout of Non-DOE Major Funding Organizations: Dept. of Defense = $50M, Dept. of Homeland Security = $53M, International Technology = $100M, Other Federal Agencies = $34M, Non-Federal Sources = $30M, Integrated Contracts from Other DOE Sites = $31M

in the absence of nuclear testing. LANL has a suite of supercomputing assets, led by Roadrunner, the first computer in the world to operate at sustained petaflop speeds. The Laboratory's supercomputers also enable research of broader scientific questions related to complex systems like Earth's weather, disease pandemics, and the security of the U.S. electricity grid.

- **Broader national security missions** – LANL's capabilities in the areas of weapons design, plutonium research, and research supercomputing also support a broader set of national security challenges. The Laboratory is able to respond quickly to emerging threats, and support a broad spectrum of mission objectives in Stockpile Stewardship, nuclear energy research, nuclear forensics, nuclear safeguards, and counterterrorism. Large-scale modeling and simulations with broad experimental science capability allow LANL to address challenges such as biothreats, climate change, and infrastructure security.

Major Lab Facilities

- **Nicholas Metropolis Center for Modeling and Simulation** – The Metropolis Center houses the Laboratory's supercomputers being used to develop the computation-based capabilities needed to ensure the safety and reliability of the Nation's nuclear weapons stockpile without underground nuclear testing, and the immersive visualization facilities (Powerwall, RAVE, and CAVE) that allow scientists to refine codes developed on platforms in an interactive environment. The Metropolis Center is also the home of Roadrunner, the world's fastest and most energy efficient supercomputer.

- **Los Alamos Neutron Science Center (LANSCE)** – LANSCE combines a powerful linear accelerator with an extensive suite of diagnostic tools to give scientists unique views of the structure and behavior of materials and biological systems at the nuclear level. LANSCE's contribution to national security increased dramatically in 2008 with the ability to execute materials dynamics experiments on small quantities of plutonium using the proton radiography diagnostic. The importance of the Lujan Center's neutron source increased with the closure of the IPNS at Argonne National Laboratory, making Lujan one of only two spallation neutron sources in the United States. The Weapons Neutron Research facility (WNR) continues to impact both national security and global competitiveness with its unique neutron spectrum. WNR is the standard for qualification of semi-conductor chips for use at altitude and provides beam to a broad distribution of industrial users.

- **Dual Axis Radiographic Hydrodynamic Test Facility (DARHT)** – Designed to support Los Alamos's core mission and to further scientific understanding of the behavior of nuclear weapons, the DARHT Facility allows Laboratory scientists to study a three-dimensional, full-scale mockup of the events (implosion) that triggers nuclear detonation. Each of the Facility's two axes contains a massive x-ray machine, consisting of an accelerator whose electron beam produces the x-rays for penetrating the metal used in a weapon mockup. DARHT's first axis has been operational since 1999, with a first experiment planned for the second axis in early 2009.

- **Plutonium Facility Complex (TA-55)** – TA-55 is a complex of facilities that includes PF-4, the only fully operational plutonium facility in the United States, which supports pit manufacturing, surveillance, and special plutonium recovery. Core capabilities include basic and applied research in the chemistry of plutonium and other actinides for the study of nuclear materials and a strong technology base in nuclear materials separation, processing, and recovery. The facility also supports research in plutonium metallurgy; actinide surface studies; plutonium component fabrication technologies, including pit manufacturing and surveillance; and, actinide ceramics for heat sources and mixed-oxide fuels.

- **Chemistry and Metallurgy Research Facility (CMR)** – Constructed in 1952, the CMR Facility houses research and experimental activities for analytical chemistry, plutonium and uranium chemistry and metallurgy, and support functions. CMR is the only facility with full capability for analytical chemistry and

in the absence of nuclear testing. LANL has a suite of supercomputing assets, led by Roadrunner, the first computer in the world to operate at sustained petaflop speeds. The Laboratory's supercomputers also enable research of broader scientific questions related to complex systems like Earth's weather, disease pandemics, and the security of the U.S. electricity grid.

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metallurgical studies on small samples of plutonium and other special nuclear materials in support of DOE nuclear programs. Analysis performed at CMR on plutonium samples is critical to DOE/NNSA defense programs in assuring that plutonium specifications are met for pit production and testing. CMR houses key capabilities in analytical chemistry, uranium processing, destructive and non-destructive analysis of nuclear materials, actinide research, processing, and metallography.

- **Center for Integrated Nanotechnologies (CINT)** – CINT is a DOE Office of Science Nanoscale Science Research Center (NSRC), operating as a national user facility devoted to establishing the scientific principles that govern the design, performance, and integration of nanoscale materials. CINT is one of five NSRCs throughout the U.S.

Science and Technology Challenges

Los Alamos has strong science, technology, and engineering capabilities that support a broad range of national security programs. Being able to integrate and apply these capabilities rapidly to new challenges, across organizational boundaries, will be a key advantage in an increasingly competitive landscape. To achieve the vision of LANL as a capabilities-based laboratory, Los Alamos must succeed in three broad areas of investment and transformation.

- Continue to invest in and leverage *science that matters* to tackle worthy problems, relevant to many aspects of our national security.
- Be more agile in *the way the work is performed*, more easily drawing on strengths across the Laboratory and increasingly creating strong teams with partners. LANL will also need to continually improve operational effectiveness in all dimensions: safety, security, business, and environmental, to support the ability to meet mission goals.
- Transform the Laboratory's *scientific campus and facilities* to a more compact, modern, integrated campus. This includes a new, modern signature facility, MaRIE (Matter-Radiation Interactions in Extremes), which will leverage and extend the unique capabilities around LANSCE. Together, these success factors are the path to LANL's ability to recruit and retain the most talented staff from around the world.

Leadership Challenges

- ***Operations.*** Using best practices and "corporate reach back" from LANS parent organizations, improve the quality of operations and business functions, and dramatically lower Laboratory costs.
- ***Security.*** Maintain the necessary high level of physical and cyber security in order to appropriately manage risk within funding constraints.
- ***Workforce.*** Ensure the recruitment and retention of a world-class workforce at the Laboratory and maintain a pipeline of Post Doctorate students, which is dependent on challenging scientific work, user friendly scientific facilities, robust compensation benefits, and modern laboratory equipment and infrastructure.
- ***Science and Technology (S&T) Base.*** Sustain the Laboratory's unique capabilities and broad S&T base—necessary for long-term success in Stockpile Stewardship and other national security missions and to invest in new capabilities to address emerging national challenges, within anticipated fiscal constraints.
- ***Safety & Environment.*** Apply the strong commitment of all Laboratory employees to Environmental, Safety, Health and Quality (ESH&Q) to achieve markedly improved safety performance, including compliance with the State of New Mexico Cleanup Order on Consent for the Laboratory legacy environmental cleanup.
- ***Mission Direction.*** Provide approaches and technology options to help NNSA successfully transform the weapons complex within the expected budget and more generally, to help the Federal system focus on the defining security issues of the 21st century.

Los Alamos
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- *Mission Infrastructure and Support:*

  - **CMR-Replacement (CMRR)** – NNSA has initiated the major systems acquisition process for the construction of the first phase of the new CMRR Facility better known as the Radiological Laboratory Utility Office Building (RLUOB). When the entire project is complete, the new CMRR will be more than 100,000 square feet smaller than the existing CMR Facility, and it will allow for the consolidation of Category I and II special nuclear materials from Lawrence Livermore National Laboratory. The new construction will also enable the Nation to continue to train International Atomic Energy Agency (IAEA) inspectors, provide power sources for U.S. satellites, research and build next-generation nuclear detection equipment, and train personnel on how to prevent and deal with the potential for nuclear terrorism. This critical project faces significant funding challenges driven by the following factors: Increased construction costs; seismic requirements; delayed completion date due to current Government funding profile; and lack of nuclear-qualified suppliers.

  - **LANSCE-R** – LANSCE continues to be a state-of-the-art high power, multi-use accelerator facility that is operating effectively to support a major multi-sponsored user program. However, some components are approaching end-of-life and must be replaced to avoid an adverse impact on facility performance. The refurbishment of LANSCE is an infrastructure priority for the future of LANL as provided in NNSA's Complex Transformation plans. NNSA has identified a budget profile for LANSCE, and it is important to deliver this required funding on the specified timescale. LANL relies heavily on the capabilities that are available only from LANSCE, including proton radiography, fundamental cross-sections, and properties of classified subsystem materials under extreme conditions. LANSCE also enables the Laboratory to carry out a broad range of basic science that supports everything from biology to nuclear forensics and attribution to test of the standard model of particle physics. The refurbishment of LANSCE, known as LANSCE-R, will allow the facility to continue to support the nation for another 20-30 years, as well as form the foundation for a new science facility to attract and retain the next generation of scientists.

Accomplishments

2008

- **Roadrunner Supercomputer Breaks Petaflop Barrier:** Roadrunner, LANL's high-performance computer, is the world's fastest and most energy efficient supercomputer. The computer, developed in partnership with IBM, exceeded a sustained speed of one petaflop/s, or one million billion calculations per second, and will play a key role in maintaining the U.S. nuclear deterrent, solving global energy challenges, and opening new windows in basic scientific research.

- **DARHT Facility Declared Fully Operational:** NNSA declared the DARHT Facility fully operational. Providing enhanced high-resolution radiographic capability for the hydrodynamic tests needed for Stockpile Stewardship, DAHRT is critical to LANL's mission. DARHT's second axis increases its scientific capability via high-energy, four-pulse, three-dimensional radiographic experiments.

- **Real-Time Surveillance System Developed to Help the Warfighter:** Working with the Air Force, LANL developed and fielded a wide-area persistent surveillance capacity called Angel Fire for the U.S Marine Corps. The system, which was fielded in less than 18 months, provides warfighters with real-time situational awareness.

- **LANL Technologies Play Key Role in Space:** NASA space missions continue to rely on LANL research and development. The Cassini spacecraft orbiting Saturn is powered by LANL's TA-55 plutonium facility-supplied radioisotope thermoelectric generators and carries a pair of laboratory-built ion-mass and ion-beam

spectrometers. For the Mars Science Laboratory mission scheduled for launch in 2009, LANL has built ChemCam, which will use laser pulses to dissolve rocks and employ spectrographs to determine the composition of the resulting gases.

2007

- **Plutonium Pits Delivered, Meeting Key NNSA Pit Production Milestones:** The first plutonium pits certified for acceptance into the Nation's nuclear weapons stockpile since 1989 were produced and delivered by LANL's TA-55 plutonium facility.

- **Super VTR Open for Business:** LANL opened a first of its kind Super Vault Type Room (S-VTR) representing a new era in how the Laboratory uses, stores and protects Accountable-Classified Removable Electronic Media (A-CREM). Reducing the risks inherent in classified computing by reducing the opportunity for human error when accessing and using A-CREM, the S-VTR mimics the way a bank handles assets, both physically and electronically.

2006

- **DARHT Conducts Successful W76 Hydrotest:** The W76 Life Extension Program (LEP) reached a major milestone with a successful hydrotest at the DARHT Facility. The hydrodynamic experiment performed two essential tasks: provide an engineering certification of manufacturing design and assembly techniques in support of the W76 LEP, and harvest physics data to further inform the Laboratory's baseline predictive models - to apply the principles of Quantification of Margins and Uncertainties in the W76 LEP path forward.

- **Powerful Magnet Commissioned:** LANL's National High Magnetic Field Laboratory's Pulsed Field Facility commissioned its 100 Tesla Multi-shot Magnet. At 100 tesla, the new magnet's field is two million times stronger than Earth's magnetic field and opens up new frontiers for materials research, such as the basic electronic energy balance in electronic materials.

2005

- **Lab Scientists Develop Muon Detector:** Utilizing muon radiography, LANL scientists developed a detector that can see through lead or other heavy shielding in truck trailers or cargo containers to detect uranium, plutonium or other dense materials.

- **Airborne Instruments Aid in Katrina Effort:** A unique hazard-detecting aircraft equipped with a multi-spectral infrared mapping system and a Fourier Transform Infrared spectrometer package called ASPECT, supported by LANL scientists and operated by the Environmental Protection Agency, provided first responders and residents with information about potential chemical hazards in the aftermath of Hurricane Katrina.

2004

- **Scientists Model Dynamics of DNA:** LANL researchers collaborating with colleagues at Harvard Medical School developed a model and diagnostic tools to simulate the dynamics of DNA. The work is an important step towards beginning to decipher the genetic information contained in the human genome, and could be a significant leap in understanding the fundamental processes of life.

- **Isotope Production Facility (IPF):** The Laboratory dedicated its new IPF at the Los Alamos Neutron Science Center. The IPF produces radioisotopes for applications from commercial uses to medical imaging and therapy, including some short-lived isotopes used for the treatment of cancer.

Los Alamos
NATIONAL LABORATORY
EST.1943

2003

- **Nuclear Weapons:** The Laboratory successfully made the first nuclear weapons pit in 14 years meeting specifications for use in the U.S. nuclear weapons stockpile. The newly made pit was built for the W-88 warhead, which is carried on the Trident II D5 submarine-launched ballistic missile.

- **Nonproliferation and International Security Center (NISC):** The NISC, a 164,000-square foot secure facility that consolidates widely scattered work in nuclear safeguards, nonproliferation and weapons assessment, was formally dedicated under budget and ahead of schedule.

2002

- **GENIE (GENetic Imagery Exploitation):** LANL researchers created a remarkable tool that rapidly and intuitively develops algorithms for identifying features of interest in many types of imagery. GENIE has been applied to many important problems, including the analysis of the World Trade Center site multi-spectral infrared images to determine ash debris and smoke plumes for use in emergency response.

- **Strategic Computing Complex**: The Laboratory formally dedicated the 300,000-square-foot Strategic Computing Complex as the Nicholas C. Metropolis Center for Modeling and Simulation. The Metropolis Center provides large-scale computation tools to certify the safety and reliability of the Nation's nuclear weapons stockpile in the absence of nuclear testing.

Awards (1960 - Present)

- **4 Enrico Fermi Awards (1990, 1978, 1970, 1963)**
- **1 Edward Teller Medal (1983)**
- **28 E.O. Lawrence Awards**
- **110 R&D 100 Awards since 1978**

Sandia National Laboratories

Sandia National Laboratories

Mission Statement

Sandia National Laboratories provides ***innovative, science-based, systems-engineering solutions to the most challenging problems that threaten peace and freedom for our Nation and the globe***. We implement this support through a corporate strategy that defines specific mission areas around which we structure our organization and manage capability investments.

History

Sandia's roots lie in the Manhattan Project, and its history reflects the country's evolving Strategic National Security needs. Our original emphasis on nuclear weapon engineering, turning nuclear physics packages into deployable weapons, expanded into new areas as national security requirements changed. In addition to ensuring the safety, security, and reliability of the stockpile, Sandia applied the expertise it acquired in weapons work to a variety of related areas such as energy research, supercomputing, and treaty verification. Events such as the end of the Cold War, the disintegration of the Soviet Union, and the September 11, 2001 attacks have caused a top-to-bottom reassessment of support for Strategic National Security based on guidance such as the Nuclear Posture Review and the Department of Energy (DOE) Strategic Plan. We are evolving to support a new paradigm for Strategic National Security which includes the role of nuclear weapons, as well as consideration of nonproliferation, conventional weapons, intelligence, energy security, and homeland security and defense.

Multi-Program Laboratory

Sandia is a multi-program laboratory that works for the National Nuclear Security Administration (NNSA), other parts of DOE, and a large number of agencies and organizations within the U.S. Government. Sandia also performs some work with private industry under Cooperative Research and Development Agreement (CRADA) arrangements and a small amount of work for other entities. This work is carried out within five major program areas:

Lab-at-a-Glance

Locations: Albuquerque, NM; Livermore, CA; Barking Sands, HI; Pantex, TX; Carlsbad, NM; Las Vegas, NV
Type: Multi-program lab
Contract Operator: Lockheed Martin Corporation
Responsible Site Office: Sandia Site Office
Website: www.sandia.gov

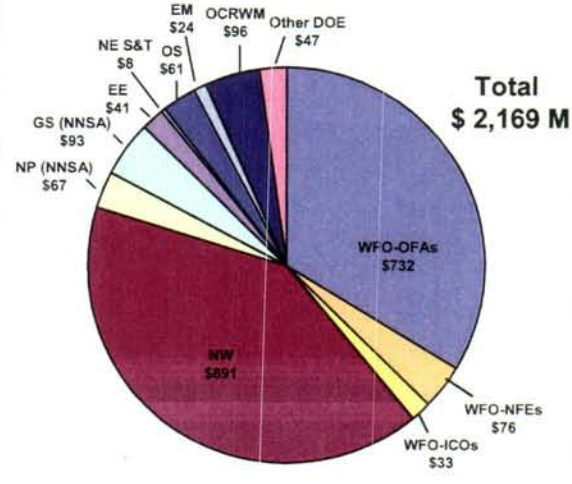
Physical Assets:

- 193,000 acres, 1,163 buildings
- 7,459,000 GSF in active operational buildings
- 94,000 GSF in non-operational buildings
- Replacement plant value: $4,110 M
- Deferred maintenance: $250 M
- Asset Condition Index
  - Mission Critical: 94.4%
  - Mission Dependent: 94%
  - Non-Mission Dependent: 92.7%
- Asset Utilization Index: 100%

Human Capital:

- 8,280 FTE
- 11,700 on site (includes staff, LTE, staff augmentation, students, post docs, performance-based contractors)

FY 2008 Total Funding by Source



FY 2008 Non-DOE Funding Sources: DoD, DOS, NRC, DHS, OFA, NFE, and ICO

Sandia National Laboratories

- Nuclear Weapons: This work consists of our historic efforts in nuclear weapons engineering and is primarily conducted for the NNSA.
- Defense Systems and Assessments: This work includes direct Department of Defense warfighter support, as well as detailed analysis and is conducted for a broad spectrum of national security-focused agencies within the U.S. Government.
- Homeland Security and Defense: This work is conducted for both the Department of Homeland Security and various agencies of the Defense Department (e.g., U.S. Northern Command).
- Energy, Resources and Nonproliferation: This work focuses on issues related to energy security, water resources, and nonproliferation and is performed for a variety of customers, including various parts of DOE (OCRWM, OS, EERE, NE), the Department of State, and the Nuclear Regulatory Commission.
- Science, Technology and Engineering (ST&E): This program serves to advance the ST&E base of the laboratory. The Laboratory Directed Research and Development (LDRD) Program and the Research Foundations are supported in this Program area.

Core Competencies

Sandia organizes its core capabilities into six "Research Foundations:"

- **Material Science and Technology (MS&T)**: The primary product of MS&T is knowledge of materials structure, properties, performance, and the processes to produce, transform, and analyze materials with a particular focus on Scientifically Engineered Materials, Materials Processing, and Materials Aging and Reliability.
- **Computer and Information Sciences (C&IS):** C&IS exists to develop and maintain a high-performance computing capability at Sandia through research in advanced computer architectures and systems (including software); algorithms and solvers for massively parallel computing; enabling technologies including meshing, simulation frameworks, and visualization; and, key applications areas such as electrical and device modeling and shock physics.
- **Engineering Sciences (ES):** ES develops advanced, science-based computational capabilities that capture our understanding of the underlying governing phenomena and that are validated against high-fidelity, spatially and temporally resolved experimental data. We use these underlying capabilities and understanding to provide optimal science-based engineering solutions to support design and risk informed decisions.
- **Pulsed Power (PP) Sciences**: PP focuses on creating, diagnosing, and modeling intense, sub-microsecond pulses of x-rays and charged-particle beams for a wide range of applications that include: 1) ensuring the safety and reliability of the Nation's nuclear stockpile and of electronic and material components that are subjected to radiation; 2) validating pulsed-power-driven inertial confinement fusion concepts; 3) making accurate measurements of material properties; 4) developing and validating electromagnetic, radiation hydrodynamic, and magneto-hydrodynamic codes; and 5) contributing to energy security.
- **Microelectronics and Microsystems (M&M):** M&M represents key scientific and engineering competencies that differentiate Sandia within the entire Federal Government. The rapid advance of commercial microelectronics and microsystem products requires us to have a deep understanding of their operation down to the atomic level. This understanding allows us to employ commercial technologies in many of our applications and provides us with the knowledge to pioneer new concepts, convert them into innovative technologies, and deliver custom products to our customers.

Sandia National Laboratories

- **Bioscience and Technology:** While Sandia's core mission remains focused on the safety, security, and reliability of our Nation's nuclear stockpile, our work in the areas of homeland security, energy, military preparedness, and intelligence for national security has grown significantly. Bioscience capabilities play an important role in many of these growing mission areas. Two principal areas of mission focus are Biothreats and Bioenergy.

Major Lab Facilities

- **MicroEngineering Science Applications (MESA):** MESA provides the equipment, tools, and analytical capabilities required to design and prototype qualified, microsystem-based components for nuclear weapons and other critical national security applications.
- **Red Storm High Performance Computer:** Red Storm is a massively parallel supercomputer with a distributed memory, multiple instruction, and multiple data architecture to provide exceptional computational power. Not only one of the world's fastest supercomputers, it offers users ease of use, system balance, sustained performance, and reliability.
- **Z-Pinch Accelerator:** Z is the world's most efficient (15%) and powerful laboratory x-ray source, producing x-ray powers in excess of 300 trillion watts.
- **Environmental Test Facilities:** Sandia has one of the most robust and diverse national security environmental validation and qualification complexes in the Nation. Facilities include rocket sled tracks, drop towers, a burn facility, a large-scale centrifuge, vibration and electromagnetic test facilities, all equipped with state-of-the-art data acquisition and analysis equipment. In addition, test and evaluation facilities at the Tonopah Test Range and the Nevada Test Site are available for larger test and evaluation operations.
- **Combustion Research Facility (CRF):** CRF is an internationally recognized Office of Science user facility that is home to about one hundred scientists, engineers, and technologists who conduct basic and applied research aimed at improving our Nation's ability to use and control combustion and combustion-related processes.
- **National Solar Thermal Test Facility (NSTTF):** NSTTF provides experimental engineering data for the design, construction, and operation of unique components and systems in proposed solar thermal electrical plants for large-scale power generation. In addition, the facility can provide high heat flux and temperatures for materials testing or aerodynamic heating simulation; large fields of optics for astronomical observations or satellite calibrations; a solar furnace; and a rotating platform for parabolic trough evaluation.
- **Center for Integrated Nanotechnologies (CINT):** CINT, a joint SNL-LANL endeavor for the Office of Science, is keeping the U.S. in a leading position in the expanding field of nanotechnology. The CINT Core Facility houses low-vibration laboratories with sensitive microscopes for materials characterization, chemical/biological synthesis labs, and a clean room for device integration. The Scanning Probes Laboratory houses unique and state-of-the-art instruments that are crucial to the advancement of nanoscience. The work will focus on nanomaterials and nanofabrication. The facility is used by a wide range of national and international researchers.
- **International Programs Building (IPB):** The International Programs Building houses programs designed to create sustainable, technology-based system solutions to reduce the threat of proliferation of weapons of mass destruction and terrorism through international cooperation. One of these programs is the Cooperative Monitoring Center, a facility in which international representatives can meet to solve mutual security problems. The CMC, together with its sister facility in Amman, Jordan,

offers an extensive collection of exportable technologies and systems that can be applied to efforts to reduce the threat of weapons of mass destruction and other security challenges.

- **National Infrastructure Simulation and Analysis Center (NISAC):** NISAC, a joint capability with LANL, analyzes and predicts critical infrastructure interdependencies and the consequences of disruption. This facility is the Nation's premier intradepartmental and interagency modeling, simulation, and analysis center, providing support for event mitigation and policy planning.
- **Kauai Test Facility (KTF):** KTF is a rocket launch range operated for DOE. Sandia's Strategic Target System and rail-launched sounding rocket missions launch from KTF. The facilities and personnel support a variety of sounding rocket missions, including weapons research and development; operational training, test, and evaluation; and, technology development.

Science, Technology, and Engineering Challenges

Sandia's mission space divides the national security continuum into two issue areas—nuclear weapons and other national security challenges. This mission space also includes a number of key ST&E challenges:

- Sustaining, modernizing, and protecting the Nation's nuclear weapons stockpile by:
  - ✓ Providing core products including warhead systems engineering and integration; arming, fuzing, and firing systems; neutron generators; gas transfer systems; and, surety systems;
  - ✓ Providing essential capabilities including Engineering Sciences, Materials Science, Major Environmental Test, Radiation Effects Sciences, MESA Technologies, and Computational Simulation; and,
  - ✓ Conceiving, developing, designing, and deploying engineered systems to keep our stockpile safe and secure.
- Providing innovative technological solutions that:
  - ✓ prevent the spread of weapons of mass destruction;
  - ✓ provide new capabilities for national defense;
  - ✓ defend against terrorism; and
  - ✓ protect our national infrastructures, and ensure stable sources of energy and other critical resources.

Leadership Challenges

Sandia has defined its leadership challenges in terms of the following strategic issues:

- **Emerging National Security Mission Challenges:** Develop deep understanding, strategies and actions to address emerging national security challenges. Examples include: "All Things Nuclear" (issues embedded at the intersections among nuclear weapons, nonproliferation, nuclear energy, and nuclear terrorism); Cyber Security; and Energy Security in a carbon constrained world.
- **World Class Workforce**: Develop and implement a strategy to attract, develop and retain the extraordinary talent needed for mission success.
- **Strategic Capabilities:** Assure the management of Strategic Capabilities for the laboratory now and into the future, guided by assessments of S&T trends and cross-cutting mission needs.
- **Future of Science:** Understand the scientific underpinning of current and future national security missions, including evaluation of new science and the translation of scientific advances to solutions to meet mission needs.

Sandia National Laboratories

- **National Security through Global Engagement:** Understand the requirements for knowledge, strategies, infrastructure, and technology to support our sponsors as they pursue the national security mission across the globe.
- **Internal Business Model**: Transform Sandia business structure and processes to enable effective, cost-efficient support of the full spectrum of Sandia missions and associated customers.
- **Leadership and Management Development**: Construct a leadership development model and curriculum that ensures pool of leadership talent at all levels.

Recent Accomplishments

- **Delivered W76-1 AF&F (2007)** Sandia completed the W-76-1 Arming, Fuzing, and Firing system on schedule and cost. Cavity System Generated Electromagnetic Pulse (SGEMP) and Thermo-mechanical Stress experiments on the Z-Pinch Reactor were essential in qualifying these components.
- **Solved B61 Spin Rocket Problem (2007)** Sandia solved a longstanding problem with B-61 spin rocket motors.
- **Completed Microsystems Engineering Sciences Application (MESA) (2007)** The $413M MESA project was completed $40M under budget and three years ahead of schedule.
- **Designed and Fielded Critical Satellite Payloads (ongoing)** Since 1963, Sandia has been responsible for more than 130 Sandia-designed satellite payloads and for significant design elements of R&D satellites. These programs continue to be critical to a variety of national security customers.
- **Supported Missile Defense Agency (MDA) flight tests (ongoing)** Sandia has supported more than forty-five successful MDA launches on the Pacific Test Range over the last decade.
- **Prevented trafficking of radioactive material (ongoing)** Sandia's support of the NNSA Second Line of Defense Program has helped to prevent illicit trafficking in nuclear and radiological materials in countries around the world.
- **Completed Yucca Mountain License Application (2008)** As the Office of Civilian Radioactive Waste Management's Lead Laboratory for Repository Systems, Sandia led the eight lab teams in preparation of the license application for authorization to construction of the Yucca Mountain repository.
- **Upgraded Red Storm (2008)** Upgrades to Sandia's Cray-built Red Storm computer have increased its peak speed from 41.5 to 124.4 teraflops.
- **Received ISO Certification (2008)** Computing Support Services in New Mexico and California received ISO 9001:2000 certification (Recertification was also provided for Sandia's NM Telephone, Networking, and Procurement organizations).
- **Reduced Total Recordable Case Rate (TRCR) (2007)** The TRCR and Days Away and Restricted or Transferred (DART) Rate, both of which characterize Sandia's performance on employee safety were at historic lows in FY07 and represented reductions of 37% and 35% from FY06.
- **Praised by NNSA on Safety and Security (2008)** Sandia's safety and security performance was characterized by NNSA's Principal Deputy Administrator as "phenomenal performance" based on a DOE Office of Independent Oversight audit.

Selected Awards

- **Eighty-three R&D 100 Awards (including 23 in the last five years and three in 2008)**
- **2008 NNSA Administrator's Award for Excellence in Internal Controls**
- **2008 Shingo Award (Neutron Generator Production)**
- **2008 DOE Secretary's Achievement Honor Award to CINT Project Team**

- 2008 DOE Secretary's Achievement Honor Award to MESA Project Team
- 2008 Award of Excellence in Technology Transfer
- 2008 Outstanding Technology Transfer Professional Award
- 2008 American Physical Society George E. Pake Prize (Julia Phillips)
- 2008 RCA/OR Edelman Award
- 2008 AIAA Sustained Service Award (Bill Oberkampf)
- 2008 Best Places to Work for Post-Docs by New Scientist Magazine
- 2008 Lockheed Martin Excellence in Research Award (Gerald Torres)
- Nine 2007 NNSA Defense Programs Awards of Excellence
- Three 2007 Federal Laboratory Consortium Interagency Partnership Awards
- 2007 Lockheed Martin NOVA award
- Twenty-Six Professional Society "Best Papers" awards in 2007 and 2008
- 2002 E. O. Lawrence Award (Jeff Brinker)
- 1996 E. O. Lawrence Award (Jack Jackowatz)
- Thirteen current or former employees are members of the National Academy of Engineering
- Seventeen Professional Society Fellows since 2006

Office of the Under Secretary for Science

Organization Information

Organization Name:
Office of the Under Secretary for Science (S-4)

Address:
1000 Independence Avenue, SW, Washington, DC 20585

Organization Phone Number:
202-586-2086

Organization Website:
None noted.

POC E-Mail Address:
Todd.Harding@hq.doe.gov

Supporting the DOE Mission

Strategic Theme 3 Scientific Discovery and Innovation
Strategic Theme 3.1 Scientific Breakthroughs
Strategic Theme 3.2 Foundations of Science
Strategic Theme 3.3 Research Integration

Mission Statement

The Under Secretary for Science is the principal scientific advisor within the Department of Energy, advising the Secretary on scientific matters relating to all programmatic elements within the Department and the National Nuclear Security Administration (NNSA).

The Under Secretary for Science has line management authority over the Office of Science (SC) (with an annual budget of roughly $4 billion) and is responsible for working with the Under Secretary, Administrator of the National Nuclear Security Administration, and the other program offices under their respective authorities to coordinate research integration between the basic and applied programs in the Department.

The Under Secretary for Science also provides independent advice to the Secretary on matters relating to nuclear weapons stockpile stewardship, safety, and reliability. Although research integration with NNSA is statutorily prohibited, the Under Secretary for Science coordinates with the NNSA Administrator to obtain information necessary to provide independent advice to the Secretary on scientific matters related to the NNSA mission.

The Under Secretary for Science also serves as the Department's technology transfer coordinator.

Status

Budget:

The Immediate Office of the Under Secretary for Science is administratively within—and funded through—the Office of the Secretary of Energy. With the exception of IT support, the Under Secretary for Science is supported through the budget of the Office of the Secretary of Energy. Immediate staffing is limited; the Under Secretary for Science relies heavily upon the scientific and management expertise of SC.

History

The Office of the Under Secretary for Science was established by the Energy Policy Act (EPAct) of 2005 which amended the Department of Energy Organization Act (DOE Act).

Critical Operating Procedures

Legislative Authority

Section 202(b) of the DOE Act provides that the Under Secretary for Science shall be appointed from among persons who have extensive background in scientific or engineering fields and are well qualified to manage the civilian research and development programs of the Department. The Under Secretary for Science shall:

(A) Serve as the Science and Technology Advisor to the Secretary.

(B) Monitor the research and development programs of the Department in order to advise the Secretary with respect to any undesirable duplication or gaps in the programs.

(C) Advise the Secretary with respect to the well-being and management of the multipurpose laboratories under the jurisdiction of the Department.

(D) Advise the Secretary with respect to education and training activities required for effective short- and long-term basic and applied research activities of the Department.

(E) Advise the Secretary with respect to grants and other forms of financial assistance required for effective short- and long-term basic and applied research activities of the Department.

(F) Advise the Secretary with respect to long-term planning, coordination, and development of a strategic framework for Department research and development activities.

(G) Carry out such additional duties assigned to the Under Secretary by the Secretary relating to basic and applied research, including supervision or support of research activities carried out by any of the Assistant Secretaries.

Departmental Authority

As noted above, the Under Secretary for Science has legislative authority to "carry out such additional duties assigned to the Under Secretary by the Secretary relating to basic and applied research, including supervision or support of research activities carried out by any of the Assistant Secretaries." Two such communications have been issued by the

Secretary of Energy granting additional authorities and responsibilities to the Under Secretary for Science:

- On July 3, 2006, the Secretary issued a memorandum on the general functions of the Under Secretary for Science in order to carry out the functions of the office as required by EPAct of 2005.
- On June 28, 2007, the Secretary issued a memorandum appointing the Under Secretary as the Department's technology transfer coordinator to carry out certain technology transfer functions as required by EPAct of 2005. (Also see "Technology Transfer Board" under SC Stewardship of DOE Laboratories tab).

Recent Organizational Accomplishments and Strengths

Only one person has served as Under Secretary for Science since the position was authorized by Congress. He served concurrently as the Director of the Office of Science, a past position he held prior to the establishment of the Under Secretary for Science position. In addition to the research priorities he set as Director of the Office of Science, the following overarching priorities were set as Under Secretary for Science:

1. Basic-Applied Research Integration
2. Stockpile Stewardship
3. Human Capital
4. Laboratory Stewardship

Leadership Challenges

None noted.

Key Strategies and Timing

None noted.

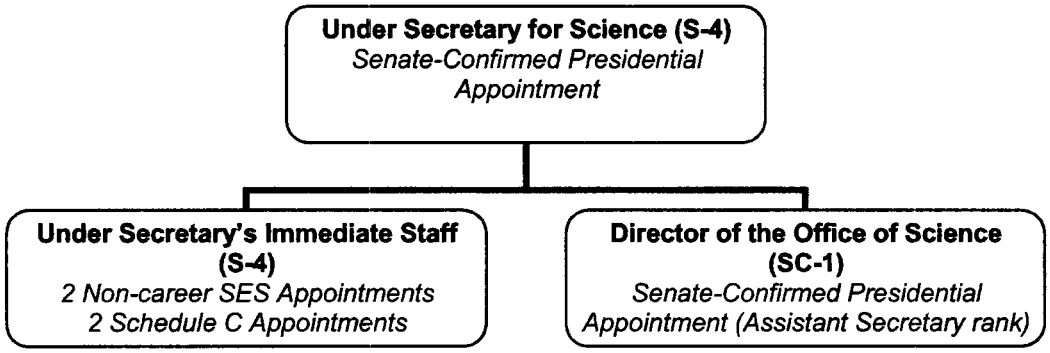
Critical Events and Action Items

None noted.

Hot Issues

None noted.

Organizational Structure



Office of Science

Organization Information

Organization Name:
Office of Science (SC-1)

Address:
1000 Independence Avenue, SW, Washington, DC 20585

Organization Phone Number:
202-586-5430

Organization Website:
http://www.science.doe.gov/
For comprehensive information on the Office of Science:
https://www.osti.gov/sctransitionbook/

POC E-Mail Address:
Patricia.dehmer@science.doe.gov

Supporting the DOE Mission

Strategic Theme 3	Scientific Discovery and Innovation
Strategic Theme 3.1	Scientific Breakthroughs
Strategic Theme 3.2	Foundations of Science
Strategic Theme 3.3	Research Integration

Mission Statement

The mission of the Department of Energy's (DOE) Office of Science is to deliver the remarkable discoveries and scientific tools that transform our understanding of energy and matter and advance the national, economic, and energy security of the United States.

The Relationship Between the Director and the Under Secretary for Science

With the exception of the Director of the Office of Minority Economic Impact, the position of the Director, Office of Science is the only assistant secretary level position whose authorities are specified in legislation. This exception is particularly important because of statutory authorities granted to the newly-formed Under Secretary for Science (USS) position in the Energy Policy Act (EPAct) of 2005. While many of USS's authorities overlap those of the Director, Office of Science, several differences in their authorities should be noted:

- The USS serves as "the science and technology advisor to the Secretary," whereas the DOE Organization Act gives the Director the duty to advise the Secretary on the physical research programs transferred to the Department from the Energy Research and Development Administration;

- The USS is responsible for advising the Secretary with respect to the "well-being and management of the multipurpose laboratories under the jurisdiction of the Department." The Director has the same responsibilities, however, with the exception of "laboratories that constitute part of the nuclear weapons complex"; and

- The USS, under the Energy Policy Act of 2005, has a responsibility to "advise the Secretary with respect to long-term planning, coordination, and development of a strategic framework for Department research and development activities."

The current Under Secretary for Science also serves as the Director of the Office of Science.

Overview of the Office of Science

The Office of Science (SC) manages a robust research portfolio through its six interdisciplinary program offices: the Advanced Scientific Computing Research (ASCR) program, the Basic Energy Sciences (BES) program, the Biological and Environmental Research (BER) program, the Fusion Energy Sciences (FES) program, the High Energy Physics (HP) program, and the Nuclear Physics (NP) program. In addition, SC sponsors a range of science education initiatives through its Workforce Development for Teachers and Scientists (WDTS) program.

Precise management of these science programs enables SC to distinguish itself as the national leader in science and engineering research. For example, SC is the single largest supporter of basic research in the physical sciences in the United States, providing more than 40 percent of total funding for this vital area of national importance. It oversees – and is the principal federal funding agency of – the Nation's research programs in high-energy physics, nuclear physics, and fusion energy sciences.

Similarly, SC is the Federal Government's largest single funder of materials and chemical sciences, and it supports unique and vital parts of national research in climate change, geophysics, genomics, life sciences, and science education. In addition to these priorities, SC also manages fundamental research programs in basic energy sciences, biological and environmental sciences, and computational science.

SC makes extensive use of peer review and federal advisory committees to develop general directions for research investments, to identify priorities, and to determine the very best scientific proposals to support.

The Office also manages 10 of the Department's 17 national laboratories. These world-class laboratories comprise the most comprehensive research system of its kind in the world. The laboratories conduct research that is not well-suited to university or private sector research facilities because of its scope, infrastructure, or multidisciplinary nature, but for which there is a strong public and national purpose. Furthermore, they distinguish themselves as world-class facilities for a number of reasons: they are driven by DOE missions; they accomplish large-scale, long-term projects under safe and secure operating conditions; they utilize multidisciplinary research teams; and they are home to research facilities, through which members of the scientific community gain access to the laboratory's distinctive experimental capabilities.

The 10 laboratories managed by the Office of Science are: Ames Laboratory (Ames), Argonne National Laboratory (ANL), Brookhaven National Laboratory (BNL),Fermi National Accelerator Laboratory (FNAL), Lawrence Berkeley National Laboratory (LBNL), Oak Ridge National Laboratory (ORNL), Pacific Northwest National Laboratory (PNNL), Princeton Plasma Physics Laboratory (PPPL), SLAC National Accelerator Laboratory, and Thomas Jefferson National Accelerator Facility (TJNAF).

SC also oversees the construction and operation of some of the Nation's most advanced research and development (R&D) user facilities at its national laboratories and at universities nationwide. These user facilities include particle and nuclear physics accelerators, synchrotron light sources, neutron scattering facilities, supercomputers and high-speed computer networks.

Further information on the Office of Science may be found at http://www.science.doe.gov.

Status

Budget:

The following provides a high-level perspective of the SC Fiscal Year 2009 budget. Further details may be found at:
http://www.science.doe.gov/Budget_and_Planning/index.htm

Office of Science
FY 2009 Budget Request to Congress
(dollars in thousands)

	FY 2007 Approp.	FY 2008 Approp.	FY 2009 Request to Congress	FY 2009 Request to Congress vs. FY 2008 Approp.	
Basic Energy Sciences	1,221,380	1,252,756 [a]	1,568,160	+315,404	+25.2%
Advanced Scientific Computing Research	275,734	341,774	368,820	+27,046	+7.9%
Biological and Environmental Research	480,104	531,063	568,540	+37,477	+7.1%
High Energy Physics	732,434	702,845 [a]	804,960	+102,115	+14.5%
Nuclear Physics	412,330	423,671 [a]	510,080	+86,409	+20.4%
Fusion Energy Sciences	311,664	294,933 [a]	493,050	+198,117	+67.2%
Science Laboratories Infrastructure	41,986	66,861	110,260	+43,399	+64.9%
Science Program Direction	166,469	177,779	203,913	+26,134	+14.7%
Workforce Dev. For Teachers and Scientists	7,952	8,044	13,583	+5,539	+68.9%
Safeguard & Security (gross)	75,830	75,946	80,603	+4,657	+6.1%
All Other	110,730 [b]	207,211 [b]	——	-207,211	-100.0%
Total, SC	3,836,613	4,082,883 [a]	4,721,969	+639,086	+15.7%

[a] FY 2008 supplemental amounts of $62.5M include $13.5M for Basic Energy Sciences, $32.0M for High Energy Physics, $1.5M for Nuclear Physics, and $15.5M for Fusion Energy Sciences.

[b] "All Other" includes SBIR/STTR funding reprogrammed within SC and transferred from other DOE offices (FY 2007 and FY 2008), a charge to reimbursable customers for their share of safeguards and security costs (FY 2007 and FY 2008), Congressionally-directed projects and a rescission of a prior year Congressionally-directed project (FY 2008 only), and offsets for the use of prior year balances to fund current year activities (FY 2007 and FY 2008).

People

Estimated number of federal and contractor FTEs as of 9/30/08: 1,292
Estimated number of federal FTEs: 980
Estimated number of contractor FTEs: 312
Estimated number of headquarters FTEs: 341
Estimated number of field site FTEs: 951

Facilities
The Office of Science oversees these 10 national laboratories:

· Ames Laboratory
· Argonne National Laboratory
· Brookhaven National Laboratory
· Fermi National Accelerator Laboratory
· Thomas Jefferson National Accelerator Facility
· Lawrence Berkeley National Laboratory
· Oak Ridge National Laboratory
· Pacific Northwest National Laboratory
· Princeton Plasma Physics Laboratory
· SLAC National Accelerator Laboratory

Performance:
Performance data for Program Assessment Rating Tool (PART) ratings, metrics and Joule measures may be found within the Office of the Deputy Director for Science Programs.

History

By the close of World War II, it was evident that fundamental knowledge of atomic and nuclear physics had tipped the balance of world power. The Manhattan Project vividly demonstrated the importance of basic research and its linkages to some of the most urgent national priorities.

After the War, there was a need to continue the research and development activities of the Manhattan Project and to take the opportunity to turn some of them towards nonmilitary purposes. Congress passed the Atomic Energy Act of 1946, which transferred responsibility for atomic energy research and development from the War Department to an independent civilian agency. On August 1, 1946, President Truman signed the bill into law, and the transfer of the Manhattan Engineer District's activities to the Atomic Energy Commission (AEC) became effective at midnight on December 31, 1946.

Many of the Commission's activities were unprecedented and exploratory. The Commission's charter directed it, in part, to ensure continuity of the ongoing activities and to carry out a diversified program of basic research. Specifically, the charter directed the Commission "to assist in the acquisition of an ever expanding fund of theoretical and practical knowledge" relating to the Commission's mission, including the peaceful use of the atom.

Basic research programs in atomic, nuclear, and radiation physics, and in related disciplines of chemistry and applied mathematics, were foremost among those brought forward from the Manhattan Project. The work was carried out in much the same way as it is today, by universities and National Laboratories, in conjunction with selected commercial and industrial collaborators.

In 1971, with early concerns about rising petroleum imports, the charter of the Commission was expanded to include other forms of energy and related technologies. During the period of

expansion, additional focus was given to "more efficient methods for meeting the Nation's energy needs."

On December 31, 1974, as part of a larger series of energy related national policy initiatives, the Atomic Energy Commission was abolished. Its functions were reorganized under the newly created Energy Research and Development Administration (ERDA). ERDA was chartered with an expanded research mission. In addition to research on nuclear energy, basic research responsibilities were broadened to include solar, fossil, conservation, and geothermal research.

Finally, in 1977, the establishment of the U.S. Department of Energy (DOE) gathered under one authority most of the energy related activities that had evolved during the 1970s among a number of Federal agencies. Included in the reorganization were not only the technical missions of ERDA and the Bureau of Mines, but also the energy policy and planning activities of the Federal Energy Administration (FEA) and the regulatory responsibilities of the Federal Power Commission. With the creation of the Department of Energy, the Carter Administration formulated a comprehensive energy policy. Energy technologies were not divided by fuel type, such as fossil, nuclear, or solar, but grouped under assistant secretaries according to their evolution from research and development through application and commercialization. The joining of policy, planning, and regulation with research and development again served to broaden the agency's basic research mission.

Today, the original focus in 1946 on nuclear and related science is now approximately one third of a large and diversified portfolio of basic research activities. Others have joined the portfolio. Collectively, these activities aim to maintain scientific and technical leadership across a broad spectrum of important research areas.

The Office of Energy Research was established by the Department of Energy Organization Act of 1977 (Public Law 95-91). Section 209 of the Act stated that "there shall be within the Department an Office of Energy Research to be headed by a Director, who shall be appointed by the President, by and with the advice and consent of the Senate, and who shall be compensated at the rate provided for level IV of the Executive Schedule under section 5315 of title 5." The Act further stated that the duties and responsibilities of the Director of the Office of Energy Research, now the Office of Science, shall be to advise the Secretary of Energy on DOE's R&D programs; gaps or duplication in DOE R&D programs; management of the Department's nonweapons multipurpose laboratories; education activities; and grants and other forms of financial assistance for research activities.

The name of the Office of Energy Research was changed to the Office of Science by language in the Energy and Water Development Appropriations Act of 1999 (Public Law 105-245, dated October 7, 1998, and codified in 42 U.S.C. 7139). As a result of the Department's field realignment in May 1999, the Director of Science assumed line management responsibility for the DOE Chicago and Oak Ridge Operations Offices, as well as the Berkeley and Stanford Site Offices.

Critical Operating Procedures

The authorities of the Director, Office of Science are defined in the DOE Organization Act, Title II Sec. 209. It reads as follows:

(a) There shall be within the Department an Office of Science to be headed by a Director who shall be appointed by the President by and with the advice and consent of the Senate, and who shall be compensated at the rate provided for level IV of the Executive Schedule under section 5315 of title 5, United States Code.

(b) It shall be the duty and responsibility of the Director—

(1) To advise the Secretary with respect to the physical research program transferred to the Department from the Energy Research and Development Administration;

(2) To monitor the Department's energy research and development programs in order to advise the Secretary with respect to any undesirable duplication or gaps in such programs;

(3) To advise the Secretary with respect to the well-being and management of the multipurpose laboratories under the jurisdiction of the Department, excluding laboratories that constitute part of the nuclear weapons complex;

(4) To advise the Secretary with respect to education and training activities required for effective short- and long-term basic and applied research activities of the Department;

(5) To advise the Secretary with respect to grants and other forms of financial assistance required for effective short- and long-term basic and applied research activities of the Department;

(6) To carry out such additional duties assigned to the Office by the Secretary.

Recent Organizational Accomplishments and Strengths

None noted.

Leadership Challenges

None noted.

Key Strategies and Timing

None noted.

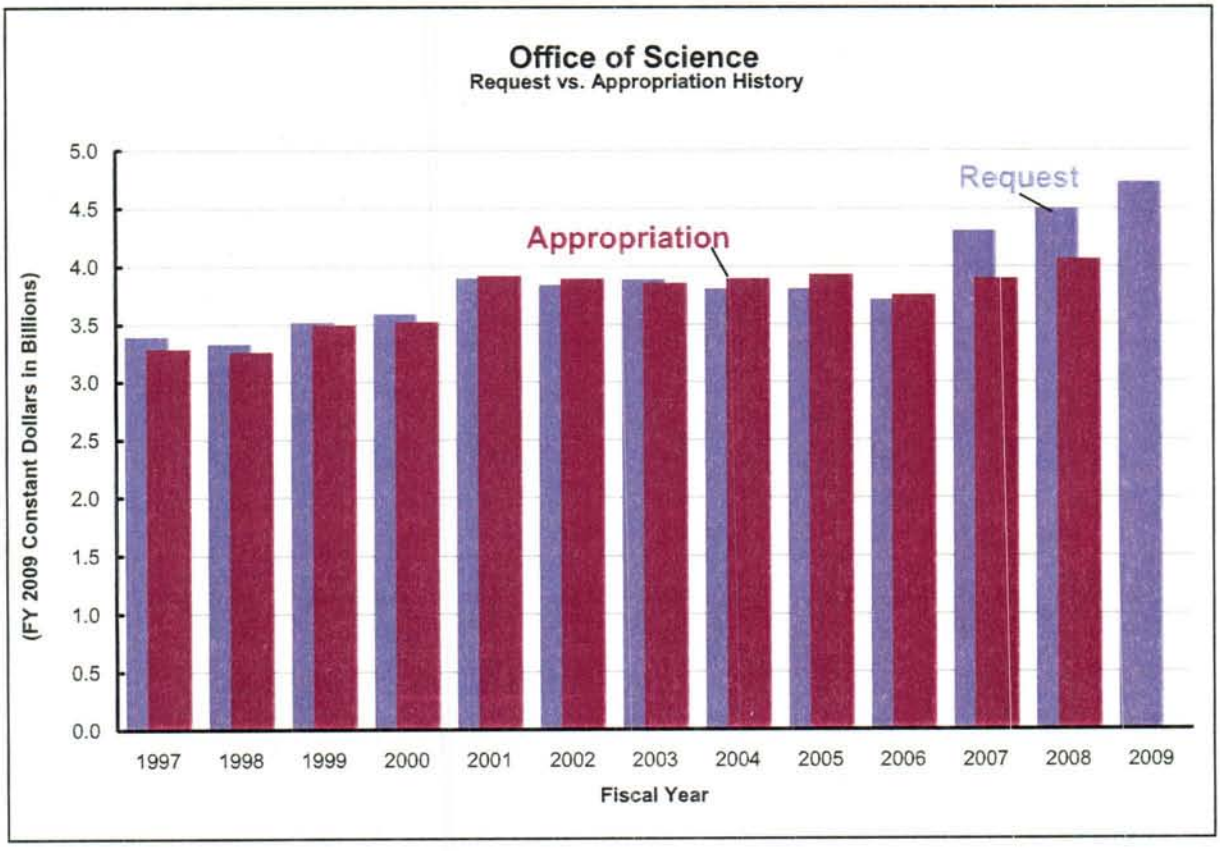
Critical Events and Action Items

None noted.

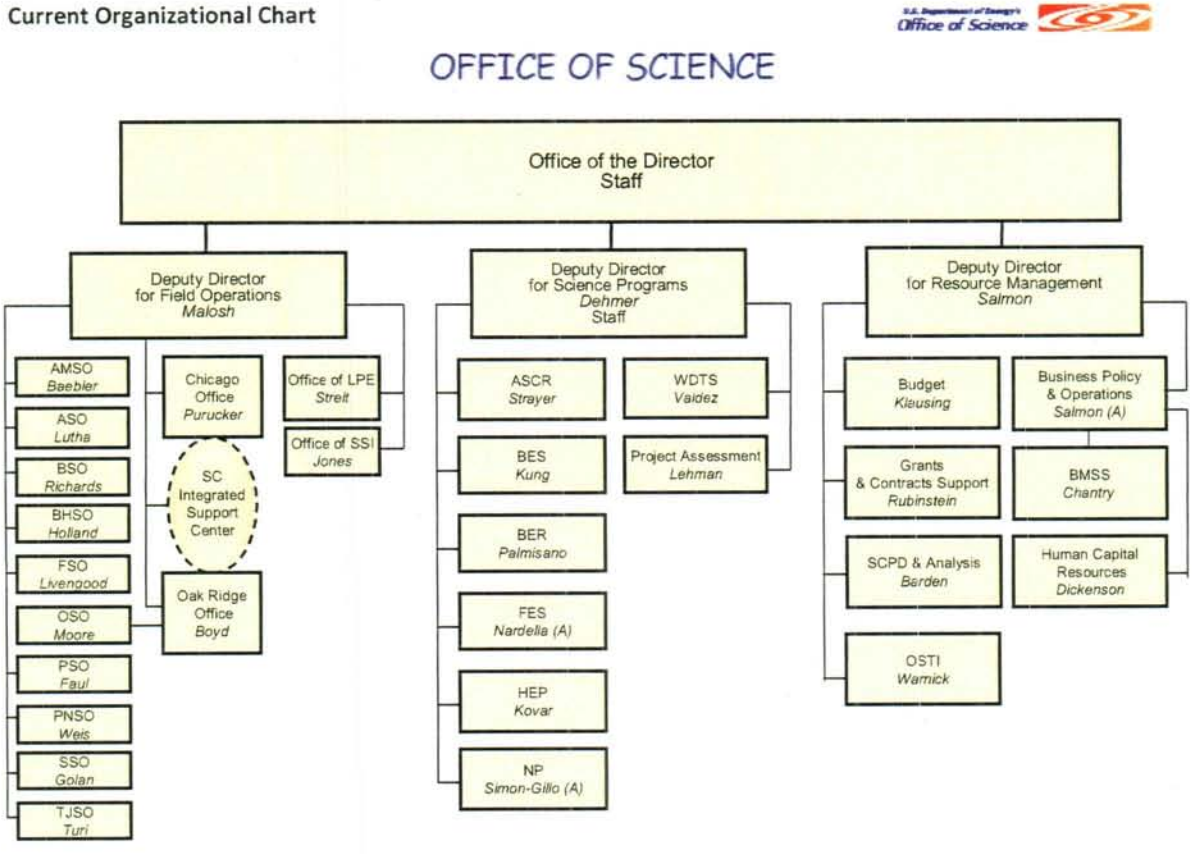
Hot Issues

None noted.

Following is a historical chart which highlights the difference between the requested and appropriated amounts for the Office of Science between 1997 and 2009. The budget data included is in constant FY 2009 dollars and does not include congressionally-directed projects.



Current Organizational Chart



Three Deputy Directors – the Deputy Director for Science Programs, the Deputy Director for Field Operations, and the Deputy Director for Resource Management – report directly to the Director of the Office of Science. With the exception of personal staff, these three individuals are the Director's only direct reports.

Conclusion

The Director, Office of Science – as the direct superior to the three Deputy Directors – constitutes a vital link between the six SC science programs, the ten SC laboratories, and the management offices which enable scientific research. The Director's successful integration of these three line organizations enables SC to support DOE missions.

Office of the Deputy Director for Science Programs

Organization Information

Organization Name
Office of the Deputy Director for Science Programs (SC-2)

Address:
1000 Independence Avenue, SW, Washington, DC 20585

Organization Phone Number:
202-586-5430

Organization Website:
http://www.science.doe.gov/
For comprehensive information on the Office of Science:
https://www.osti.gov/sctransitionbook/

POC E-Mail Address:
Patricia.dehmer@science.doe.gov

Supporting the DOE Mission

The Department's Strategic Plan identifies five Strategic Themes (one each for nuclear, energy, science, management, and environmental aspects of the mission) plus 16 Strategic Goals that tie to the Strategic Themes. Science supports the following goals:

- Strategic Theme 3, Scientific Discovery and Innovation: Strengthening U.S. scientific discovery, economic competitiveness, and improving quality of life through innovations in science and technology.
  - Strategic Goal 3.1, Scientific Breakthroughs: Achieve the major scientific discoveries that will drive U.S. competitiveness; inspire America; and revolutionize our approaches to the Nation's energy, national security, and environmental quality challenges.
  - Strategic Goal 3.2, Foundations of Science: Deliver the scientific facilities, train the next generation of scientists and engineers, and provide the laboratory capabilities and infrastructure required for U.S. scientific primacy.

Mission Statement

The mission of the Office of Science is to deliver the discoveries and scientific tools that transform our understanding of energy and matter and advance the national, economic, and energy security of the United States.

Status

Budget:
SC Budget and FTEs provided in SC-1 and SC-4 SIPs.

People:
SC Budget and FTEs provided in SC-1 and SC-4 SIPs.

Facilities:
The Office of Science leads the world in the conception, design, construction, and operation of large-scale research facilities. The facilities include particle accelerators and colliders, synchrotron light sources, neutron scattering facilities, nanoscale science research centers, supercomputers, high-speed networks, and genome sequencing facilities. And they are of use in such diverse fields as materials sciences, chemistry, high energy and nuclear physics, fusion energy, biology, advanced computation, and environmental sciences. Each year, these Office of Science facilities are used by about 20,000 researchers and their students from universities, private industry, foreign nations, and other U.S. government agencies, including the National Science Foundation and the National Institutes of Health.

Performance:
The Program Assessment Rating Tool (PART) was developed by the Office of Management and Budget (OMB) to provide a standardized way to assess the effectiveness of the Federal Government's portfolio of programs. In the FY 2005 PART review, OMB assessed six SC programs: ASCR, BES, BER, FES, HEP, and NP. Program scores ranged from 82–93%. Three programs—BES, BER, and NP—were assessed "Effective." Three programs—ASCR, FES, and HEP—were assessed "Moderately Effective." In general the FY 2005 assessment found that these SC Programs have developed a number of adequate performance measures. These measures have been incorporated into the FY 2009 Budget Request, grant solicitations, and the performance plans of senior managers. As appropriate, they are being incorporated into the performance-based contracts of management and operating (M&O) contractors.

The Annual Performance Targets are tracked through the Department's Joule system and reported in the Department's Annual Performance and Accountability Report. Roadmaps with detailed information on tracking progress toward the long-term measures have been developed with the Scientific Advisory Committees and links to these reports are provided on SC's PART website. The Scientific Advisory Committees are reviewing progress toward those measures vis-à-vis the roadmaps every three to five years. The first reviews were conducted during FY 2006 and early FY 2007. Links to the results of these reviews are provided on SC's PART website as they become available. OMB did not complete a PART for any SC Programs for the FY 2009 Budget, but has provided SC with recommendations to further improve performance. The improvement plan action items for the current fiscal year may be found at http://ExpectMore.gov (search by program name). SC has incorporated this feedback from OMB into the FY 2009 Budget Request decision process.

History

SC history provided in SC-1 SIP.

Critical Operating Procedures

The Science program funds energy-related basic research in the following areas: fundamental research in energy, matter, and the basic forces of nature; health and environmental consequences of energy production and development; fundamental science that supports the foundations for new energy technologies and environmental mitigation; a science base for fusion as a potential future energy source; and advanced computational and networking tools critical to research. In support of its mission, the Science program has responsibilities in three main areas: selection and management of research; operation of world-class, state-of-the-art scientific facilities; and design and construction of new facilities.

Disciplines supported by the Science program include high-energy and nuclear physics; condensed matter and materials physics; plasma science and fusion energy sciences; chemistry; biochemistry, biophysics, and systems biology; earth sciences; climate and environmental sciences; applied mathematics, computer sciences, and advanced modeling and simulation.

Research priorities are established using topical scientific workshops; Federal Advisory Committees; external reviews commissioned by the SC programs, occasionally using organizations such as the National Academy of Sciences; and interagency coordinating and working groups. Decisions on long-term research directions are also guided by Department mission needs and national priorities. The process that involves the broader scientific communities—particularly the topical workshops, Federal Advisory Committees, and external reviews—enable the Office of Science to seize new scientific opportunities and foster programs that advance the frontiers of science.

Facility priorities are established in similar ways. In 2003, the Office of Science published a *Facilities for the Future of Science: A Twenty-Year Outlook*, the first long-range scientific facilities plan prioritized across scientific disciplines ever issued by a government science funding agency anywhere in the world. The document listed 28 proposed facilities, ranking them along two dimensions: scientific importance and technological readiness. The document served as a roadmap for several years, providing an overarching strategic framework and long-term vision to guide year-by-year DOE policy and funding decisions. Significant progress was made in implementing the plan and deploying many of the planned facilities. But because contemporary science and technology undergo change, the Office of Science was careful not to adhere with inappropriate rigidity to the 2003 snapshot, but to respond to technological progress in reordering and restructuring its priorities. In 2007 the Office of Science published an *Interim Report*, which provides a summary update on the status of the facilities listed in the *Twenty-Year Outlook*. In many cases, substantial progress has been made toward deployment. Some planned facilities have been accelerated; a number have been reoriented, some in a substantial way including termination in light of facilities abroad.

Research projects and facilities undergo regular peer review and merit evaluation based on procedures set forth in 10 CFR Part 605 for the extramural financial assistance and grant

program and under similar processes for the laboratory programs and scientific user facilities. New projects are selected through peer review and merit evaluation.

The SC programs are coordinated with one another, with programs of the DOE technology offices and the National Nuclear Security Administration, and with programs of other federal agencies. Coordination with DOE's applied technology offices is executed through a number of established processes. These processes include scientific and technical workshops; program manager-level coordination between the basic and applied R&D programs in targeted research areas; and coordination working group efforts and DOE laboratory working groups organized by the Department's Science and Technology (S&T) Council (originally called the R&D Council). The Office of Science programs and DOE applied programs also facilitate the bridging of the basic and applied research by holding joint grantee and contractor meetings to promote communication between researchers and technology developers and stimulate the sharing of ideas and collaboration. The R&D coordination carried out under this model includes activities in biofuels derived from biomass, solar energy, hydrogen, solid-state lighting and other building technologies, the advanced nuclear energy systems, vehicle technologies, and improving efficiencies in industrial processes.

Recent Organizational Accomplishments and Strengths

For comprehensive information on the Office of Science: https://www.osti.gov/sctransitionbook/

Leadership Challenges

None noted.

Key Strategies and Timing

None noted.

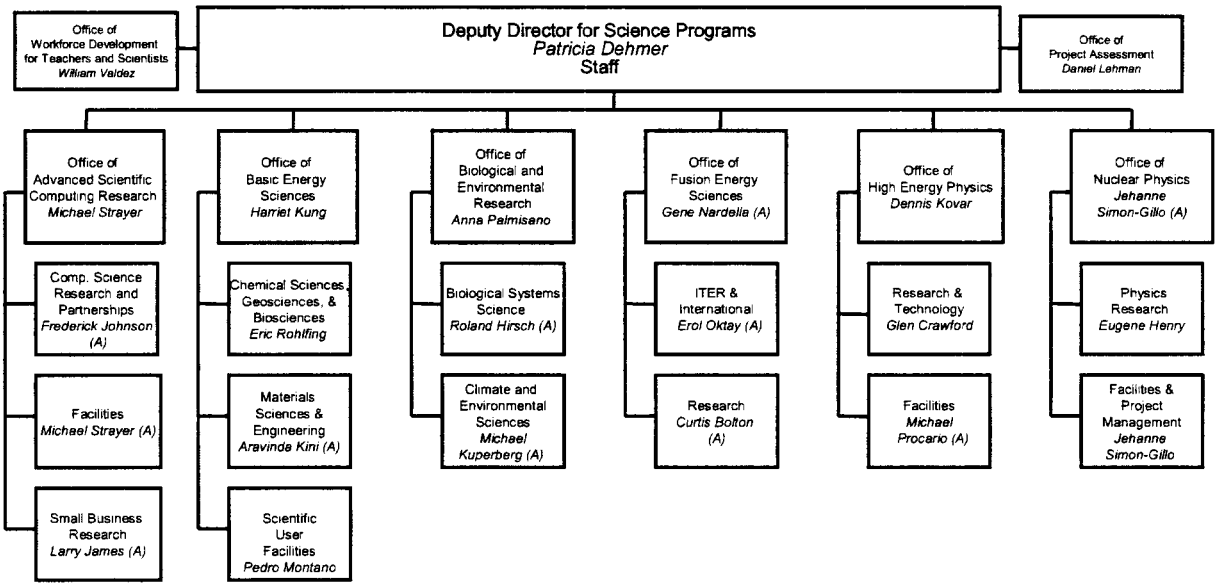
Critical Events and Action Items

None noted.

Hot Issues

Not Applicable

Current Organizational Chart



Office of the Deputy Director for Field Operations

Organization Information

Organization Name
Office of the Deputy Director for Field Operations (SC-3)

Address:
1000 Independence Avenue, SW, Washington, DC 20585

Organization Phone Number:
202-586-5434

Organization Website:
http://www.science.doe.gov/
For comprehensive information on the Office of Science:
https://www.osti.gov/sctransitionbook/

POC E-Mail Address:
George.malosh@science.doe.gov

Supporting the DOE Mission

Office of Science (SC) Field Operations are accountable for overseeing the operation of each of the ten SC National Laboratories, which entails ensuring DOE mission outcomes at the laboratories, evaluating the performance of the Contractor and ensuring compliance with contractual obligations. This encompasses a wide spectrum of oversight responsibilities in areas such as business systems, safety, security, infrastructure, and project management. Additionally, SC Field Operations manage major construction projects and play an oversight role for all nuclear activities at the SC laboratories. The SC Field Operation is comprised of a Site Office at each of the ten laboratories and the Integrated Service Center (ISC), located in Oak Ridge and Chicago, which provides assistance to the site offices as they carry out their contract oversight and contractor performance evaluation responsibilities.

In addition, the directorate includes two elements located in Headquarters (HQ). The first, the Office of Laboratory Policy and Evaluation, is responsible for managing and integrating Laboratory planning activities and the annual Laboratory evaluation process, and for policy and contractual issues common to the ten laboratories. The second, the Office of Safety, Security and Infrastructure, provides the Director with complex-wide, independent HQ oversight of the safety and security performance at the Science laboratories. This office is also responsible for budget formulation and execution for general-purpose infrastructure projects and for Safeguards and Security activities at the laboratories.

Mission Statement

In support of the Office of Science's overall mission to fund scientific research, the primary mission of the SC Field Offices is to oversee Contractor performance and to ensure compliance

to contractual obligations at each of the ten laboratories. Beyond providing oversight and quality assurance at our national laboratories, SC Field Operations is also responsible for building and operating the facilities in which research is conducted and managing the transaction process that provides program-approved funding to the appropriate M&O Contractors and individual researchers.

Status
None noted.

History
None noted.

Critical Operating Procedures
In an effort to address the wide geographic dispersion of Office of Science's operations, the Office of Science Management System (SCMS) was created to integrate SC Operations (SC Headquarters, the ISC, and Site Offices) and clearly outline how the organization functions. SCMS is a web-based database that houses documentation and procedures which provide a comprehensive description of organizational responsibilities, the associated authorities within which SC operates, and the management approaches and processes used throughout the organization. Development of SCMS began in 2006 and is currently scheduled to be implemented by the end of CY 2008. SCMS is the vehicle used to ensure consistency and integration in the SC Operations. SCMS can be accessed through the Office of Science website at http://scms.sc.doe.gov.

Recent Organizational Accomplishments and Strengths
In addition to creating SCMS (see *Critical operating procedures)*, last year the Office of the Deputy Director for Field Operations launched the SC Infrastructure Modernization Initiative.

The general-purpose infrastructure at the ten Office of Science research laboratories consists of over 1,500 buildings and real property trailers, with more than 21 million gross square feet of space. The average age of active buildings is 37 years, and many of them date back to the 1940's and 1950's. Due to historically flat Science budgets, general laboratory infrastructure capital investments have remained at the $20 to $30 million range for many years. Because of their age and historically inadequate sustainment and recapitalization investments, many of these facilities are in poor condition and are simply too antiquated to efficiently and effectively support modern research. The requirement for recapitalization is currently estimated at about $2 billion.

To remedy this situation and provide the modern laboratory infrastructure needed to remain competitive in 21st century research, SC began the Infrastructure Modernization Initiative in FY 2008. The goal of this Initiative, which will be funded under the Science Laboratories Infrastructure (SLI) program, is to transform the SC research complex into one that:

- Offers a safer, healthier and more secure work environment for employees and visitors;
- Has improved mission readiness;
- Is more efficient to operate and maintain, with minimal deferred maintenance backlog;
- Meets or exceeds DOE sustainability goals;

- Supports worker productivity and facilitates effective interaction with colleagues; and
- Provides a satisfactory work environment worthy of world-class scientific institutions and able to help attract and retain high-quality scientific staff.

Under this initiative, the SLI budget would increase from $79 million in FY 2008 to more than $200 million per year in FY 2013 to fund line item construction projects that will construct new facilities and modernize existing facilities and utilities.

In concert with the start of the Infrastructure Modernization Initiative, the Office of Science implemented an annual planning process that integrates scientific planning with infrastructure/operational planning in the context of each laboratory's anticipated contributions to the DOE missions. These annual plans directly tie proposed investments to specific business lines and provide a clear picture of the infrastructure investments that are needed to ensure the laboratories are "mission ready" (i.e., they have the infrastructure necessary to support existing and future scientific missions). Mission readiness will also become the focus of future facilities and infrastructure performance metrics in the laboratory Performance Evaluation and Management Plans. In the past, metrics focused on assessing whether or not the laboratories were spending a target amount of dollars on activities like maintenance or deferred maintenance reduction. In the future, metrics will focus on those activities that are required to maintain the mission readiness of each laboratory.

The Infrastructure Modernization Initiative is a critical part of our strategy for achieving and maintaining mission readiness at each of our laboratories. However, in addition to the modernization capital investments, reaching the goal will require a combination of funding types and sources including –

- Maintenance funds, which come from laboratory overhead and therefore consist of contributions from all parties doing work at the laboratories;
- Deferred Maintenance Reduction funds, which are also laboratory overhead dollars; and
- General Plant Project (GPP) and Institutional GPP (IGPP) funds, which provide funding for general-purpose construction activities that are less than $5M. These funds also result in some reduction of deferred maintenance.

Further details regarding the Infrastructure Modernization Initiative can be found at https://www.osti.gov/sctransitionbook/Infrastructure.htm.

Leadership Challenges

None noted.

Key Strategies and Timing

None noted.

Critical Events and Action Items

3-month events

None noted.

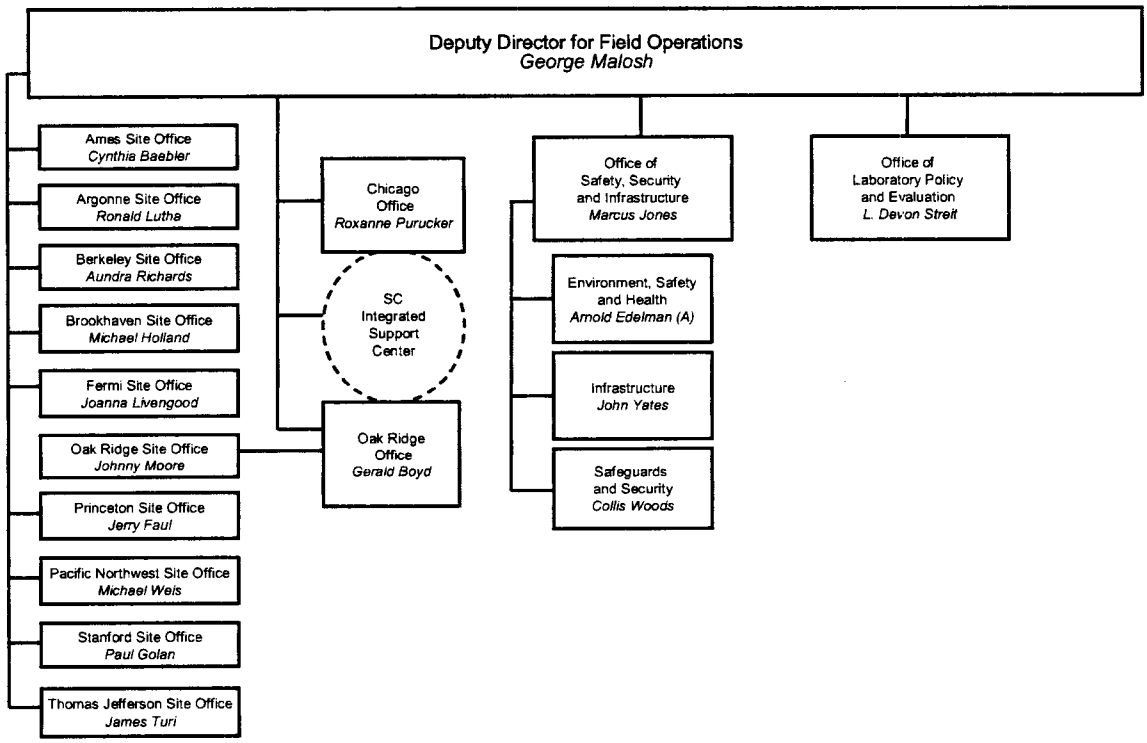
12-month events

Competition of the Brookhaven National Laboratory (BNL) and Oak Ridge National Laboratory (ORNL) contracts.

Hot Issues

None noted.

Current Organizational Chart



Office of the Deputy Director for Resource Management

Organization Information

Organization Name
Office of the Deputy Director for Resource Management (SC-4)

Address:
1000 Independence Avenue, SW, Washington, DC 20585

Organization Phone Number:
202-586-5430

Organization Website:
http://www.science.doe.gov/
For comprehensive information on the Office of Science:
https://www.osti.gov/sctransitionbook/

POC E-Mail Address:
Jeffrey.salmon@science.doe.gov

Supporting the DOE Mission

Strategic Theme 3: Scientific Discovery and Innovation
Strategic Theme 3.1: Scientific Breakthroughs
Strategic Theme 3.2: Foundations of Science
Strategic Theme 3.3: Research Integration

Key Activities:

- Formulate the FY 2010 budget in accordance with Department of Energy and Office of Management and Budget direction.
- Execute appropriated funds consistent with all DOE, OMB and Congressional guidance.
- Ensure continuity of award and administration of the Office of Science's nearly 2,400 research grants.
- Provide advice, analyses and operational support for SC organizations at headquarters and in the field relating to all aspects of human resources management, including position management, organization and management analyses, and administrative services.
- To advance science and sustain technological creativity by communicating the relevance and importance of R&D findings and making these R&D findings available and useful to DOE researchers and the public.
- Provide necessary Information Technology products and services to effectively support the SC business functions and SC programs in meeting the SC mission.
- Support the workforce to enable:
    - Scientific program development and management of a broad spectrum of scientific disciplines including Advanced Scientific Computing Research, Basic Energy Sciences, Biological and Environmental Research, Fusion Energy

Sciences, High Energy Physics, Nuclear Physics and science education and workforce development.

- Day-to-day oversight of Management and Operating (M&O) contract performance in support of SC laboratories and facilities.
- Program support across the SC enterprise in the areas of budget and planning, acquisition and financial assistance, federal workforce support, human resources (HR); business management, systems and administration, laboratory policy and evaluation, infrastructure, construction, and facilities management, Safeguards and Security, and Environment, Safety and Health.

Mission Statement

The Office of the Deputy Director for Resource Management plans, develops, manages, and implements a central management policy support program that utilizes customer service and quality assurance principles to ensure the effective and efficient operation of the Office of Science (SC). These areas include program direction and analysis management; financial management; corporate business management; management analyses; acquisition and financial assistance management; human resources operations; human capital planning; information technology services; grants and contracts management; and business and administrative services. The Office assists in ensuring that SC activities are in full conformance with the Secretary's equal opportunity policies and that prudent business management practices and policies are employed in the proper use of Federal funds. The Office serves as the principal SC-wide point of contact with other DOE staff organizations and represents the business management needs of SC to the Department; and manages activities required by the Federal Managers' Financial Integrity Act and the Federal Advisory Committee Act. The Deputy Director for Resource Management ensures that the Office of Science Management System (SCMS) reflects the current best business practices, policies, and procedures for the functions under its cognizance by working directly with the Deputy Director for Field Operations, who serves as the system owner. Those offices that report directly to the Deputy Director for Resource Management are:

- Office of Budget
- Office of Grants and Contracts Support
- Office of Scientific and Technical Information
- Office of Business Policy and Operations
- Office of SC Program Direction and Analysis

Status

Refer to the SC Budget Document attached.

History

Refer to the SC Budget Document attached.

Critical Operating Procedures

General Chief Financial Officer Guidance and Budget Calls Memoranda
Congressional Records
OMB Circular A-11, Preparation, Submission and Execution of the Budget

Recent Organizational Accomplishments and Strengths
None noted.

Leadership Challenges
Refer to the SC Budget Document attached.

Key Strategies and Timing
None noted.

Critical Events and Action Items
3-Month Events
None noted.

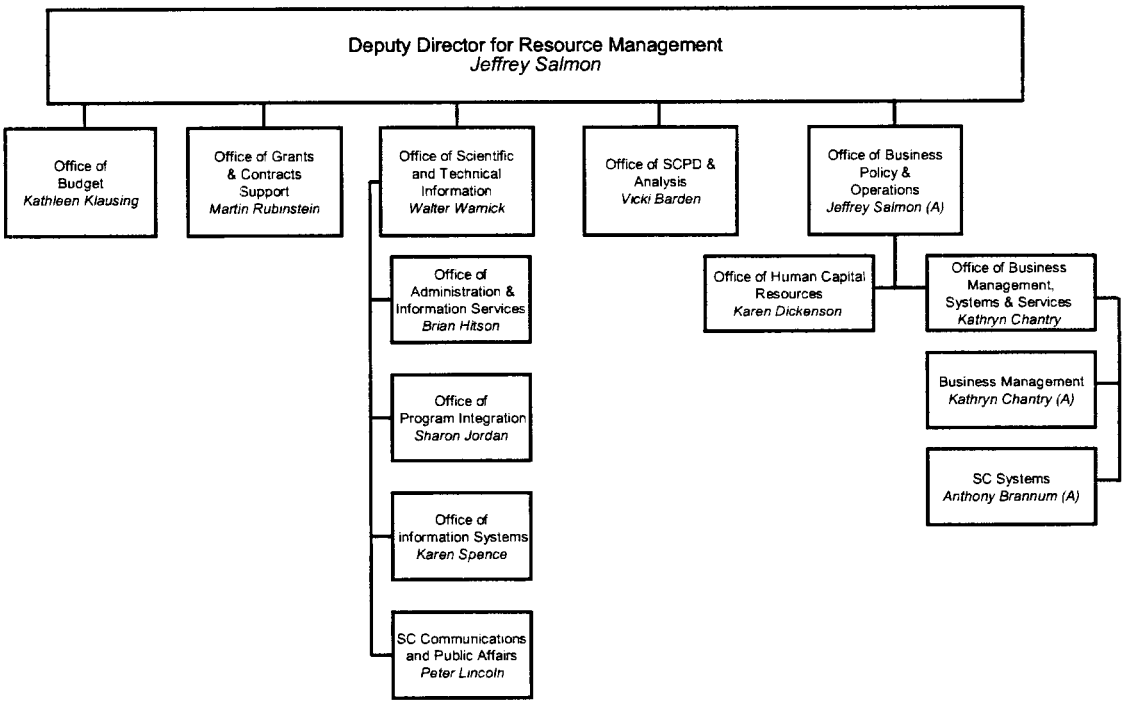
12-month events
None noted.

Hot Topic Issues
None noted.

Current Organizational Chart

Office of Science

OFFICE OF SCIENCE



Science Budget Document

Organization Information

Organization Name

Office of Budget (SC-41)
Office of Science Program Direction and Analysis (SC-46)

Address:

Office of Budget
19901 Germantown Road, Germantown, MD 20874

Office of Science Program Direction and Analysis (SC-46)
19901 Germantown Road, Germantown, MD 20874

Organization Phone Number:

Kathleen Klausing, Director, SC-41, 301-903-3541
Vicki Barden, Director, SC-46, 301-903-5409

Organization Website:

http://www.science.doe.gov/obp/FMD_AtAGlance.htm
http://www.science.doe.gov/
For comprehensive information on the Office of Science:
https://www.osti.gov/sctransitionbook/

POC E-Mail Address:

Kathleen.klausing@science.doe.gov
Vicki.barden@science.doe.gov

Supporting the DOE Mission

Strategic Theme 3	Scientific Discovery and Innovation
Strategic Theme 3.1	Scientific Breakthroughs
Strategic Theme 3.2	Foundations of Science
Strategic Theme 3.3	Research Integration

Key Activities:

- Formulate the FY 2010 budget in accordance with Department of Energy (DOE) and Office of Management and Budget (OMB) direction.
- Execute appropriated funds consistent with all DOE, OMB and Congressional guidance.
- Day-to-day oversight of Management and Operating (M&O) contract performance in support of Office of Science (SC) laboratories and facilities.
- Program support across the SC enterprise in the areas of budget and planning, acquisition and financial assistance, federal workforce support, human resources (HR); business management, systems and administration, laboratory policy and evaluation, infrastructure, construction, and facilities management, Safeguards and Security, and Environment, Safety and Health.
- Collect, preserve and disseminate research and development (R&D) information produced by DOE-sponsored research for use by DOE, the scientific community, academia, U.S. industry, and the public to expand the knowledge base of science and technology and to accelerate the pace of scientific discovery.

Mission Statement

The Office of Budget manages the appropriation for the Office of Science, currently $4.7B, including the budget formulation, budget execution, and strategic planning processes for SC, ensuring that the program funds are used according to the intent of the appropriation language. In addition, the Office of Budget ensures that financial management restrictions are not violated, proper accounting controls and practices are maintained, and adequate performance measures are in place to evaluate SC programs effectively.

The Office of SC Program Direction and Analysis provides a skilled and highly motivated Federal workforce to manage and support energy and science-related research disciplines, diversely supported through research programs, projects, and facilities under the SC's leadership.

Status

Budget:

The Office of Science (SC) request for Fiscal Year (FY) 2008 was $4.398B and the appropriation was $3.973B. A supplemental in the amount of $62.5M increased the overall FY 2008 appropriation to $4.083B. The Office of Science (SC) request for Fiscal Year (FY) 2009 is $4.722B; an increase of $639M, or 15.7%, over the current FY 2008 appropriation.

Office of Science
FY 2009 Budget Request to Congress
(dollars in thousands)

	FY 2007 Approp.	FY 2008 Approp.	FY 2009 Request to Congress	FY 2009 Request to Congress vs. FY 2008 Approp.	
Basic Energy Sciences	1,221,380	1,252,756 [a]	1,568,160	+315,404	+25.2%
Advanced Scientific Computing Research	275,734	341,774	368,820	+27,046	+7.9%
Biological and Environmental Research	480,104	531,063	568,540	+37,477	+7.1%
High Energy Physics	732,434	702,845 [a]	804,960	+102,115	+14.5%
Nuclear Physics	412,330	423,671 [a]	510,080	+86,409	+20.4%
Fusion Energy Sciences	311,664	294,933 [a]	493,050	+198,117	+67.2%
Science Laboratories Infrastructure	41,986	66,861	110,260	+43,399	+64.9%
Science Program Direction	166,469	177,779	203,913	+26,134	+14.7%
Workforce Dev. For Teachers and Scientists	7,952	8,044	13,583	+5,539	+68.9%
Safeguard & Security (gross)	75,830	75,946	80,603	+4,657	+6.1%
All Other	110,730 [b]	207,211 [b]	——	-207,211	-100.0%
Total, SC	3,836,613	4,082,883 [a]	4,721,969	+639,086	+15.7%

[a] FY 2008 supplemental amounts of $62.5M include $13.5M for Basic Energy Sciences, $32.0M for High Energy Physics, $1.5M for Nuclear Physics, and $15.5M for Fusion Energy Sciences.

[b] "All Other" includes SBIR/STTR funding reprogrammed within SC and transferred from other DOE offices (FY 2007 and FY 2008), a charge to reimbursable customers for their share of safeguards and security costs (FY 2007 and FY 2008), Congressionally-directed projects and a rescission of a prior year Congressionally-directed project (FY 2008 only), and offsets for the use of prior year balances to fund current year activities (FY 2007 and FY 2008).

People

Estimated number of federal and contractor FTEs as of 9/30/08: 1,292
Estimated number of federal FTEs: 980
Estimated number of contractor FTEs: 312
Estimated number of headquarters FTEs: 341
Estimated number of field site FTEs: 951

Facilities

None noted.

Performance

Please reference the Standard Issue Paper for the Office of the Under Secretary for Science

History[1]

Since 1997, the Office of Science appropriation has typically been close to the President's request and its growth relatively flat from year to year. On average, the appropriated amount was 1.8% less that the requested amount from FY 1997 through FY 2008, with overall annual growth of 1.2% after inflation. The largest growth year during this period, FY 2001, was driven by construction costs for the Spallation Neutron Source at Oak Ridge National Laboratory. Over the same period of time, the following four programs have experienced slight funding growth: Advanced Scientific Computing and Research (ASCR) with 5.0%; Basic Energy Sciences (BES), 3.6%; Biological and Environmental Research (BER), 0.7% and Nuclear Physics (NP), 0.5%. On the other hand, High Energy Physics (HEP) experienced a 2.1% funding decrease as well as Fusion Energy Sciences (FES) with a 0.4% decrease.

The slight increases in funding for Program Direction were used to maintain the cost of living augmentation necessary to keep up with inflation.

Recently, initiatives have proposed to double, by 2016, the funding levels for research at key Federal agencies that support high-leverage fields of physical science and engineering including the Department of Energy's Office of Science, the National Science Foundation, and the National Institute for Standards and Technology. In particular, the Energy Policy Act of 2005, the America COMPETES Act and the 2006 report "Rising Above the Gathering Storm" led to the American Competitiveness Initiative (ACI) which was reflected in the FY 2007 budget request to Congress. Although the House and Senate strongly supported the accelerated growth in the FY 2007 and FY 2008 requests, final appropriations did not meet the ACI level requirements. While appropriations in FY 2007 and FY 2008 were 9.5% and 11.5% less than the requested amount, they did reflect growth of 3.6% and 2.1% over the prior year appropriations.

The FY 2009 House appropriation committee mark provides $100M, or 2.1%, above the requested level, excluding $39.7M for congressionally-directed project and $15M for a new Advanced Research Projects-Energy program. The FY 2009 Senate appropriation committee mark provides a 140M, or 3.1% decrease below the request, excluding $58.5M for congressionally-directed project and $8.6M which has yet to be distributed. As of this writing, the conference mark has yet to occur.

Critical Operating Procedures

- Adhere to the budget cycle requirements, including preparation, review and submission processes, according to OMB Circular A-11, Preparation, Submission and Execution of the Budget, which provides guidance on preparing the official budget and includes instructions on budget execution.

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[1] Percentages throughout this document compare appropriations excluding Congressionally-directed projects (or earmarks), and are after adjusting for inflation.

- Prepare and submit monthly Approved Funding Program (AFP) which is the mechanism utilized to distribute program funds to the various laboratories and operation offices.
- Respond to budget calls and questions from CFO and OMB as well as budget requests from Congress.
- Answer congressional records requests which include the review of testimonies including questions for the records from various House and Senate committees and sub-committees.

Recent Organizational Accomplishments and Strengths

None noted.

Leadership Challenges

- Success in completing the Office of Science (SC) mission is largely contingent on having a competent and expert current and future workforce in place. SC is working to attract and retain a capable and proficient workforce to ensure existing continuity and the future of its basic research programs. This is a dilemma faced by many agencies, but is particularly acute and problematic for SC given the high degree of specialized knowledge and technical qualifications required of its workforce. Workforce planning across the SC enterprise is a high priority. Innovative and strategically deployed recruitment and retention incentives and developmental tools, as well as significant succession planning efforts, are some of the many initiatives utilized by SC to build and maintain a superior workforce.

- The Science Program Direction program funds the federal workforce and associated support costs. While the research side of SC has experienced a significant budgetary increase in response to the American Competes Act, the SC Program Direction budget has experienced some challenges. The FY 2007 year-long Continuing Resolution (CR) and the lengthy FY 2008 CR and subsequent $7M appropriation reduction has necessitated lengthy hiring delays of much needed Headquarters Program Office Program Managers who have responsibility for scientific program development and management. Numerous Committee of Visitor (Advisory Committees) reports have identified staffing shortfalls at Headquarters and recommended that additional Program Managers and associated support staff be hired. In response to the COV reports, the FY 2007, FY 2008 and FY 2009 President's Requests included funding for 68 additional Program Managers and support staff. As of the fourth quarter of FY 2008, only 26 have been hired or are in the process of being hired and a hiring freeze is now in effect pending the outcome of the FY 2009 appropriations. A recent staffing analysis of the SC Field complex, who has responsibility for: (1) implementing the SC program within the framework established by HQ policy and guidance, (2) day-to-day oversight responsibility for Management and Operating (M&O) contractor performance supporting SC laboratories and facilities, and (3) best-in-class business, administrative and specialized technical support across the SC complex and other DOE programs, indicated that there are significant staffing shortfalls across the Field in the areas of acquisition (grants and contracts), financial, HR, legal, health, safety, security, and facilities management. The SCPD program requested 20 Field new hires in the FY 2009 President's Request that are also on hold pending the outcome of the FY 2009 appropriation.

- As the Office of Science increases, so do the requests for information and justification. The success of the Office of Budget hinges on its ability to successfully manage the ever

increasing number of requests with high-quality and relevant information. As such, the Office of Budget provides ongoing training to the analysts and technicians so that all staff has the necessary knowledge needed to perform daily tasks as well as fulfill the requirements of ad-hoc requests. As much as possible, managers try to anticipate potential requests, especially cyclical ones that often occur based on budget cycles. The challenge that is more difficult to manage the fulfillment of ad-hoc requests that occur outside of regular cycles. The current strategy being implemented is to provide analysts and technicians with an overview of the information sources available to answer the requests but to provide them with one-on-one support as needed, especially with complex requests.

Key Strategies and Timing

Not applicable.

Critical Events and Action Items

Not applicable.

Hot Issues

This is the third year of the America COMPETES Act which drives the overall SC funding. The budget request supports investments in basic research that are important both to the future economic competitiveness of the United States and to the success of the DOE mission. These areas include energy security and national security; advancing the frontiers of knowledge in the physical sciences and areas of biological, environmental, and computational sciences; and providing world-class research facilities for the Nation's science enterprise. The FY 2009 President's request is in line with the America COMPETES Act which had SC doubling its funding over a seven year period. However, the FY 2008 budget without earmarks was significantly lower than the President's request, and was only 2.6% above FY 2007, which itself was also lower that the President's FY 2007 request. Hopefully, the FY 2009 enacted budget will be in line with the President's request to provide the funding level necessary for SC to pursue its goals and objectives.

SC provides support for the basic research and scientific and technological capabilities that highlight the Department's technically complex mission. Part of this support is in the form of large-scale scientific user facilities. SC facilities represent a sophisticated suite of instrumentation and research capabilities that meet the diverse needs of about 21,000 researchers each year and enable U.S. scientists to remain at the forefront of scientific discovery and innovation. These facilities include the world's highest energy proton accelerator (the Tevatron at Fermi National Accelerator Laboratory); the world's forefront neutron scattering facility (the Spallation Neutron Source at Oak Ridge National Laboratory), and synchrotron light sources such as the Advanced Photon Source and the Advanced Light Source for probing the structure and function of materials. The Department's five Nanoscale Science Research Centers and the computational resources at the National Energy Research Scientific Computing Center and Leadership Computing Facilities offer technological capabilities to the research community that are unmatched anywhere in the world.

The Office of Budget plays a critical role in developing the appropriate programmatic guidance to meet Energy Independence and Security Act of 2007 (EISA) goals and priorities. EISA's

provisions are intended to reduce America's dependence on oil, improve efficiency, and cut emissions. EISA mandates the use of at least 36 billion gallons of biofuels by 2022 as well as a national fuel economy standard of at least 35 miles per gallon by 2020—an increase in fuel economy of some 40 percent that will save billions of gallons of fuel. Without transformational breakthroughs in deriving fuels from plant cellulose materials, we reduce our chances of reaching these aggressive goals. The transformational basic research undertaken by the Office of Science's Bioenergy Research Centers is one way the Department is addressing the difficulties of cost-effective bioethanol production. New scientific discoveries supported by the Office of Science will speed revolutionary gains in production efficiencies and cost reduction – and in some cases may be the only way to meet our goals.

Science's continued compliance with the Energy Policy Act (EPAct) of 2005 guidance ensures that the funding expended is in line with the overall priorities set forth by the act. EPAct requires the Department of Energy (DOE) to periodically review all of the science and technology activities of the Department in a strategic framework that takes into account both the frontiers of science to which the Department can contribute and the national needs relevant to the Department's statutory missions. Additionally, and as part of the review, the Department is required to develop a plan to improve coordination and collaboration in research, development, demonstration, and commercial application activities across Department organizational boundaries. Regular reports are due to Congress every four years and must include the results of the Department's review and the Department's coordination plan. Accordingly, the Office of Science maintains R&D coordination data across the following cross-cutting areas: Materials under extreme conditions, Cyber security, Catalysis, Bioconversion, Mathematics of Complex Systems, Energy Storage, Carbon Capture, Risk Assessments for Geologic, Carbon Sequestration, and Nuclear Waste.

Technology development proceeds fastest where there is a strong grounding in scientific understanding, but we will not meet the targets with solely incremental improvements in current technologies. We need the breakthroughs that will result only from transformational basic research.

Following are some of the highlights of the FY 2009 Budget Request for the Office of Science which are driving the fundamental scientific changes necessary to meet the aggressive goals and priorities.

Energy Frontier Research Centers (EFRC) (~$100M/yr)

The Office of Science seeks to engage the Nation's intellectual and creative talent to tackle the scientific grand challenges associated with determining how nature works, leading the scientific community to direct and control matter at the quantum, atomic, and molecular levels, and harness this new knowledge and capability for some of our most critical real-world challenges. The goal of EFRC's is to generate innovative basic research to accelerate scientific breakthroughs needed to create advanced energy technologies for the 21st century. EFRC's will pursue fundamental basic research in areas such as Solar Energy Utilization, Geosciences for Nuclear Waste and CO_2 Storage, Catalysis for Energy, Advanced Nuclear Energy Systems and others. EFRC's will be generating awards of $2M-$5M per year for an initial 5-year period to U.S. universities, DOE laboratories, and other institutions.

World-Leading Facilities

The FY 2009 budget request supports the operation and maintenance of Science's state of the art facilities, including: **Spallation Neutron Source** ($177.6M) and the **High Flux Isotope Reactor** ($58.8M) which together provide capabilities unavailable anywhere else in the world for study of the position and motion of atoms in materials -- from liquid crystals to superconducting ceramics, from proteins to plastics, and from metals to cell walls.

- **Four Synchrotron Light Sources** which are extraordinary tools for determining protein structures, probing the physical properties of new materials, and studying chemical reactions
    - **Advanced Light Source** at Lawrence Berkeley National Laboratory ($51.0M)
    - **Advanced Photon Source** at Argonne National Laboratory ($116.5M)
    - **National Synchrotron Light Source** at Brookhaven National Laboratory ($40.1M)
    - **Stanford Synchrotron Radiation Laboratory** at the SLAC National Accelerator Laboratory ($33.0M)
- **Five DOE Nanoscale Science Research Centers** ($101.2M) to provide unmatched capabilities for fabrication, synthesis, and characterization of matter at the nanoscale
- **Linac Coherent Light Source,** currently under construction at the Stanford Linear Accelerator Center ($56.0M, which includes $37.0M for construction and $19.0M for operations) will be a revolutionary x-ray free electron laser that will allow probing of chemical and biological structures and examination of chemical reactions in real time at the single molecule level. The LCLS makes use of technologies developed for the current SLAC Linac ($96.7M for operations) and the next generation of linear colliders.

The International ITER Fusion Project ($214.5M)

ITER is an international collaboration to build the first fusion science experiment capable of producing a self-sustaining fusion reaction, referred to as "burning plasma." It is the next essential and critical step on the path toward demonstrating the scientific and technological feasibility of fusion energy. ITER's mission is to demonstrate the scientific and technological feasibility of fusion energy, the power source of the sun and the stars. The United States participation in the international ITER project continues in FY 2009. ITER Major Item of Equipment (MIE) project is not fully funded due to FY 2008 Appropriations, which reduced funding from the requested $160,000,000 to $26,126,000 (which includes the FY 2008 appropriation of $10,626,000 and the supplemental amount of $15,500,000). As a result, the United States will be forced to default on most of its 2008 commitments to the ITER Organization. The funding delay will impact the international schedule and will increase U.S. costs; the extent of the cost and schedule impacts is still being assessed.

High Energy Physics Research investigates the elementary building blocks of matter and energy to address the big questions ($805M)

The High Energy Physics (HEP) program supported by the FY 2009 request allows the U.S. to continue its leadership at the energy frontier with the Tevatron as long as possible and play a strong role in the Large Hadron Collider program. Additionally, this supports the pursuit of an internationally coordinated, staged program in neutrino physics that will establish a U.S. leadership role in this area in the next decade. Finally, HEP research will address compelling non-accelerator scientific opportunities and in particular, expand the program in particle astrophysics.

Increased funding of 11.6% over the FY 2008 appropriation is requested in FY 2009 for targeted areas in accelerator R&D, in accordance with recommendations from High-Energy Physics Advisory Panel (HEPAP) and external program reviews, to begin implementation of a strategic plan for technology R&D in the HEP program. These increases are directed at four distinct areas: (1) short-term R&D focused on addressing the issues associated with the development of a high intensity proton source for an enhanced neutrino program at Fermilab; (2) mid-term R&D directed at developing superconducting radiofrequency technologies and infrastructure for the HEP program and the U.S.; (3) mid-term R&D directed towards the proposed International Linear Collider (ILC) that is focused on areas where the U.S. is acknowledged expert, and that is internationally coordinated; and (4) long-term R&D directed at advanced accelerator technologies with the promise of transformational changes. Overall funding for technology R&D activities is actually below the FY 2007 level-of-effort but is better aligned with programmatic priorities.

Nuclear Physics Research seeks to understand the origin of the universe and the evolution of the cosmos ($510M)

Nuclear Physics' (NP) FY 2009 President's request of $510M represents an increase of approximately 17.5% over the FY 2008 appropriation. Starting in FY 2009, the Isotope Production and Applications subprogram is transferred to the Nuclear Physics Program which includes funding of $20M. This subprogram, with its importance to applied programs including the medical uses of isotopes, is a substantial beneficiary of the basic research conducted within Nuclear Physics. Overall, the NP program's goal is to provide significant support for its major user facilities, allowing them to develop their full potential through expanded use by researchers. The NP program will substantially advance our understanding of nuclear matter and the early universe. The FY 2009 funding request will help the United States maintain a leading role in nuclear physics research, which has been central to the development of various technologies, including nuclear energy, nuclear medicine, and the nuclear stockpile.

Climate Change Modeling and Research ($155M)

The FY 2009 President's request for Climate Change Modeling and Research represents in increase of approximately 13.2% over the FY 2008 appropriation. The FY 2009 budget provides the funding level necessary to ensure that the U.S. is a leader in climate prediction tools and environmental observation and measurement

Biological and Environmental Research (BER) priorities within the Climate Change Research subprogram are to develop the ability to predict climate on global and regional scales; to explore the impacts of excess atmospheric CO_2 on the Earth system; to develop strategies for its removal and sequestration from the atmosphere; and, provide the science to underpin the prediction of the impacts of climate change. These priorities will depend on the continued development of novel research tools and a close integration of experimental, observational, and computational research.

Networking and Information Technology Research and Development ($401M)

Computational modeling and simulation has become a third pillar for scientific discovery, along with theory and experiment. Scientific computing is particularly important for the solution of research problems that are unsolvable through traditional theoretical and experimental

approaches, or are too hazardous, time-consuming, or expensive to solve by traditional means. All of the SC research programs have identified major scientific challenges that can only be addressed through advances in scientific computing. Advanced Scientific Computing Research's (ASCR) research projects in applied mathematics, computer science, and networking provide key tools and techniques to help the other SC programs achieve their research objectives as well as allow scientists to effectively utilize high performance computers. ASCR's other main responsibility is to provide the DOE research community with the high-performance computing and networking tools required to support world-class scientific leadership.

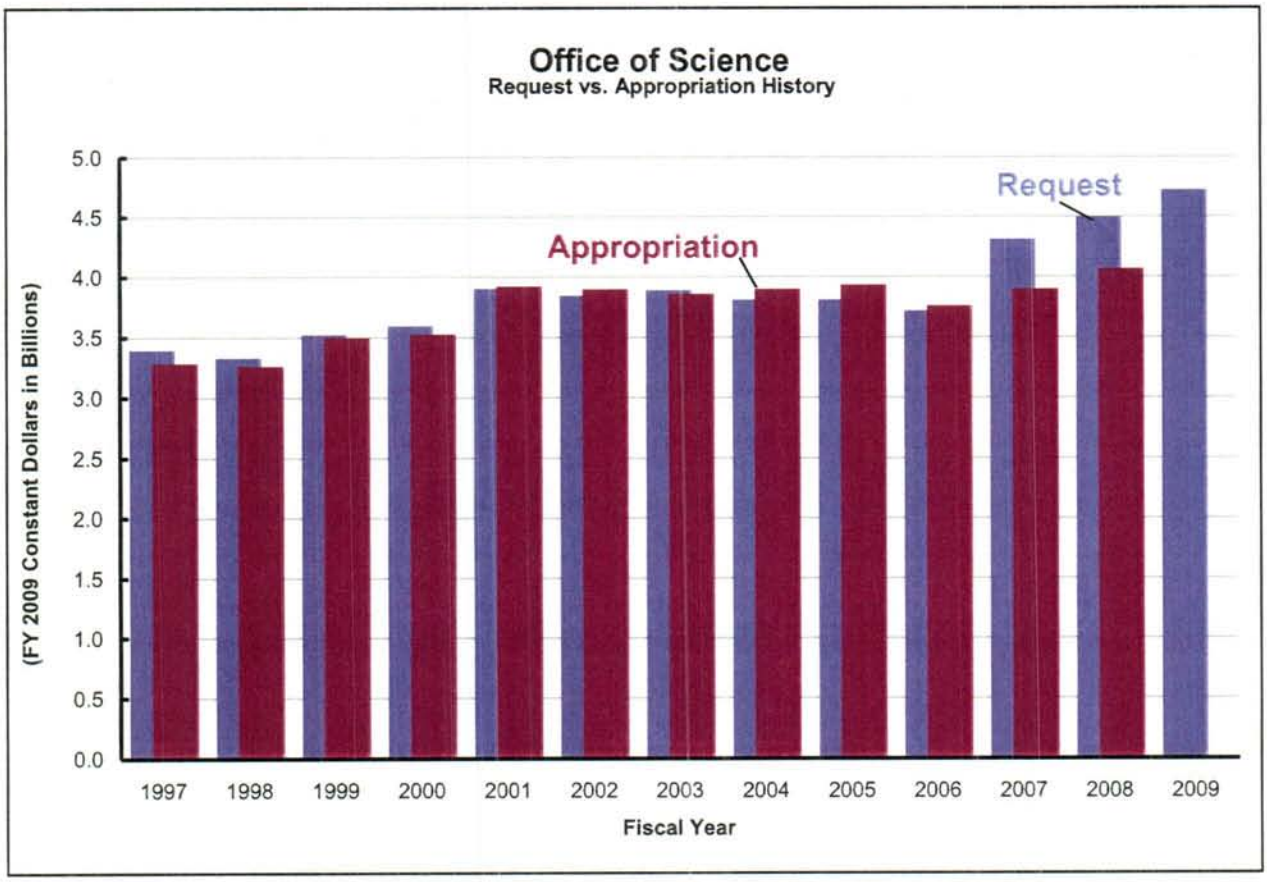
The Advanced Scientific Computing Advisory Committee (ASCAC) provides valuable independent advice to DOE on a variety of complex scientific and technical issues related to the ASCR program. This advisory committee plays a key role in assessing the scientific and programmatic merit of presently funded activities and in evaluating plans for the future. In FY 2007, ASCAC was charged with assessing the priorities and balance of the ASCR portfolio and their report was published in February 2008 and can be found at http://www.science.doe.gov/ascr/ASCAC/BalanceReport_FinalDraft.pdf.

It is important for ASCR to carefully balance investments in facilities and research and to make this balance more transparent, ASCR has split the Mathematical, Information, and Computational Science (MICS) subprogram into two subprograms: Mathematical, Computational, and Computer Sciences Research and High Performance Computing and Network Facilities. The Administration has recognized the importance of high-end computing to the Nation. The President identified supercomputing as an important component of his American Competitiveness Initiative in the 2006 State of the Union Address.

DOE Bioenergy Research Centers ($75M)
In June 2007, DOE announced the creation of three new Bioenergy Research Centers. These three Centers bring together top scientists and researchers from multiple disciplines in the quest for the breakthroughs in basic science that will make production of biofuels cost-effective and commercially viable on a national scale.

The *DOE BioEnergy Science Center* is led by Oak Ridge National Laboratory and its mission is to focus on the resistance of plant fiber to breakdown into sugars and to study the potential energy crops poplar and switchgrass. The *DOE Great Lakes Bioenergy Research Center* is led by University of Wisconsin-Madison, in close partnership with Michigan State University and its mission is to explore plant fiber breakdown across a wide range of plants to increase plant production of starches and oils, which are more easily converted to fuels. This Center also has a major focus on sustainability, examining the environmental and socioeconomic implications of moving to a biofuels economy. Finally, the *DOE Joint Bioenergy Institute* is led by Lawrence Berkeley National Laboratory and its mission is to concentrate on "model" crops of rice and *Arabidopsis*, in the search for game-changing breakthroughs in basic science as well as explore microbial-based synthesis of fuels beyond ethanol.

Following is a historical chart which highlights the difference between the requested and appropriated amounts for the Office of Science between 1997 and 2009. The budget data included is in constant FY 2009 dollars and does not include congressionally-directed projects.



AMES LABORATORY

United States Department of Energy

Ames Laboratory (Ames), located in Ames, Iowa, on the campus of Iowa State University, conducts research in various areas of national concern, including materials study and synthesis, energy resources, high-speed computer design, and environmental improvement. Ames was founded in 1947 following work to produce purified uranium for the Manhattan Project. Today, Ames laboratory scientists are actively involved in innovative research, science education programs, the development of applied technologies, and the transfer of such technologies to industry. Ames operates on a budget of approximately $30 million and employs more than 425 full and part-time staff, including 250 scientists and engineers. Graduate students make up over 21% of the work force; another 300 personnel are non-paid associates in departments across Iowa State University. The laboratory supplies roughly 17% of the federal research funding received by Iowa State University, which runs the lab for the U.S. Department of Energy's (DOE) Office of Science.

Single-Program Laboratory

Ames primarily conducts research supported by DOE's Office of Science, though Ames is also funded by the Office of Energy Efficiency and Renewable Energy, the Office of Fossil Energy, and the Office of Defense Nuclear Nonproliferation. Ames' Work for Others program sponsors research for industry and other federal agencies, including the National Institute of Justice and the Department of Defense.

Mission

Ames Laboratory's mission focus is to provide expertise to the Department of Energy (DOE) laboratory system in the areas of energy and environmental improvement through research in material science, engineering, analytical instrumentation and chemical science. Inherent in this mission are the transfer of technologies to improve industrial competitiveness and education of the next generation of scientists and engineers.

Core Competencies

- Materials design, synthesis and processing
- Analytical instrumentation/device design and fabrication, materials characterization, x-ray and neutron scattering, solid-state Nuclear Magnetic Resonance (NMR), and spectroscopy/microscopy
- Catalysis science
- Condensed matter theory
- Separation science

Lab-at-a-Glance

Location: Ames, IA

Type: Single-program laboratory

Contract Operator: Iowa State University (ISU) of Science and Technology

Responsible Field Office: Ames Site Office

Website: http://www.ameslab.gov/

Physical Assets:

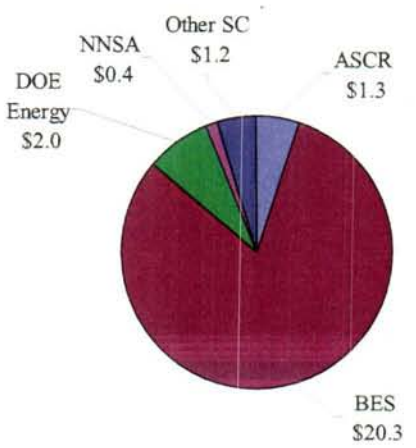
- 10 acres (lease–long term, no cost)
- 12 buildings
- 327,664 GSF in Active Operational Buildings
- Replacement Plant Value: $62.1M
- Deferred Maintenance: $1.5M
- Asset Condition Index:
  - Mission Critical: 0.98 (Excellent)
  - Mission Dependent: 0.96 (Good)
- Asset Utilization Index: 0.98 (Excellent)

Human Capital:

- 300 Full-time equivalent employees
- 250 ISU graduate/undergraduate students, employees, and associates
- 200 Facility users, visiting scientists, and associates

FY 2007 Total DOE Funding: $25.1M

FY 2007 DOE Funding by Source *(BA in Millions):*



FY 2007 Non-DOE/Non-DHS Funding: $1.4M

AMES LABORATORY
United States Department of Energy

Major User Facilities

- **Materials Preparation Center (MPC):** provides advanced materials to industry, university, and government research centers.

Recent Scientific Achievements

- Material for magnetic refrigeration that improves refrigerator efficiency by an estimated 40 percent.
- Invented new stronger, easier to use lead-free solder which stands up better in high-heat conditions.
- Designed/demonstrated materials that make it easier to develop optical lasers, optical computers and solar cells.
- Discovered compounds that could be used to produce practical materials highly resistant to corrosion at high temperatures.
- Invented a solvent-free way to produce organic compounds in solid state, which could lead to a solution for high-capacity, safe hydrogen storage needed to make hydrogen-powered vehicles viable.
- Integrated 3-D computational fluid dynamics software with detailed chemistry models for fuel spray combustion simulation.
- Developed a component of SPARSKIT's state of the art iterative methods for solving sparse linear systems.
- Developed the first metamaterial component operating in the visible spectrum.
- Developed and completed the first successful application of ARPES microscopy; developed highest flux/energy resolution ARPES spectrometer.
- Invented a new class of magnetic materials: RT_2Zn_{20}.
- Completed the first growth of MgB_2 single crystals in a U.S. laboratory.
- Developed a novel interdisciplinary approach using bacterial mineralization proteins and self-assembling block copolymers for controlled synthesis and assembly of uniformly sized superparamagnetic nanocrystals. This approach draws inspiration from nature, as the skins of many migratory and homing birds and animals contain organized aggregates of magnetite nanocrystals that exhibit superparamagnetic properties at ambient temperatures.
- Developed new solid-state NMR techniques to characterize nanocomposites.
- Invented novel nanoparticle-based solid catalysts for highly efficient production of biodiesel from vegetable oils, low-quality animal fats, and restaurant waste oils. These catalysts are environmentally friendly and can be reused and recycled many times. This technology will significantly lower the cost of biodiesel production and will allow the usage of non-food-based oils and fats for biodiesel synthesis.
- Invented a non-invasive mesoporous silica nanoparticle-based (MSN) gene delivery system for plant transformation; the first demonstration of gene-carrying porous nanoparticles that can penetrate cell wall-containing plant tissues.
- Discovered a process that makes it possible to achieve very low-sulfur diesel fuel.

Awards

- 16 R&D 100 Awards since 1984, the latest to Dr. M. Bryden in 2006 for texture based engineering tools.
- In 2008, Dr. K. Gschneidner Jr. received the Acta Materialia Gold Medal, considered by many to be the top award worldwide in the field of materials research.
- Dr. J. Corbett received the American Chemical Society's 2008 F. Albert Cotton Award in Synthetic Inorganic Chemistry.
- In 2007, Dr. I. Anderson received the Distinguished Scientist/Engineer Award by the Electronic, Magnetic & Photonic Materials Division of the Minerals, Metals, & Materials Society; only the second person selected for the award.
- Dr. C. Soukoulis received the Descartes Prize for Excellence in Scientific Collaborative Research in FY2006 for his contributions to the field of left-handed materials.

Argonne NATIONAL LABORATORY

Argonne National Laboratory (ANL) is a descendant of the Manhattan Project and was designated the nation's first national laboratory, in 1946. The University of Chicago has played a key management role at ANL throughout its history. Today, with a research portfolio of $551 million and approximately 1,400 scientists and engineers, ANL plays a key role in R&D innovation and complements industry and academia in maintaining the nation's economic growth and competitiveness.

Multi-Program Laboratory

Argonne conducts research for several Office of Science programs, including: Advanced Scientific Computing Research, Biological and Environmental Research, Basic Energy Sciences, High Energy Physics, Nuclear Physics, and Fusion Energy Sciences. DOE's Offices of Energy Efficiency and Renewable Energy, Nuclear Energy, Fossil Energy, Civilian Radioactive Waste Management, Environmental Management, and the National Nuclear Security Administration also conduct research at ANL.

Mission

Argonne's mission is to deliver breakthrough materials that make the nation energy-efficient, economically competitive, environmentally sound, and physically secure. ANL works to accelerate science and technology innovation by understanding and manipulating properties at the nuclear, atomic, molecular and nano-scales — controlling molecules, atoms, and electrons — to create new materials that further scientific discovery and enhance energy production, storage and use.

Core Competencies

- Synthesis, characterization, and modeling of chemicals and materials
- Hard X-ray and nanoscale research
- Leadership computing, numerical libraries and software tools
- Accelerator technologies
- Modeling, simulation and visualization
- Structural biology/genomics and bioinformatics
- Catalysis, energy storage, and energy conversion systems
- Nuclear structure, particle physics, and nuclear astrophysics
- Nuclear fuel cycle, separation science, and reactor design
- Transportation science and engineering
- Non-proliferation, threat reduction, infrastructure assurance and risk analysis

Lab-at-a-Glance

Location: Argonne, IL

Type: Multi-program laboratory

Contract Operator: UChicago Argonne, LLC

Responsible Site Office: Argonne Site Office

Website: www.anl.gov/

Physical Assets:

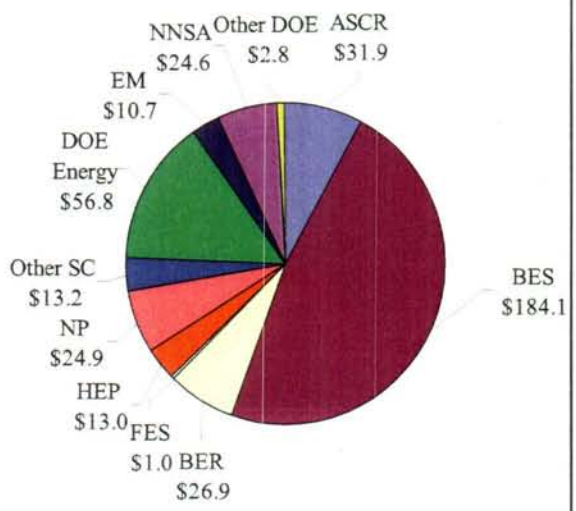
- 1,500 acres and 99 buildings
- 4.6M GSF in active operational buildings
- 83K GSF in non-operational buildings
- Replacement plant value: $1.6B
- Deferred maintenance: $84.4M
- Asset Condition Index
  - Mission Critical: 0.947 (Adequate)
  - Mission Dependent: 0.945 (Adequate)
- Asset Utilization Index: 0.966 (Good)

Human Capital:

- 3,000 Full-time equivalent employees
- 1,400 scientists and technical staff
- 4,250 facility users, visiting scientists, and students in FY 2007
- 9,000 badged users

FY 2007 Total DOE Funding: $390.2M

FY 2007 DOE Funding by Source *(BA in Millions):*



FY 2007 Non-DOE/Non-DHS Funding: $89.8M
FY 2007 Dept. of Homeland Security: $20.4M

Argonne NATIONAL LABORATORY

Major User Facilities

- **Advanced Photon Source (APS):** provides a high-brightness, high-energy electron beam and is a unique source of high-energy X-rays for scattering and imaging studies with an optimal time structure for time-resolved research.
- **Center for Nanoscale Materials (CNM):** combines advanced scanning probes, including the X-ray nanoprobe, organic and inorganic synthesis, and nanofabrication with theory and modeling.
- **Electron Microscopy Center (EMC):** a facility for exploring inorganic and organic materials on the atomic scale using advanced microstructural characterization methods.
- **Argonne Tandem-Linac Accelerator System (ATLAS):** to a superconducting linear accelerator for heavy ions, the energy domain best suited for studying the properties of the nucleus, the core of matter, and the fuel of the stars.
- **Argonne Leadership Computing Facility (ALCF):** offers access to a highly integrated, low-power-operation petascale computing platform with an unprecedented level of concurrency and a suite of tools that allow scientists to tune and understand their codes to further research in energy systems, life sciences, and basic sciences.
- **Atmospheric Radiation Measurement (ARM) Climate Research Facility (ACRF):** provides highly instrumented ground stations, a mobile facility, and an aerial vehicles program for studying cloud formation processes and their influence on radiative transfer and measures other parameters that determine radiative properties of the atmosphere.

Recent Scientific Achievements

- Discovery of a "superinsulator," a new fundamental state of matter that opens new directions of inquiry in condensed matter physics and breaks ground for a new generation of microelectronics.
- The APS has generated 50% more protein structures, and more high-impact structural biology publications, than any other x-ray source in the world.
- The newest version of the Greenhouse gases, Regulated Emissions and Energy use in Transportation (GREET) model will provide researchers with even more tools to evaluate and compare the environmental impacts of new transportation fuels and advanced vehicle technologies.
- Discovery of how the structure of plutonium nanocluster contaminants causes them to spread further in groundwater, increasing the risk of human and animal exposure.
- Development of a new computational technology that provides new insight into the relationship between viruses and their environments by identifying subtle differences in the metabolic processes of microbial communities.
- Development of a biochip that can save lives by rapidly screening patients for immune responses to proteins from cancer cells or disease-causing microorganisms.
- The most neutron-rich matter that can be made on Earth—the nucleus of the helium-8 atom—has been created, trapped and characterized by Argonne scientists.
- Significant contributions to the design and construction of the Hadronic Tile Calorimeter, which will measure the energy produced after subatomic particles called hadrons strike the sensor array.
- Catalytic alkane activation via synthesis, physical and chemical characterization and modeling of supported size-selected metal clusters.
- Development of composite cathode materials (now patented and licensed by Argonne for commercial production and sale worldwide) for lithium-ion batteries, which result in longer-lasting, safer batteries for hybrid-electric vehicles, cell phones, laptop computers and other applications.
- Made the first 100-ps x-ray "snapshots" that show turbulence in a fuel spray.
- Discovered, with x-rays under extreme conditions, a new family of hydride superconductors.

Awards

- Three Nobel Prizes
- Bardeen Prize
- Two Enrico Fermi Awards
- Kamerlingh Onnes Prize
- Nine E.O. Lawrence Awards
- 98 R&D 100 Awards
- Three members of the National Academy of Sciences

Brookhaven National Laboratory (BNL), operated by Brookhaven Science Associates for DOE, produces excellent science and advanced technology with the cooperation and involvement of the local, national, and scientific communities. Established in 1947, BNL is a world leader in accelerator-based science and technology. BNL's two large user facilities, the Relativistic Heavy Ion Collider and the National Synchrotron Light Source, can probe nearly the entire range of scales of interest to most areas of the physical and biological sciences, from human-sized to elementary particles. Located on Long Island in Upton, New York, BNL employs 2,700 scientists, engineers, technicians, and support staff and hosts approximately 4,300 guest researchers annually. BNL operates on an annual budget of approximately $500 million.

Multi-Program Laboratory

Brookhaven is a multi-program laboratory, with DOE's Office of Science providing about 75% of funding. The majority of Brookhaven's research programs fall within various program offices under the Office of Science, including: Basic Energy Sciences, Biological and Environmental Research, High Energy Physics, and Nuclear Physics.

Mission

Brookhaven supports DOE's strategic missions by advancing photon sciences and energy-related research and applying results to 21st Century problems of critical importance to the Nation and advancing fundamental research in nuclear and particle physics to gain a deeper understanding of matter, energy, space, and time.

Core Competencies

- Conceptualization, design, construction, and operation of advanced accelerator systems, detectors, magnets, and instrumentation
- Synchrotron radiation science and technology
- Imaging, including radiotracer chemistry, biological structure, and instrumentation
- Development and application of advanced software and computing facilities to high energy and nuclear physics experiment and theory
- Synthesis and characterization of complex and nano-structured materials

Lab-at-a-Glance

Location: Upton, NY

Type: Multi-program laboratory

Contract Operator: Brookhaven Science Associates

Responsible Field Office: Brookhaven Site Office

Website: http://www.bnl.gov/

SC Physical Assets:

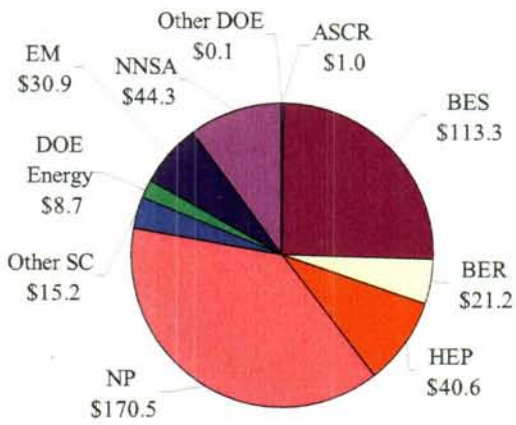
- 5,320 acres and 341 buildings
- 4.0M GSF in Active Operational Buildings
- 69K GSF in Non-Operational Buildings
- 2007 Replacement Plant Value: $1.754B
- Deferred Maintenance: $107M
- Asset Condition Index:
  - Mission Critical: 0.94 (Adequate)
  - Mission Dependent: 0.93 (Adequate)
- Asset Utilization Index: 0.98 (Good)

Human Capital:

- 2600 full time employees (9/30/07)
- 2700 full time employees (3/31/08)
- 4300 Facility users and visiting scientists

FY 2007 Total DOE Funding: $445.8M

FY 2007 DOE Funding by Source *(BA in Millions):*



FY 2007 Non-DOE/Non-DHS Funding: $43.7M
FY 2007 Dept. Of Homeland Security: $3.2M

BROOKHAVEN NATIONAL LABORATORY

Major User Facilities

- **Relativistic Heavy Ion Collider (RHIC):** a unique world-class accelerator facility for colliding intersecting symmetric or asymmetric beams of nuclei and polarized protons.
- **National Synchrotron Light Source (NSLS):** provides researchers with intense light spanning the electromagnetic spectrum from the infrared through the ultraviolet to the x-ray region. Plans for the National Synchrotron Light Source-II are underway; NSLS-II will be the highest brightness synchrotron source and it will enable qualitative advances in discovery potential in many fields. BNL anticipates that NSLS-II will be fully operational in 2015.
- **Center for Functional Nanomaterials (CFN):** provides state-of-the-art capabilities for the fabrication and study of nanoscale materials that address the Nation's challenges in energy security.
- **U.S. ATLAS Tier I Computing Facility and Analysis Support Center:** serves as the principal center to supply capability and capacity computing to the U.S. ATLAS physics program and provides expertise in all aspects of ATLAS software and physics analysis that will enable physics discoveries.
- **Accelerator Test Facility (ATF):** the Nation's proving ground for new concepts in accelerator physics.
- **NASA Space Radiation Laboratory (NSRL):** a facility for the study of possible risks to human beings exposed to radiation in space and for developing shielding materials for such risks.

Recent Scientific Achievements

- 2003 Nobel Prize in Chemistry awarded to biophysicist Roderick MacKinnon, M.D., for structural and mechanistic studies of ion channels carried out at the National Synchrotron Light Source.
- 2002 Nobel Prize in Physics given to chemist Raymond Davis Jr. for solar neutrino research.
- At the Relativistic Heavy Ion Collider, creation of a new state of strongly interacting matter with near-perfect liquid properties, giving insight into the earliest moments of the universe.
- Invention of new nanocatalysts for fuel cells that contain ten times less of costly platinum metal and have already me the DOE 2010 activity targets.
- Synthesis and characterization of DNA-directed three-dimensional ordered crystalline structures of nanoparticles.
- Brain imaging studies that have gained international recognition.

Awards

- Six Nobel Prizes: five in Physics and one in Chemistry
- The 1985 and 2002 National Medal of Science
- The 1991 and 2000 Wolf Prize
- The 1986, 1987, 1988, 1998, and 2003 Fermi Award
- Eleven Lawrence Awards
- Nine Presidential Early Career Awards for Scientists and Engineers
- Numerous R&D 100 Awards

Fermilab

Fermi National Accelerator Laboratory, also known as Fermilab, is the largest U.S. laboratory dedicated to research in particle physics. Fermilab was established in 1967 in Batavia, Illinois, about 45 miles west of Chicago, on 6,800 acres of land. The original Fermilab Main Ring became the world's highest energy accelerator when it first became operational, in 1971. Fermilab's Tevatron, commissioned in 1983, was the first large proton accelerator based on superconducting magnet technology. The laboratory staff includes 1,950 full-time employees and the budget for FY 2007 was $347.7 million. Approximately 2,300 scientists from 210 institutions in 35 states and 27 countries carry out research at the energy frontier, the highest-energy environment for discovery in the world today. Fermilab scientists also pursue research in particle astrophysics and cosmology by exploring the convergence of the inner space and outer structural spaces of elementary particles, as well as the evolution of the universe. Fermi Research Alliance manages and operates the laboratory for DOE's Office of Science.

Single-Program Laboratory

Fermilab is a single-program laboratory funded by the Office of Science's Office of High Energy Physics.

Mission

Fermilab's mission is to provide the facilities and resources necessary to understand the fundamental nature of matter and energy and to conduct research at the frontiers of high energy physics and related disciplines.

Core Competencies

- Construction and operation of accelerator facilities for particle physics
- Construction and operation of experimental facilities for particle physics and particle astrophysics
- Research, design, and development of accelerator technology
- High-performance scientific computing and networking
- International scientific collaboration
- Theoretical particle physics and astrophysics

Lab-at-a-Glance

Location: Batavia, IL

Type: Single-program laboratory

Contract Operator: Fermi Research Alliance, LLC

Responsible Site Office: Fermi Site Office

Website: http://www.fnal.gov

Physical Assets:

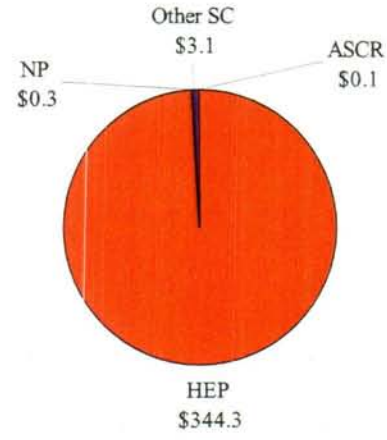
- 6,800 acres
- 346 buildings
- 2.3M GSF in Active Operational Buildings
- Replacement Plant Value: $608M
- Deferred Maintenance: $39.3M
- Asset Condition Index:
  - Mission Critical: 0.91 (Adequate)
  - Mission Dependent: 0.96 (Good)
- Asset Utilization Index: 1.0 (Excellent)

Human Capital:

- 1,950 Employees
- 2,300 Facility users and visiting scientists, including 615 students (undergraduate and graduate)

FY 2007 Total DOE Funding: $347.7M

FY 2007 DOE Funding by Source *(BA in millions):*



FY 2007 Non-DOE/Non-DHS Funding: $0.6M

Fermilab

Major User Facilities

- **The four-mile-circumference Tevatron proton-antiproton collider**, the world's most powerful particle accelerator.
- **The Booster accelerator**, providing beam for the MiniBooNE neutrino experiment.
- **The Main Injector accelerator**, providing beam for the NuMI (Neutrinos at the Main Injector) experiment.
- **The two 5,000-ton collider detectors, CDF and D Zero**, each serving an international collaboration of more than 500 university physicists.
- **Long-baseline MINOS experiment:** officially launched in 2005, is studying the question of neutrino mass and the neutrino mass hierarchy.
- **Short-baseline MiniBooNE experiment:** has refuted evidence for a fourth type of neutrino, confirming the Standard Model.
- **Compact Muon Solenoid (CMS) experiment at CERN:** for which Fermilab serves as host for the U.S. collaboration component (US CMS), and as home for the US CMS research program involving nearly 400 scientists.
- **Lattice Gauge Theory Computing Facility:** where approximately 60 user theorists work with the theory of quantum chromodynamics with teraflop computing power.
- **Particle Astrophysics Center:** encompassing the Sloan Digital Sky Survey, the Pierre Auger Cosmic Ray Observatory, and the Cryogenic Dark Matter Search, and proposed projects including the SuperNova Acceleration Probe of the Joint Dark Energy Mission, and the Dark Energy Survey, where Fermilab is building a camera for the Cerro Tololo Interamerican Observatory (CTIO) in Chile.

Recent Scientific Achievements

Discoveries at Fermilab during the 40 years of its history have helped to define the growing understanding of the fundamental nature of the universe and how it works. The discovery of the bottom quark in 1977 and the top quark in 1995, and the first observation of the tau neutrino in 2000, among other Fermilab achievements, have shaped the current picture of the basic structure of matter, known to scientists as the Standard Model of Fundamental Particles and Forces. Now the stage is set for new discoveries and new physics at the Tevatron in the months and years ahead.

Awards

- Presidential Medal of Technology, presented to four Fermilab scientists for development and construction of the Tevatron.

Jefferson Lab

Thomas Jefferson National Accelerator Facility

Thomas Jefferson National Accelerator Facility (TJNAF), or Jefferson Lab (JLab), in Newport News, Virginia, is a program-dedicated laboratory for Nuclear Physics within the Department of Energy's Office of Science. Currently operated by the Jefferson Science Associates, LLC, for the Office of Science, TJNAF began operations in 1995 with the completion of the Continuous Electron Beam Accelerator Facility (CEBAF), a unique international electron-beam user facility for the investigation of nuclear and nucleon structure based on the underlying quark structure. Its research and engineering staff are experts in superconducting radio-frequency technologies that are integral to providing expertise for cost effective accelerators of the future. JLab has an international user community of 1,175 researchers. Collectively, there have been over 20,000 citations from work completed at CEBAF. Research conducted at TJNAF contributes to thesis research material for about one-third of all U.S. Ph.D.s awarded annually in Nuclear Physics. The laboratory's science education program for K-12 students, undergraduates and teachers builds critical knowledge and skills in the physical sciences.

Single-Program Laboratory

Jefferson Lab is a program-dedicated laboratory funded by the Office of Nuclear Physics in DOE's Office of Science.

Mission

The primary mission of Jefferson Lab is to discover the fundamental quark-gluon structure of matter.

Core Competencies

- Nuclear Physics – experimental, theoretical, computational
- Accelerator Science and Technology – srf, high brightness, polarized electron beams, and cryogenics

Lab-at-a-Glance

Location: Newport News, VA

Type: Single-program laboratory

Contract Operator: Jefferson Science Associates, LLC (JSA)

Responsible Site Office: Thomas Jefferson Site Office

Website: http://www.jlab.org

Physical Assets:

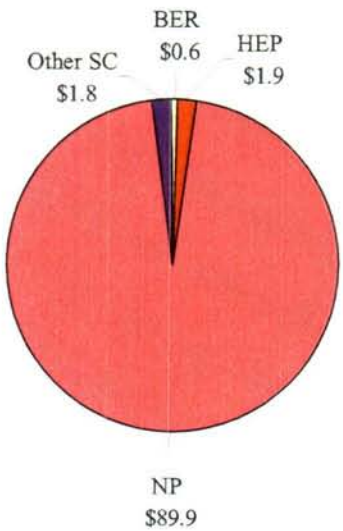
- 206 Acres (includes SURA land)
- 70 Buildings
- 695K SF in DOE Buildings
- Replacement Plant Value: $185M
- Deferred Maintenance: $9.5M
- Asset Condition Index:
  - Mission Critical: 0.96 (Good)
  - Mission Dependent: 0.78 (Fair)
- Asset Utilization Index: 1.0 (Excellent)

Human Capital:

- 650 Full-time equivalent employees
- 2,200 Facility users and visiting scientists

FY 2007 Total DOE funding: $94.1M

FY 2007 DOE Funding by Source *(BA in Millions):*



FY 2007 Non-DOE/Non-DHS Funding: $8.4M

Jefferson Lab
Thomas Jefferson National Accelerator Facility

Major User Facilities

- **Continuous Electron Beam Accelerator Facility (CEBAF):** a continuous-wave, upgradeable 6 billion electron volt (GeV) beam capable of simultaneously delivering highly polarized electron beams to three separate experimental halls, each equipped with complementary experimental apparatus. JLab is currently upgrading CEBAF's energy to 12 GeV; the number-one ranking recommendation of the 2007 NSAC Long Range Plan that is fully supported by the Office of Science. The Upgrade's higher energy plus construction of an additional experimental hall and experimental apparatus in the existing halls will enable new insights into the structure of the nucleon, the transition between the hadronic and quark/gluon descriptions of nuclei, and the nature of confinement.
- **Free-Electron Laser (FEL):** a superconducting radiofrequency-based laser that has delivered the world's record of 15 kilowatts (kW) of infrared light, provided proof-of-principle for energy-recovering linacs, and is now spawning a new generation of FELs built on its design.

Recent Scientific Achievements

- World leading capabilities for studies of parity violation have led to major advances in the understanding of the role of strange quarks in nuclei.
- The determination of the strange magnetic moment and charge radii provided confirmation of the lattice QCD calculations of these critical "disconnected contributions" – the first time such terms, analogous to the famous Lamb shift in atomic physics, have been determined.
- Measurements of high momentum nucleons knocked out of nuclei have provided new insight into the nature of short-range correlations, confirming the critical role played by the tensor force.
- The measurement of the electric form factor by a completely new technique, revealing novel behavior and changing the short distance charge distribution of the proton dramatically in comparison with earlier work from SLAC.
- High precision tests of parity violating electron scattering, aimed at determining the strange content as noted earlier, provided a major increase in the precision with which the Standard Model is tested. This data raised the lower limit o the scale of possible new physics beyond the Standard Model to almost 1 TeV.
- Theoretical speculations about the possible conformal nature of QCD at low energy.
- Studies of spin dependent deep-inelastic scattering doubled the data-base for spin structure functions, leading to a very important limit on the amount of the nucleon spin carried by polarized gluons (less than 0.3). This, together with pioneering measurements of generalized parton distributions of the neutron, contributed important information concerning the resolution of the famous proton spin problem.
- Studies of the transition form factors to the Roper resonance strongly suggest that it does not have a large gluonic component in its wave function, in contrast with widely held theoretical ideas.

Awards

- Two R&D 100 Awards
- 2007 White House "Closing the Circle Award"

Berkeley Lab

Lawrence Berkeley National Laboratory (LBNL) has been a driving force behind investigations in particle physics and the nature of matter and energy in the universe since its founding, in 1931. As the birthplace of accelerator-based physics and nuclear medicine, LBNL has evolved into a multidisciplinary laboratory that works: to understand and advance physical, chemical, biological, and earth systems for sustainable energy and environmental solutions; to conduct ultrafast science to engineer systems at quantum, atomic, and molecular scales, understanding and fabricating nanostructured materials and devices; and to advance physics and cosmology, conducting computational science of scale, and developing new scientific approaches to the science and engineering of complex biosystems. LBNL is operated by the University of California for DOE.

Multi-Program Laboratory

LBNL is a multi-program laboratory that receives most of its funding from Office of Science programs, including: Advanced Scientific Computing Research, Basic Energy Sciences, Biological and Environmental Research, High Energy Physics, Nuclear Physics, and Fusion Energy Sciences. LBNL is also funded by DOE's Offices of Energy Efficiency and Renewable Energy, Civilian Radioactive Management, Fossil Energy, and Nonproliferation and National Security.

Mission

LBNL's mission advances three goals. LBNL attempts to solve the most pressing and profound scientific problems facing humankind, such as using basic science for a secure energy future, understanding living systems to improve the environment, health, and energy supply, and understanding matter and energy in the universe. LBNL also builds and operates scientific user facilities and trains next generation scientists and engineers.

Core Competencies

- Sustainable energy science and technology, including supply, energy storage, and efficiency
- Soft x-ray and ultrafast science, photon and particle beams, including national user facilities
- Nanoscience, materials synthesis and characterization
- Multidisciplinary and integrated biology and environmental science, including climate change
- Computational science, applied mathematics, and electrical and mechanical engineering
- Advanced detector systems for astrophysics, high energy physics, and nuclear science

Lab-at-a-Glance

Location: Berkeley, CA

Type: Multi-program laboratory

Contract Operator: University of California

Responsible Field Office: Berkeley Site Office

Website: http://www.lbl.gov/

Physical Assets:

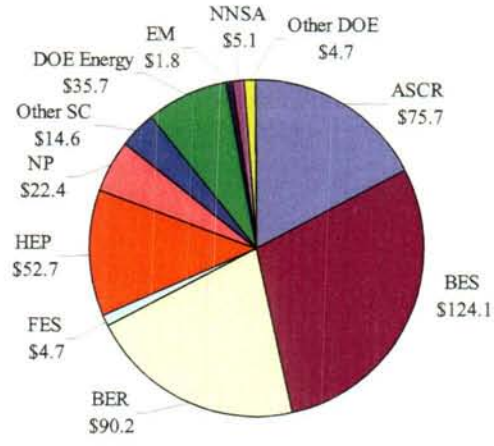
- 202 acres (leased) and 108 Buildings
- 1.6M GSF in Active Operational Buildings
- 125K GSF in Non-Operational Buildings
- Replacement Plant Value: $964.3M
- Deferred Maintenance: $53.3M
- Asset Condition Index
  - Mission Critical: 0.95 (Good)
  - Mission Dependent: 0.98 (Excellent)
- Asset Utilization Index: 0.97 (Good)

Human Capital:

- 2,708 Full-time equivalent employees
- 3,068 Total employees: 239 faculty, 295 postdocs, 321 graduate students, 174 undergraduates
- 6,935 Facility users and visiting guests

FY 2007 Total DOE Funding: $431.7M

FY 2007 DOE Funding by Source *(BA in Millions):*



FY 2007 Non-DOE/Non-DHS Funding: $117.3M
FY 2007 Dept. Homeland Security: $2.9M

Berkeley Lab

Major User Facilities

- **Advanced Light Source (ALS):** one of the world's brightest sources of ultraviolet and soft x-ray synchrotron radiation delivering advanced microscopies, spectroscopies, and structural analysis for scientific and technological research .
- **Energy Sciences Network (ESnet):** a high-speed computing network, data and connectivity backbone serving thousands of DOE scientists and collaborators worldwide.
- **Joint Genome Institute (JGI):** a center for genome sequencing and information sciences serving the scientific community and DOE missions in bioenergy, bioremediation, and carbon sequestration.
- **National Center for Electron Microscopy (NCEM):** houses TEAM, the world's highest resolution electron microscope, and other advanced microscopes and tools for electron micro-characterization of materials.
- **National Energy Research Scientific Computing Center (NERSC):** a leading provider of high-performance computing tools and expertise that enable computational science of scale and complex scientific applications.
- **Molecular Foundry:** a nanoscale science user facility for the characterization, design, and synthesis of "soft" (biological and polymeric) and "hard" (inorganic and microfabricated) building blocks and functional assemblies.

Recent Scientific Achievements

- Design and fabrication of the world's highest resolution electron microscope which images single atoms.
- Development of nanostructured solid polymer electrolytes to enable rechargeable lithium-metal batteries.
- Discovery of "dark energy," an antigravity force, through observation and computational data analysis.
- Demonstration of the link between breast cancer and the surrounding extracellular matrix.
- Sequenced more than 550 genomes and their computational genome analysis and annotation.
- Creation of the world's smallest electrical switch, smallest nano-radio, and the smallest motor.
- Construction of the world's highest field dipole magnet.
- Mathematical and computational models that provide ultra-high resolution analysis of turbulent flames.
- First optical acceleration of electron bunches to GeV energies with narrow beam spread.
- Observation of the early structure of the universe in the microwave radiation afterglow of the Big Bang.

Awards

- 11 Nobel Laureates worked or are working at the Laboratory
- 84 memberships in the National Academies of Science, Engineering, and Medicine (affiliated)
- 13 National Medals of Science
- 3 Fermi Awards
- 27 Lawrence Awards
- 44 Industrial Research 100 Awards

OAK RIDGE
National Laboratory

Oak Ridge National Laboratory (ORNL) is the Department of Energy's (DOE's) largest science and energy laboratory. Managed since April 2000 by UT-Battelle, a partnership of the University of Tennessee (UT) and Battelle Memorial Institute (BMI), Oak Ridge was established in 1943 as a part of the Manhattan Project. ORNL hosts 3,900 facility users and visiting scientists every year. The $1.4 billion Spallation Neutron Source (SNS), completed in 2006, and the upgraded High Flux Isotope Reactor (HFIR) will make ORNL the world's foremost center for neutron scattering. The Leadership Computing Facility (LCF) is DOE's most powerful computing complex for open scientific research. ORNL also manages the U.S. ITER project.

Multi-Program Laboratory

As a multi-program laboratory, ORNL's funding comes from many sources: the Office of Science and its Basic Energy Sciences, Advanced Scientific Computing, Biological and Environmental Research, Fusion, Nuclear Physics, and High Energy Physics programs; the DOE Offices of Energy Efficiency and Renewable Energy, Fossil Energy, Nuclear Energy, the National Nuclear Security Administration, Environmental Management; and various Work for Others sponsors.

Mission

ORNL's primary mission is to conduct research in neutron science, energy, high-performance computing, systems biology, materials science, and national security in order to develop innovative solutions to complex problems. ORNL is actively engaged in a variety of national and international partnerships with industry and educational institutions. As a DOE steward of critical national research infrastructure, ORNL provides access to this infrastructure by university, industry, and government researchers on a competitive basis.

Core Competencies

- Neutron sciences, including neutron scattering, and studies of the structure and dynamics of materials at nanometer scales and under extreme conditions
- Extreme scale computing and computational science
- Comprehensive design, synthesis, and characterization of advanced materials and interfacial chemical processes
- Biological and environmental sciences, including terrestrial ecosystems, climate sciences, microbial ecology, systems biology of plants, and bioconversion
- Engineering sciences, including the nuclear fuel cycle, plasma science, electric power systems, combustion and thermal engineering, and radiochemical process technology
- Counterterrorism and nonproliferation detection systems

Lab-at-a-Glance

Location: Oak Ridge, TN

Type: Multi-program laboratory

Contract Operator: UT-Battelle

Responsible Field Office: Oak Ridge Office

Web site: http://www.ornl.gov/

Physical Assets:

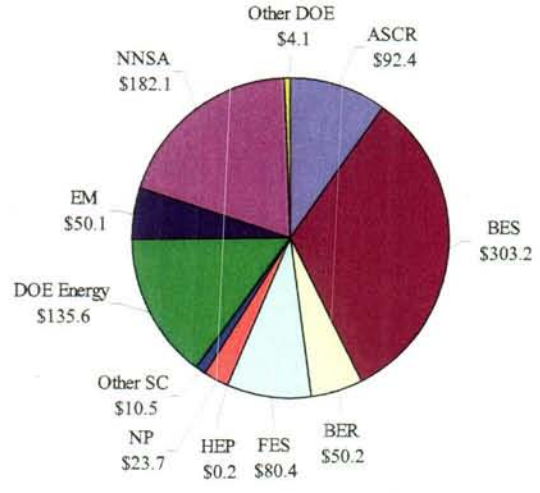
- 4,470 acres and 221 buildings
- 4.0M gsf in Active Operational Buildings
- 261K gsf in Non-Operational Buildings
- Replacement Plant Value: $7B
- Deferred Maintenance: $139M
- Asset Condition Index:
  - Mission Critical: 0.89 (Fair)
  - Mission Dependent: 0.84 (Fair)
- Asset Utilization Index: 0.96 (Good)

Human Capital:

- 4,250 Employees
- 3,900 Guests and visitors

FY 2007 Total DOE Funding: $932.5M

FY 2007 DOE Funding by Source *(BA in Millions):*



FY 2007 Non-DOE/Non-DHS Funding: $229.7M
FY 2007 Dept. of Homeland Security: $36.4M

OAK RIDGE National Laboratory

Major User Facilities

- **Spallation Neutron Source (SNS):** world's most powerful pulsed neutron source.
- **High Flux Isotope Reactor (HFIR):** world's highest-flux reactor based neutron source.
- **Leadership Class Computing Facility (LCF):** world's most powerful scientific computing complex.
- **Center for Nanophase Materials Sciences (CNMS):** DOE's first nanoscience center, the CNMS hosted 309 unique users in FY 2007.
- **BioEnergy Science Center:** pioneer science leading to economical and sustainable biomass production and its conversion to biofuel and other products.
- **High Temperature Materials Laboratory (HTML):** used for conducting advanced materials research.
- **Holifield Radioactive Ion Beam Facility (HRIBF):** used for conducting nuclear physics and astrophysics research.
- **National Transportation Research Center (NTRC):** used for conducting transportation technologies research.

Recent Scientific Achievements

- Pioneered design and synthesis of new gyroid-phase (interconnecting) mesoporous carbons from the self-assembly of polymeric precursors, with potential in separations, fuel cells and battery applications.
- Synthesis, properties, and neutron scattering characterization of a new high-T_c superconductor, $LaFeAsO_{1-x}F_x$.
- *Proceedings of the National Academy of Sciences (PNAS)*: CO_2 emissions have sharply accelerated since 2000.
- Achievement of 42% diesel engine efficiency ("brake efficiency") in 2007, meeting a DOE Joule milestone.
- Simulation of high-power electromagnetic wave heating using the AORSA radio-frequency code on Jaguar at a record 87.5 teraflops, enabling ITER performance improvements.
- Study of diffusion dynamics of hydration water on the surface of rutile to low temperatures (a "first of" experiment) enabled by SNS.

Awards

- Two Nobel Prizes
- Seven Fermi Awards
- Thirteen E.O. Larwence Awards
- 134 R&D 100 Awards, including 6 in 2007
- Inaugural James R. Schlesinger Award

Pacific Northwest
NATIONAL LABORATORY

Pacific Northwest National Laboratory (PNNL) was created in 1965. In its early days, PNNL brought nuclear science and engineering expertise to the surrounding Department of Energy (DOE) Hanford Site and tackled projects focused on designing nuclear reactors, fabricating nuclear reactor fuel, and protecting the environment. Since then, PNNL has evolved into a multidisciplinary Office of Science national laboratory that advances scientific frontiers and develops innovative technologies for DOE and the nation. PNNL is managed by Battelle for DOE, and the laboratory operated on an $843 million budget in FY 2007.

Multi-program Laboratory

In addition to the Office of Science, PNNL's principal customers include the DOE Offices of Energy Efficiency and Renewable Energy, Fossil Energy, Nuclear Energy and Environmental Management and the National Nuclear Security Administration. Other federal government agencies, such as the Departments of Homeland Security, Defense, and Health and Human Services; the Nuclear Regulatory Commission, the intelligence community, and private industry also sponsor work at PNNL.

Mission

The Laboratory's mission focus is to deliver advances in the biological, chemical, computational, environmental and materials sciences and to rapidly translate scientific advances into solutions for challenges in energy production, storage and use; threat detection and prevention; and environmental management and sustainability.

Core Competencies

- Computational science and analytics
- Environmental science and technology
- Microbial and cellular biology
- Molecular science and engineering
- Radiological science and technology
- Signature and measurement science and technology

Lab-at-a-Glance

Location: Richland, WA

Type: Multi-program laboratory

Contract Operator: Battelle Memorial Institute

Responsible Field Office: Pacific Northwest Site Office

Web site: http://www.pnl.gov/

Physical Assets:

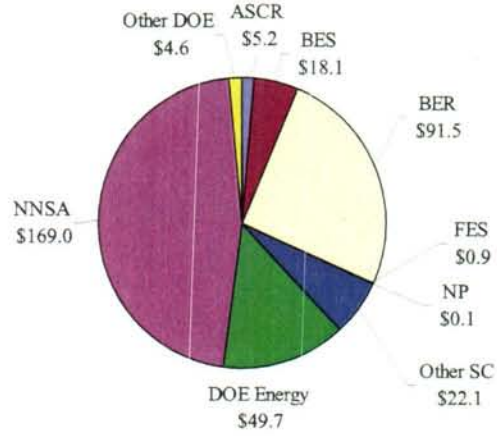
- 350 acres DOE, 250 acres BMI
- 2,015,000 gsf Total—762,000 DOE (224,000 SC, 538,000 EM); 407,000 BMI; 846,000 Leased and Other
- Replacement Value: $80M (SC only)
- Deferred Maintenance: $41K
- Asset Condition Index: 100%
  - Mission Critical: 1.0 (Excellent)
  - Mission Dependent: N/A
- Asset Utilization Index: 1.0 (Excellent)

Human Capital:

- 3,816 Full-time equivalent employees
- 3,302 Facility users, visiting scientists, and students

FY 2007 Total DOE Funding: $361.2M

FY 2007 DOE Funding by Source *(BA in Millions):*



FY 2007 Non-DOE/Non-DHS Funding: $114.4M
FY 2007 Dept. Homeland Security: $123.1M
FY 2007 OHC/Other DOE Sites: $98.4M
FY 2007 1831/IP/Other: $80.5M

Pacific Northwest

Major User Facilities

- **William R. Wiley Environmental Molecular Sciences Laboratory (EMSL):** provides integrated experimental and computational resources for discovery and technological innovation in the environmental molecular sciences to support the needs of DOE and the nation.
- **Atmospheric Radiation Measurement Climate Research Facility:** PNNL provides technical direction for heavily instrumented field sites around the world for studying cloud formation processes and their influence on radiative transfer and for measuring other parameters that determine the radiative properties of the atmosphere.

Recent Scientific Achievements

- Demonstrated that Shewanella bacteria can efficiently use either organic matter, such as reduced carbon, or hydrogen as an electron donor for pertechnetate reduction and other reductive processes - an important discovery with applications for in situ remediation and terrestrial carbon sequestration.
- Developed and demonstrated a physically based treatment of indirect effect of aerosols on clouds to resolve a major uncertainty in climate model predictions of climate change. This treatment has been implemented in the Community Climate System Model of NCAR and other major climate models of the international climate change community.
- Discovered that pentavalent uranium is stable on mineral surfaces in aqueous solutions.
- Discovered and characterized the first examples of fluorescent technetium complexes in support of the development of pertechnetate sensors applicable to Hanford vadose zone and other DOE sites.
- Developed the Global Arrays toolkit to provide an efficient, portable, shared-memory interface for distributed memory, high performance computers.
- Discovered, using advanced NMR techniques, that materials intended to entrap nuclear waste for hundreds of thousands of years may be susceptible to structural breakdown within 1,400 years.
- Developed a breakthrough advancement in active, confocal 350GHz electromagnetic imaging technology that enables stand-off detection of explosives up to ten meters.
- Obtained data and provided technical analyses to update codes and standards for building envelope, mechanical systems, and lighting. This work is estimated to have saved consumers $7 billion dollars since 1992 and will save the equivalent of 2.7 quadrillion Btus by the year 2030 if the improved codes are fully implemented by states.

Awards

- 2008 Christopher Columbus Homeland Security Award
- 2008 National Intelligence Medal of Achievement
- 2007 E.O. Lawrence award in Environmental Science
- 2007 Glen T Seaborg award in actinide chemistry
- Major contributor to the 2007 IPCC 4th Assessment Report
- 2007 Humboldt Award in Nanoscience
- 2007 ACS Field and Franklin Award in Mass Spectrometry
- 2006 and 2007 Presidential Early Career (PECASE) Awards
- 2006 StorCloud award
- 2006 Schoenbein Medal for Fuel Cells
- 13 Federal Laboratory Consortium awards in the last 5 years; 67 total
- 16 R&D 100 awards in the last 5 years; 74 total.
- 51 staff elected professional society fellows in last 5 years

Princeton Plasma Physics Laboratory (PPPL) is a world leader in the development of fusion as an inexhaustible, safe, and environmentally attractive means of generating electricity and hydrogen for the long-term. Magnetic fusion research at Princeton began in 1951 under the code name Project Matterhorn. Today, PPPL is a leader in the integrated design, fabrication, and operation of experimental facilities for fusion research and for basic and applied plasma research. The laboratory is operated by Princeton University on its James Forrestal Campus in Plainsboro, New Jersey, and has an annual budget of about $77 million.

Single-Program Laboratory

PPPL is a single-program laboratory supported by DOE's Office of Science's Fusion Energy Sciences program.

Mission

PPPL is a collaborative national center for plasma and fusion science. Its primary mission is to develop the scientific understanding and the key innovations that will lead to an attractive fusion energy source. Associated missions include conducting world-class research along the broad frontier of plasma science and providing the highest quality of scientific education.

Core Competencies

- Experimental analysis of stability and confinement of fusion plasmas
- Plasma theory and computational physics for fusion and other applications
- Physics and engineering design and operation of experimental plasma fusion facilities, using tritium, which produced world-record levels of fusion power
- Computer engineering, including data acquisition, instrumentation, and control systems
- Physics and technology of plasma applications to advance industrial technologies
- Environmental, safety, and health aspects of the operation and removal of experimental fusion devices

Lab-at-a-Glance

Location: Princeton, NJ

Type: Single-program laboratory

Contract Operator: Princeton University

Responsible Field Office: Princeton Site Office

Website: http://www.pppl.gov/

Physical Assets:

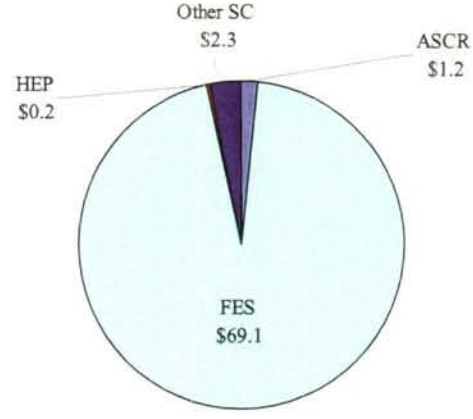
- 88.5 acres; 34 buildings
- 725K GSF in Active Operational Buildings
- 1K in Non-Operational Buildings
- Replacement Plant Value: $310M
- Deferred Maintenance: $9.5M
- Asset Condition Index:
  - Mission Critical: 0.97 (Good)
  - Mission Dependent: 0.93 (Adequate)
- Asset Utilization Index: 0.998 (Excellent)

Human Capital:

- 475 Full-time equivalent employees
- ~250 Facility users and visiting scientists

FY 2007 Total DOE Funding: $72.8M

FY 2007 DOE Funding by Source *(BA in Millions):*



FY 2007 Non-DOE/Non-DHS Funding: $1.2M

PPPL
PRINCETON PLASMA
PHYSICS LABORATORY

Major User Facilities

- **ITER:** PPPL is a partner with the Oak Ridge National Laboratory, the designated U.S. Project Office for the ITER international fusion experiment.
- **National Spherical Torus Experiment (NSTX):** studying the spherical torus plasma confinement configuration.
- **National Compact Stellarator Experiment (NCSX):** a device to study a compact stellarator confinement configuration. Construction is now underway, with operation scheduled for 2013.

Recent Scientific Achievements

- NSTX achieved its plasma current design specification (1 MA) nine months ahead of schedule.
- NSTX achieved record beta values approaching 40%. Beta relates to the economics of fusion power production.
- NSTX sustained high normalized beta and energy confinement with up to 70% of plasma current provided without transformer action.
- NSTX demonstrated suppression of anomalous ion energy and particle transport over majority of plasma.
- NSTX demonstrated importance of multi-mode effects in fast-ion transport caused by Alfvén instabilities.
- NSTX demonstrated factor of 3 reduction in peak exhausted heat flux by enhancing divertor radiation.
- NSTX achieved high electron temperature > 4keV using high-frequency fast Alfvén wave heating.
- NSTX achieved record plasma initiation currents up to 160kA using magnetic helicity injection.
- NCSX completed construction of the vacuum vessel and coil winding forms.
- NCSX fabricated 16 of 18 coils.
- NCSX completed first coil to coil mating within required tolerances.
- Magnetic Reconnection Experiment (MRX) provided a comprehensive picture of driven magnetic reconnection, significantly impacting theory for both laboratory and space plasmas.
- Current Drive Experiment-Upgrade (CDX-U) conducted the world's first demonstration of tokamak plasma performance improvement with large area liquid lithium plasma-facing components.

Awards

- One Nobel Prize
- Three E.O. Lawrence Awards
- Seven James Clerk Maxwell Prizes
- Two R&D 100 Awards

SLAC National Accelerator Laboratory (SLAC) is operated by Stanford University for the Department of Energy's Office of Science. SLAC was founded in 1962 to perform accelerator-based particle physics, but its mission has since broadened to include photon science and non-accelerator-based particle physics. SLAC has an operating budget of about $215 million. It employs approximately 1,500 full time equivalents of staff and accommodates approximately 3,000 students and visiting scientists from the U.S. and around the world each year.

Single-Program Laboratory

SLAC is a DOE Office of Science laboratory. Some programs are joint initiatives with other agencies, such as the Stanford Synchrotron Radiation Laboratory, with the National Institutes of Health, and the Gamma Ray Large Areas Space Telescope, with the National Aeronautics and Space Administration.

Mission

SLAC's programs explore the ultimate structure and dynamics of matter and the properties of energy, space and time—at the smallest and largest scales, in the fastest processes, and at the highest energies. Through investigations into the structure of matter and how it behaves on multiple time, length, and energy scales, SLAC addresses fundamental questions that span a broad range of science challenges including: understanding the basic science of matter, investigating materials related to energy and the environment, probing the organizing principles of bio-materials and processes, and elucidating the fundamental forces and constituents of the universe.

Core Competencies

- Electron-based accelerator research and technology
- Advanced instrumentation, diagnostics, and systems integration
- Innovative techniques for data analysis, modeling, simulation, and theory in Photon Science, Particle Physics and Particle Astrophysics
- Management of ultra-large data sets for users and collaborations distributed worldwide

Lab-at-a-Glance

Location: Menlo Park, CA

Type: Multi-program laboratory

Contract Operator: Stanford University

Responsible Field Office: Stanford Site Office

Website: www.slac.stanford.edu

Physical Assets:

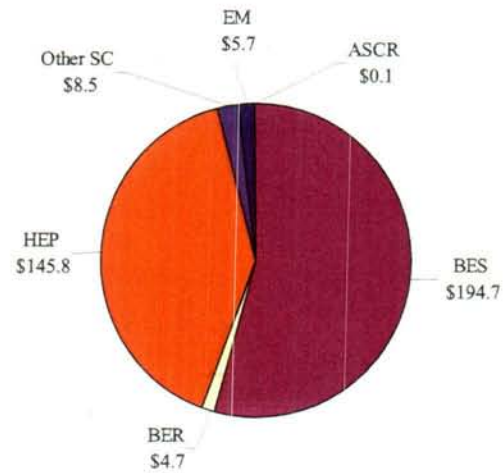
- 426 Acres
- 145 Buildings
- 1.8M GSF in Active Operational Buildings
- Replacement Plant Value: $987M
- Deferred Maintenance: $36.3M
- Asset Condition Index:
  - Mission Critical: 0.94 (Adequate)
  - Mission Dependent: 0.94 (Adequate)
- Asset Utilization Index: 99.9% (Excellent)

Human Capital

- 1,496 Full-time equivalent employees as of 4/15/08
- 3036 Users, visiting scientists and graduate students

FY 2007 Total DOE Funding: $359.6M

FY 2007 DOE Funding by Source *(BA in Millions):*



FY 2007 Non-DOE/Non-DHS Funding: $12.6M

SLAC
NATIONAL ACCELERATOR LABORATORY

Major User Facilities

- **Linac Coherent Light Source (LCLS):** currently under construction, LCLS, the world's first X-ray free-electron laser, positions SLAC to become the world leader in the exciting new field of ultrafast X-ray science.
- **Stanford Synchrotron Radiation Laboratory (SSRL):** a forefront synchrotron light source program that provides a resource to the user community for probing the electronic and atomic structure of matter.
- **B-factory**: an electron-positron collider. It completed operations in FY08, but an intensive data analysis program will continue for several years.
- **Gamma Ray Large Area Space Telescope (GLAST):** SLAC is home to the Instrument Operations Center for the Large Area Telescope instrument on GLAST, which was launched in FY 2008.

Recent Scientific Achievements

- Construction of the world's first X-ray free electron laser, producing 100 femtosecond pulses of photons in the energy range 800-8,000 eV. First experiments will commence in 2009.
- High reliability, stable X-ray beams from intermediate energy 3rd generation synchrotron light source.
- World's highest energy, low emittance electron beams from the SLAC Linac.
- Successful completion of the running of the B-factory; more than 300 peer reviewed research papers have come from BaBar to date.
- Successful completion of the Large Area Telescope instrument for GLAST, which will map the gamma ray sky starting after launch in 2008.

Awards

- Six scientists have been awarded the Nobel Prize for work carried out at SLAC.
- Ten SLAC Scientists have been elected members of the National Academy
- Six SLAC Scientists have been awarded the DOE E. O. Lawrence Award
- Two SLAC Scientists have been awarded the DOE Fermi Award

Office of Science

Hydrogen Technology Program

Organization Information

Organization Name:

Hydrogen Technology Program (Hydrogen Program)

Address:

1000 Independence Ave., S.W.
Room 5G-064
Washington, DC 20585

Organization Phone Number:

202-586-2480

Organization Website:

http://www1.eere.energy.gov/hydrogenandfuelcells/

POC E-mail Address:

JoAnn Milliken <JoAnn.Milliken@ee.doe.gov>

Supporting the DOE Mission

Strategic Theme 1 – Energy Security
- Strategic Goal 1.1 – Energy Diversity
- Strategic Goal 1.2 – Environmental Impacts of Energy
- Strategic Goal 1.4 – Energy Productivity
- Strategic Goal 3.3 – Research Integration

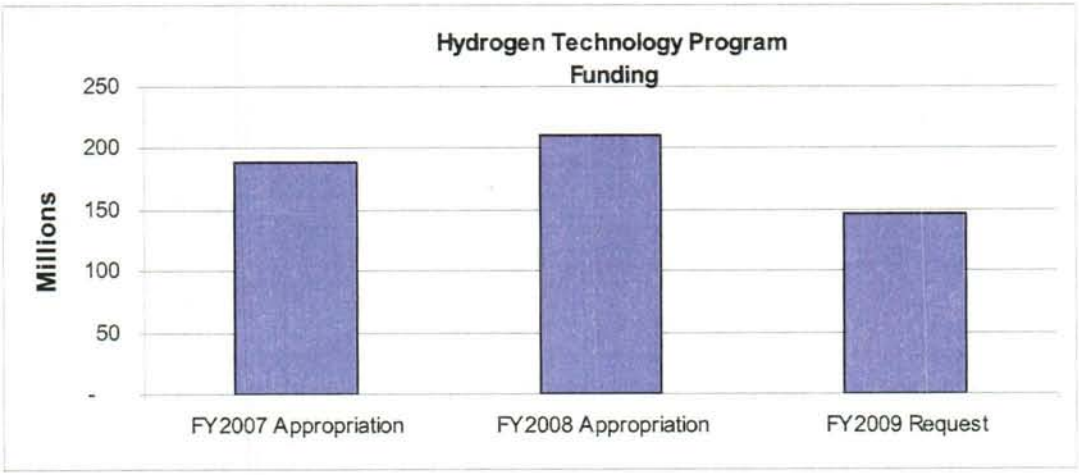
Mission Statement

Research and develop hydrogen and fuel cell technologies, working in coordination with other EERE programs (including Vehicle Technologies, and Building Technologies R&D) and the DOE Offices of Fossil Energy, Nuclear Energy, and Science.

To reduce oil use and carbon emissions in the transportation sector, and enable clean reliable energy for stationary and portable power generation. The program aims to accomplish this mission by researching, developing, and validating hydrogen and fuel cell technologies and by overcoming the non-technical barriers to their commercialization through planning and interaction with multiple levels of government and domestic and international infrastructure partners.

Status

Budget:



FY2009 Congressional Request: $146,213,000 nominal dollars (In FY 2009 Request, Safety Codes and Standards; Education; and Technology Validation are proposed to be transferred to the Vehicle Technology Program).

People:

Estimated number of Federal FTEs (HQ plus Golden Field Office): 32
Estimated number of HQ on-site contractor FTEs: 16
Estimated number of HQ FTEs: 25
Estimated number of field site FTEs (Golden Field Office): 7
Estimated number of reimbursable FTE: 0

Facilities:

The Hydrogen Technology Program is funding R&D at nine National Laboratories including three Centers of Excellence led by National Laboratories and involving multiple industry, university and national laboratory partners.

Performance:

PART rating: Adequate
FY07 PART measure status: 5 on track (but no FY 2007 target), 3 unmet, 0 unknown
FY07 4th quarter Joule status: 7 Green, 0 Yellow, 0 Red

History

Concern over growing dependence on imported petroleum, coupled with concerns about deteriorating air quality, prompted initial DOE activity supporting hydrogen technology. In the late 1980s, DOE initiated the Fuel Cells for Transportation Program to develop polymer electrolyte membrane fuel cells (PEM FCs) for automotive use. The DOE Hydrogen

Technology Program utilizes the results of these past efforts and incorporates the direction and guidance of recent energy legislation and Administration energy policies.

President George W. Bush's Hydrogen Fuel Initiative (HFI) provided an increase in resources (cumulative total hydrogen R&D funding of more than $1.2 billion over five years) to accelerate R&D in hydrogen and fuel cells. HFI formed the basis for current program plans. In the FY 2009 budget request to Congress, funding for the Hydrogen Production & Delivery and Manufacturing R&D activities was deferred until future years, in order to provide significant budget increases for Hydrogen Storage R&D and Fuel Cell Stack Component R&D—critical path areas facing the greatest technical challenges. Also in the FY 2009 request, the Technology Validation, Education, and Safety, Codes & Standards activities were proposed to be shifted to the Vehicle Technologies Program.

Critical Operating Procedures

The Hydrogen Technology Program Manager is supported by a Chief Technology Analyst, a Chief Engineer, and three team leaders. In addition, three hydrogen activities are moving to Vehicle Technologies in FY 2009: Technology Validation; Safety and Codes & Standards; and Education.

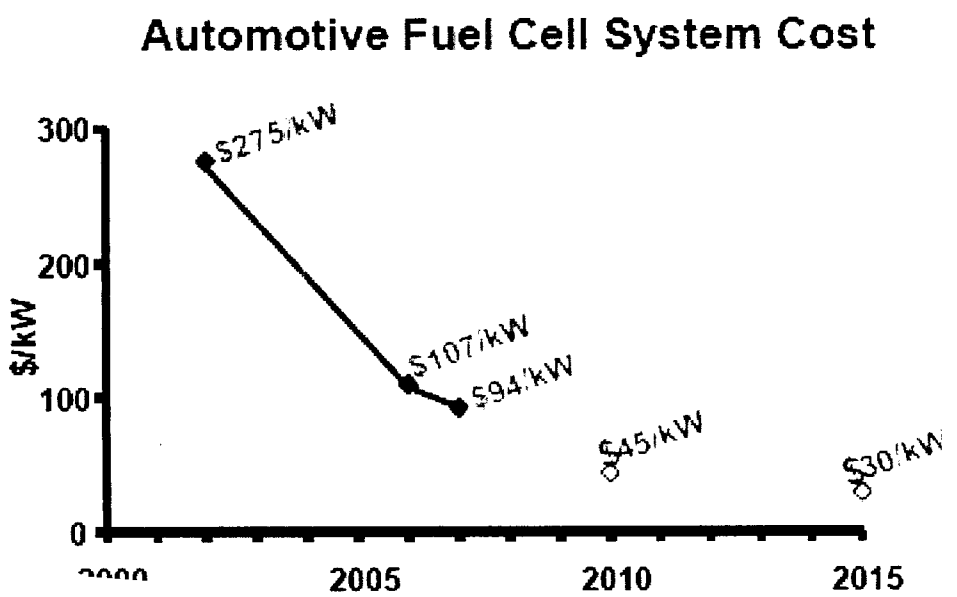
The Hydrogen Program funds R&D by industry, academia, and national laboratories primarily via competitive solicitations. The Hydrogen Program ensures project quality and technical progress by using merit reviews, peer evaluation, working groups and technical teams all of which include academia and industry experts.

Recent Organizational Accomplishments and Strengths

Organizational Accomplishments

The Hydrogen Technology Program has:

- Reduced the projected cost of hydrogen production from distributed reforming of natural gas at refueling sites from $5.00 per gallon gasoline equivalent (gge) in 2003 to $3.00/gge.
- Developed fiber-reinforced polymer (FRP) pipes that can be used for delivery of gaseous hydrogen and show no long-term aging effects from high-pressure hydrogen.
- Reduced the cost of automotive fuel cell systems, based on projected costs at high-volume manufacturing, from $275/kW in 2002 to $94/kW in 2007.



- Identified promising new materials which have provided more than 50 percent improvement in storage capacity since 2004.
- Developed the "Introduction to Hydrogen Safety for First Responders" education program, which has had 6,000+ registered users since it was launched in January 2007.
- Initiated the International Partnership for the Hydrogen Economy (IPHE), with members from 16 Nations and the European Commission, to foster worldwide collaboration on hydrogen technology RD&D.
- Established the Hydrogen and Fuel Cells Interagency Task Force to coordinate and advance the federal government's leadership role in the development and use of these technologies. The task force is made up of senior-level agency representatives (at the level of Assistant Secretary or the functional equivalent) from fourteen agencies.

Key Technology Validation Achievements

- 122 fuel cell vehicles and 16 hydrogen fueling stations in operation
- Generation 2 vehicles in operation now
- Total of 130 vehicles to be in the project
- Fuel cell durability
  - 1,200 hours actual (36K miles)
  - 1,900 hours projected (57K miles)
- Over 1.5 million miles traveled
- Over 52,000 total vehicle hours driven (200,000 trips)
- Fuel cell efficiency 53-58%
- Over 44,000 kg of hydrogen produced or dispensed
- 2 hydrogen stations filling 10,000 psi vehicle fuel tanks

Organizational Strengths

The Hydrogen Technology Program has developed the following strengths:

- World leadership in hydrogen production, delivery, storage and fuel cells technologies.
- Close relationship with auto manufacturers and energy companies through the FreedomCAR and Fuel Partnership.
- Strong coordination between the DOE Offices of Energy Efficiency (EE), Fossil Energy (FE), Nuclear Energy (NE), and Office of Science (SC), and the Department of

Transportation (DOT) through an integrated hydrogen technology plan and a number of coordinating mechanisms.

- Rigorous merit review board used for selecting and managing applied R&D projects to meet technical milestones.
- Systems analysis tools which enable comparison of various hydrogen production technologies on a hydrogen cost basis and scenario analysis to determine the impact that fuel cells will have on petroleum use and greenhouse gas emission.
- Safety and educational programs which aid in the introduction of new technologies to the public.
- Market transformation team that is introducing fuel cell and hydrogen production technologies into new markets with immediate improvement to energy security and the environment.
- Interagency Hydrogen and Fuel Cell Technology Task Force which coordinates efforts from 14 federal agencies.
- International leadership in hydrogen and fuel cell development via the International Partnership for the Hydrogen Economy (IPHE) and the International Energy Agency.

Leadership Challenges

The GAO audited the Hydrogen Program in FY 2007 and found that significant progress has been made. In addition, it recommended that the Hydrogen Program update its 2015 expectations and targets. To this end, the Hydrogen Program will update the Department's *Hydrogen Posture Plan.*

Key Strategies and Timing

The Hydrogen Technology Program supports RD&D of hydrogen fuel cell technologies in parallel with technologies for hydrogen production and delivery infrastructure to enable commercialization decisions in the 2015 period. The program addresses key technical challenges and institutional barriers to widespread use of hydrogen as an energy carrier by conducting applied research, technology development and learning demonstrations, underlying safety research, systems analysis, and public outreach and education activities. These activities are conducted by national labs, academia, and cost-shared, public-private partnerships. The targets are:

- Hydrogen Production: <$3.00/gge untaxed at the dispenser by 2020 for renewables.
- Hydrogen Delivery: <$1.00/gge hydrogen delivery from central production to point of use by 2020.
- Storage: Achieve 3 kWh/kg, 2.7 kWh/L and $2/kWh by 2015.
- Fuel Cells: <$30/kW for automotive system by 2015.
- Validation: Validate that hydrogen vehicles have >300 mile range and >5,000 hr fuel cell durability by 2015.

Critical Events and Action Items

3-month events

January 2009

- Announce award from the FY 2008 $130M fuel cell solicitation.

February 2009

- Hydrogen Technology Advisory Committee meeting as required by the Energy Policy Act of 2005 (EPACT 2005) to advise the Secretary of Energy on future hydrogen and fuel cell activities within the Department.

- Fuel cell workshop to gather information for a new fuel cell system solicitation. As Membrane Electrode Assembly (MEA) costs decrease, the remaining parts of the fuel cell system become a larger percentage of the total system cost.

March 2009

- National Hydrogen Association Meeting to be held in Columbia, S.C.

12-month events

May 2009

Annual Merit Review

Fall 2009

- Host International Partnership for the Hydrogen Economy (IPHE) meeting with representatives from 16 different countries.

- Working with the Vehicle Technologies Program we will validate polymer electrolyte membrane (PEM) fuel cell vehicles at multiple sites, achieving 2,000 hours durability, a 250 mile range, and $3.00/gge of hydrogen.

- Interagency Hydrogen and Fuel Cell Technology Task Force meeting to coordinate the efforts from 14 federal departments.

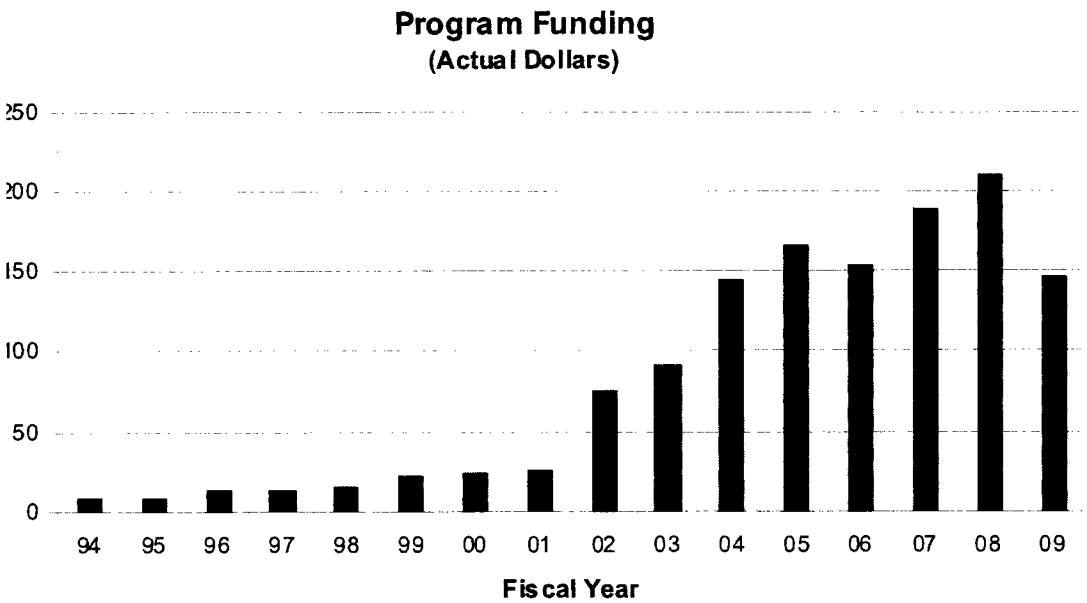
Hot Issues

Hydrogen infrastructure development remains a critical issue for early introduction of hydrogen vehicles. Continued engagement of auto and energy industry and support of demonstrations are essential to facilitate widespread commercialization of hydrogen technologies.

Renewable hydrogen energy storage can alleviate overloaded transmission lines and enable intermittent renewables (e.g. solar, wind). Without an energy storage strategy that alleviates grid congestion, further expansion of renewable options will be jeopardized.

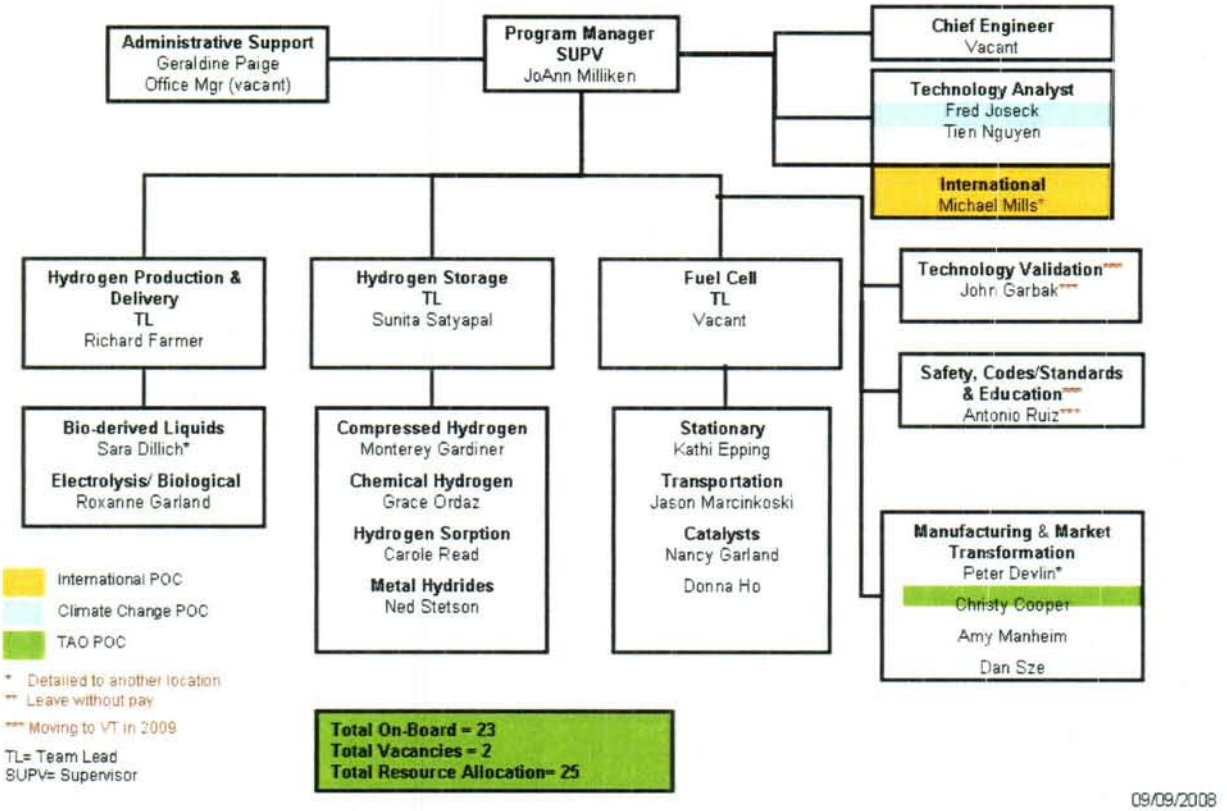
Funding Profile

Dollars in thousands		
Energy Efficiency And Renewable Energy	FY2008 Current Appropriation	FY2009 Congressional Request
Hydrogen Technology	211,062	146,213



Current Organizational Chart

Hydrogen Technology Program



Vehicle Technologies Program

Organization Information

Organization Name:

Vehicle Technologies Program

Address:

1000 Independence Ave, S.W.
Room 5G-030
Washington, DC 20585

Organization Phone Number:

202-586-8055

Organization Website:

http://www1.eere.energy.gov/vehiclesandfuels/

POC E-mail Address:

Patrick Davis <Patrick.Davis@ee.doe.gov>

Supporting the DOE Mission

Strategic Theme 1 – Energy Security
- Strategic Goal 1.1 – Energy Diversity
- Strategic Goal 1.2 – Environmental Impacts of Energy
- Strategic Goal 3.3 – Research Integration

Mission Statement

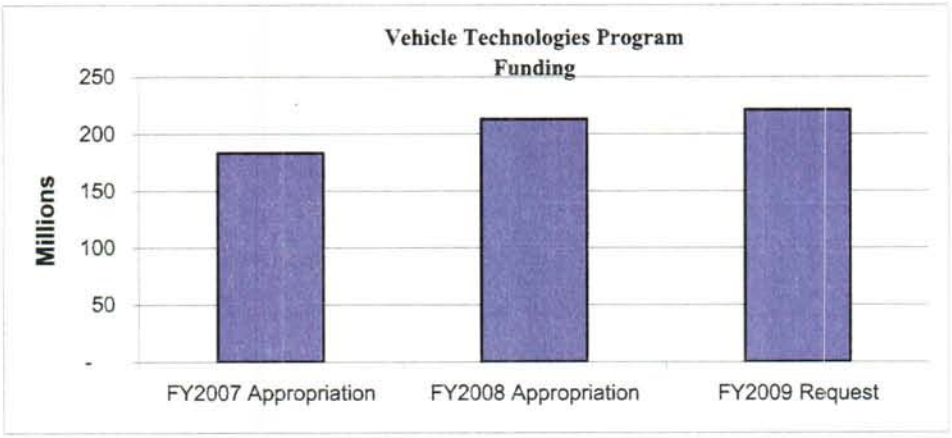
Develop more energy-efficient and environmentally friendly highway transportation technologies (for both personal and commercial vehicles) that meet or exceed performance expectations and environmental requirements and that will enable America to use significantly less petroleum and reduce greenhouse gas emissions. Accomplishing the mission will benefit both the fuel demand and replacement sides of the Department's energy security equation, enabling more productive use of the energy consumed.

Target Market

Vehicle Technologies Program (VTP) research and development (R&D) addresses needs of purchasers and manufacturers of both personal transportation (cars and light trucks), and commercial vehicles (medium and heavy-duty trucks and buses). R&D is focused on energy storage, lightweight materials, aerodynamics, power train efficiency, and alternative fuel capability will overcome cost and performance barriers to support rapid market penetration.

Status

Budget:



FY2009 Congressional Request: $221,086,000 Nominal Dollars

People:

Estimated number of Federal FTEs (HQ plus Golden Field Office): 30
Estimated number of HQ on-site contractor FTEs: 12
Estimated number of HQ FTEs: 29
Estimated number of field site FTEs (Golden Field Office): 1
Estimated number of reimbursable FTEs (National Energy Technology Laboratory): 10

Facilities:

Vehicle Technologies Program (VTP) works with and has facilities at all major national laboratories, including:

- Advanced Powertrain Test Facility, located at Argonne National Laboratory (ANL);
- Recycle Laboratory , located at Argonne National Laboratory (ANL);
- Refuel Laboratory, located at National Renewable Energy Laboratory (NREL);
- High Temperature Materials Laboratory, located at Oak Ridge National Laboratory (ORNL);
- National Transportation Research Center, located at Oak Ridge National Laboratory (ORNL); and
- Combustion Research facility, located at Sandia National Laboratory (SNL).

Performance:

PART rating: Moderately effective

FY07 PART measure status : 3 met, 0 unmet, 0 unknown

FY07 4th quarter Joule status: 5 Green, 0 Yellow, 0 Red

History

The earliest progenitor of the VTP was the Advanced Automotive Power Systems program, started in the Public Health Service in 1968. This program was transferred to the U.S. Environmental Protection Agency (EPA) in 1971, to the Energy Research and Development Administration (ERDA) in 1975, and to the DOE in 1977. The program name has periodically changed to reflect adjustments and refocusing of its role. Reorganization in 2002 separated the responsibility for fuel cells into the current Hydrogen Technology Program and responsibility for biofuels development into the current Biomass and Biorefinery Systems R&D Program. The central goal during this entire period has been to reduce U.S. oil use by conducting R&D related to improving the efficiency of cars and trucks and promoting the use of alternative fuels.

Critical Operating Procedures

The Program Manager is supported by two supervisors and four team leaders. The VTP works with industry partners to develop advanced transportation technologies. Programs are managed at the portfolio level by Technology Managers at headquarters. Project Managers at the National Energy Technology Laboratory (NETL) oversee and manage day-to-day activities associated with individual projects (contracts, grants, etc.). The Program priorities are reviewed at least biennially based on independent peer reviews of the partnerships by the National Research Council.

Recent Organizational Accomplishments and Strengths

Organizational Strengths

The Vehicle Technologies Program:

- Partners strategically with the energy, automotive, and component-supplier industries (particularly through the FreedomCAR and Fuel Partnership and the 21st Century Truck Partnership) to develop and deploy key precompetitive technologies for vehicle efficiency and the use of alternative fuels. Program goals are reviewed by industry partners in annual program reviews and biennially in National Research Council (NRC) led peer reviews.
- Addresses structural barriers in the automotive market in order to accelerate the introduction and penetration of new transportation technologies.
- Maintains a world-class research portfolio comprising state-of-the-art facilities and world class experts.
- Leverages the capabilities of the DOE National Laboratories with capabilities in industry and academia to maximize return-per-dollar of R&D expenditure.

Recent Accomplishments

In collaboration with industry partners:

- Performed the testing, analysis, and coordination with engine manufacturers that enabled EPA to promulgate the rulemaking on low sulfur diesel fuel. The 40 billion gallons of low sulfur diesel that are currently sold nationwide will enable high efficiency, emissions compliant diesel passenger vehicles to be sold in all 50 states.

- Developed technology that enabled reliable, long life nickel metal hydride batteries to be sold commercially for hybrid vehicles. Every hybrid vehicle sold today contains DOE-developed intellectual property, for which the U.S. Treasury receives a royalty payment.
- Developed technology that enabled reliable, long-life lithium-ion batteries to be sold commercially for next-generation hybrid vehicles.
- Developed the quick plastic forming aluminum stamping process that enables fast, precision, lightweight aluminum panels to be manufactured cost effectively. The process was commercialized by and is used in several production vehicles saving weight and improving fuel economy.
- Supported development of light duty diesel engine technology that provides consumers high efficiency and low emissions. The resulting engine is slated to be built and offered for sale in 2009.
- Supported development of the a dual mode hybrid transmission which is used intransit bus fleets across the country. Subsequently, the transmission was downsized and now offers it for sale in several SUVs, attaining a 50 percent fuel economy improvement in city driving.
- Developed a proprietary process for separating valuable polymers from automotive shredder residue taken from end-of-life vehicles. This technology will increase the materials supply options for manufacturers, reduce materials costs, and reduce the carbon footprint of lightweight materials over the product life cycle. A pilot scale validation plant is currently being planned for 2009.

Lithium-Ion Battery

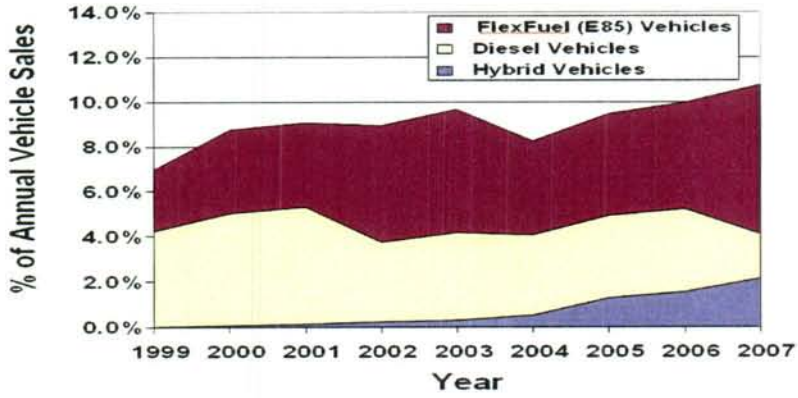
Quick Plastic Forming of Aluminum

Dual Mode Hybrid System

Leadership Challenges

- As the domestic market share of the U.S. Original Equipment Manufacturers (OEM) declines, the VTP would benefit from a strategy for R&D engagement with European and Asian companies who supply the other half of U.S. vehicles.
- Current deployment activities need to be reconsidered to support the expected introduction of plug-in hybrid vehicles, the required infrastructure, and to address the public and media concerns about ethanol production.
- Program changes may be needed based on new reviews of the partnerships by the National Research Council.

Key Strategies and Timing



Vehicle Technologies capacity growth

The VTP strategy is to support research, development, and deployment activities that are focused on significantly reducing petroleum use by:

- Improving the efficiency of internal combustion engines and by improving combustion engine operation with non-petroleum fuels;
- Improving hybrid-electric vehicles by extending their range of operation on electricity (plug-in hybrids) and by laying the systems groundwork for future fuel-cell vehicles;
- Significantly reducing the cost of carbon-fiber materials in order to safely reduce the weight of vehicles; and
- Encouraging market adoption of highly efficient vehicle technologies and advanced hybrids that can utilize domestically produced non-petroleum based fuels.

Critical Events and Action Items

3-month events

January-March 2009:

- Light-duty drive train solicitation selections will be announced. These projects will increase the efficiency of vehicle drive trains through a complete systems approach.
- The status and future direction of our key partnerships will be discussed and decided (FreedomCAR and Fuel Partnership and 21st Century Truck), including international participation.

12-month events

March-December 2009:

- In May 2009, Clean Cities is expected to announce awards that support a number of petroleum reduction activities, including outreach and education, alternative fuels infrastructure development, incremental vehicle cost, and biofuels-related curricula and demonstrations for schools and universities.

- Depending on FY 2009 appropriations, down selection of heavy-duty engine projects is possible as mortgages (funds needed for all current projects) are significantly larger than the request level.

Actions to support the establishment of a domestic battery manufacturing supplier base are critical. Loan guarantees, legislative and additional supporting solicitations are among options available.

Hot Issues

Intermediate blends of ethanol in gasoline:

- Currently, the U.S. is approaching the "blend wall" at which point ethanol production capacity exceeds the maximum usage possible from E10 (10 percent) gasoline.
- An intermediate blend (e.g., E15, E20) requires approval by EPA as "substantially similar" to gasoline and is required to further expand ethanol markets. Completion of our testing effort which examines the effect of these blends on existing (primarily older) vehicles is critical to support any future EPA rulemaking.
- Ultimately, full implementation of ethanol as a fuel requires ubiquitous deployment of Flex Fuel vehicles.

Clean Diesel:

- Clean diesel technology is a near-term pathway to substantially increase efficiency and optimal utilization of petroleum.
- Consumer education regarding the technology is important in increasing deployment to the market.
- Bio-diesel implementation is an avenue to further exploit the benefits of diesel efficiency while simultaneously achieving petroleum substitution.

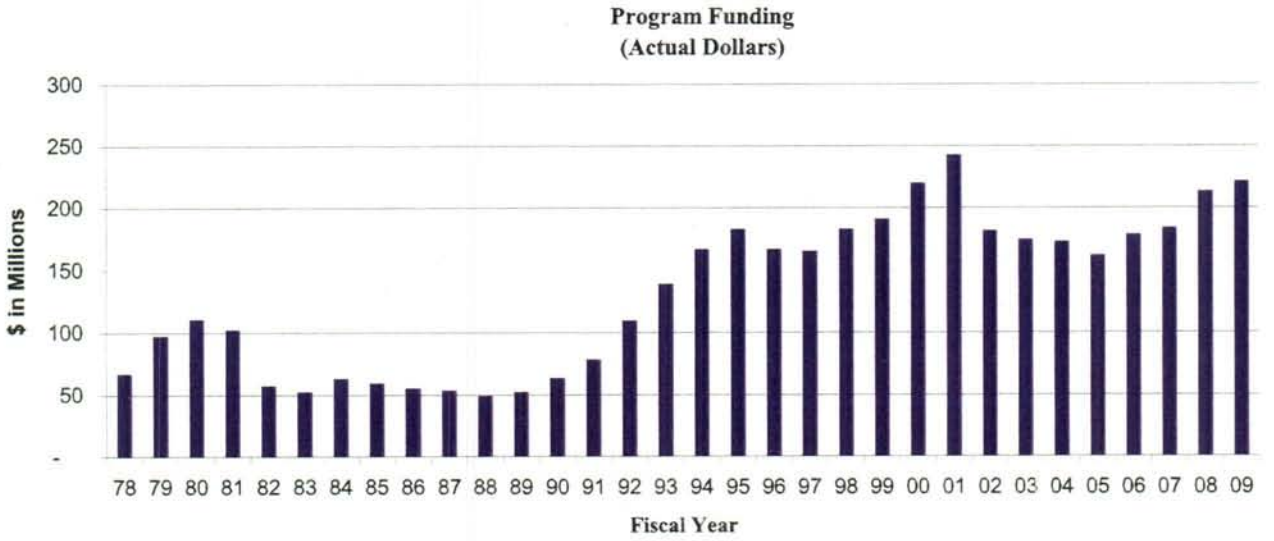
Plug-in Hybrid Electric Vehicles (PHEVs):

- PHEVs appear to be the most promising near-term technology to achieve high fuel economy gains along with petroleum substitution.
- Improved battery technologies are important; however, the high cost and short life of batteries remain barriers for improvement of PHEVs.

Development of battery manufacturing technologies and establishment of a domestic battery manufacturing industry is very important

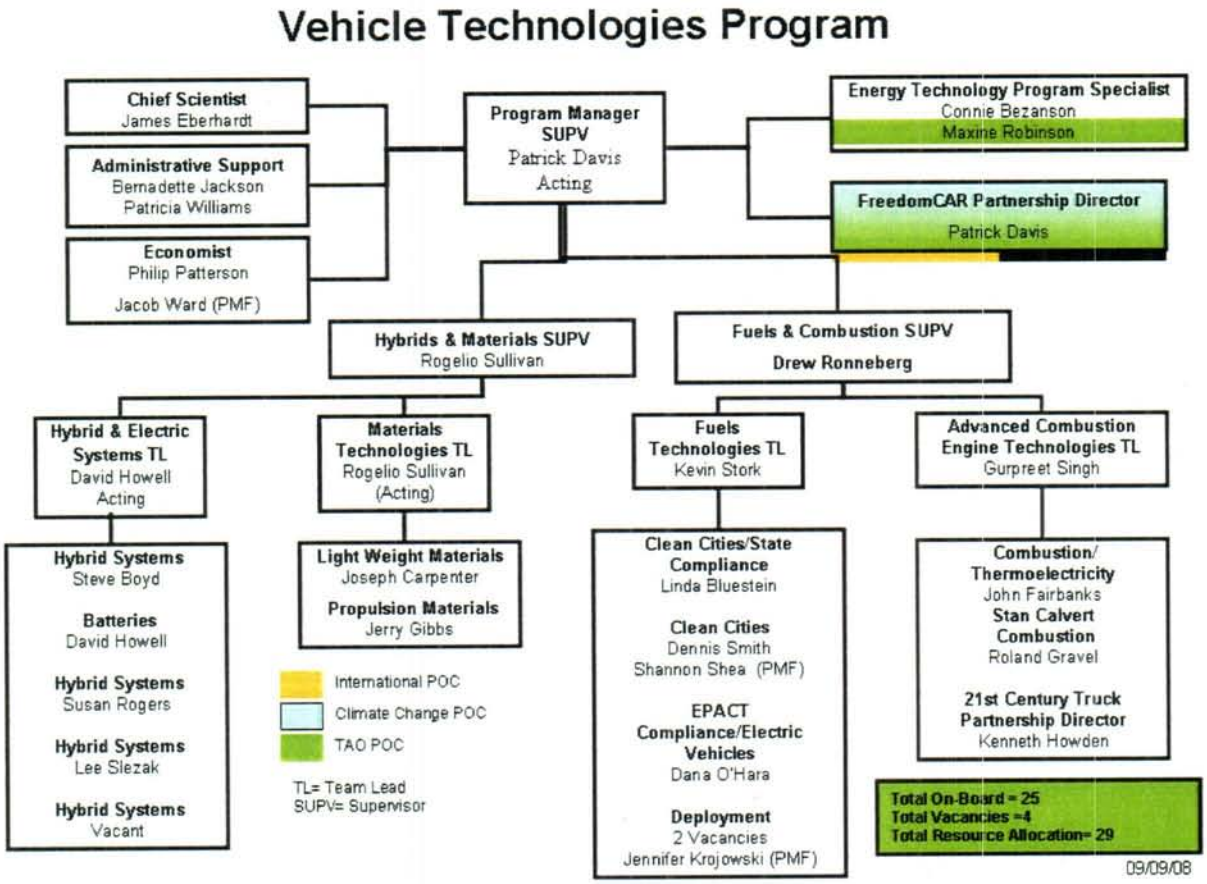
Funding Profile

Dollars in thousands		
Energy Efficiency and Renewable Energy	FY2008 Current Appropriation	FY2009 Congressional Request
Vehicle Technologies	213,043	221,086



Note: Funding has been adjusted to be comparable to the FY 2008 structure, e.g. Clean Cities funding prior to FY 2007 has been added and fuel cell R&D funds were removed from FY 1999 through 2001.

Current Organizational Chart



Solar Energy Technologies Program

Organization Information

Organization Name:

Solar Energy Technologies Program (SETP)

Address:

950 L'Enfant Plaza, S.W.
Room 6040
Washington, DC 20585

Organization Phone Number:

202-287-1685

Organization Website:

http://www1.eere.energy.gov/solar/

POC E-mail Address:

John Lushetsky <John.Lushetsky@ee.doe.gov>

Supporting the DOE Mission

Strategic Theme 1 – Energy Security
- Strategic Goal 1.1 – Energy Diversity
- Strategic Goal 1.2 – Environmental Impacts of Energy
- Strategic Goal 1.3 – Energy Infrastructure

Mission Statement

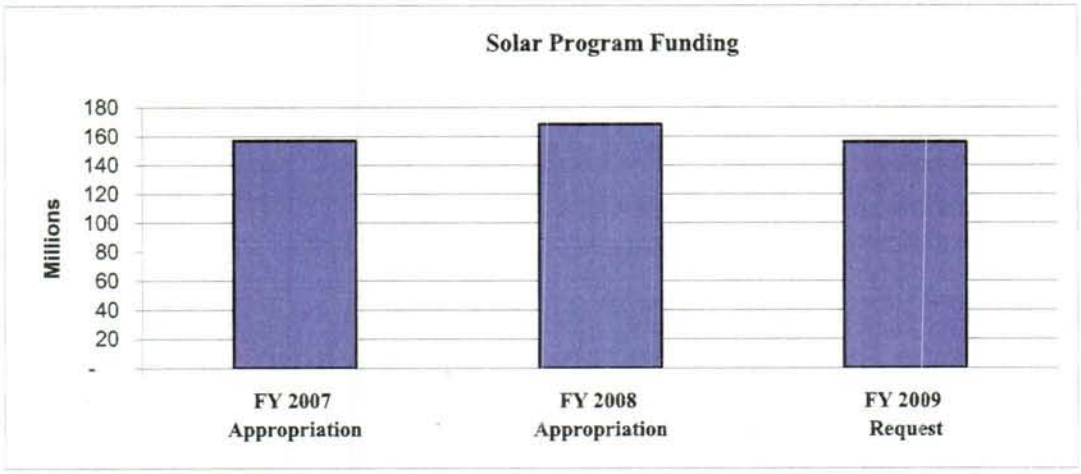
Conduct research, development, demonstration and deployment activities to accelerate widespread commercialization of clean solar energy technologies across America, diversifying the Nation's electricity supply options, while increasing national security and improving the environment.

Target Market

The program is focusing on the reduction of the life-cycle costs of solar power systems for use in targeted residential, commercial, and utility markets. Solar electric technologies include both distributed and centralized photovoltaic technologies and centralized solar thermal technologies for the production of electricity. Photovoltaic technology is unique in its suitability for distributed residential applications.

Status

Budget:



FY 2009 Congressional Request: $156,120,000 (nominal dollars)

People:

Estimated number of federal FTEs (HQ plus Golden Field Office): 28
Estimated number of HQ on-site contractors FTEs: 12
Estimated number of HQ FTEs: 18
Estimated number of field-site of contractor FTEs: 10
Estimated number of reimbursable FTEs (National Energy Technology Laboratory): 0

Facilities:

Six (6) facilities at two national laboratories:

National Renewable Energy Laboratory

- Solar Energy Research Facility
- Outdoor Test Facility
- Science and Technology Facility

Sandia National Laboratories

- PV Systems Optimization Lab
- National Solar Thermal Test Facility
- Distributed Energy Test Lab

Performance:

PART rating: Moderately effective
FY07 PART measure status: 3 met, 0 unmet, 0 unknown
FY07 4th quarter Joule status: 4 Green, 0 Yellow, 0 Red

History

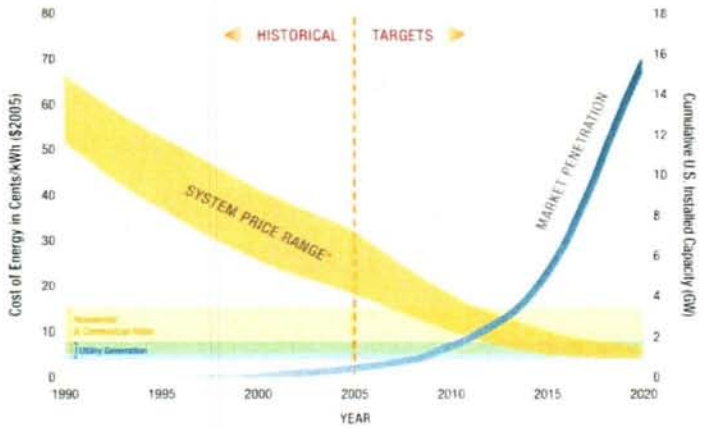
Solar energy technologies have been a vital part of DOE since its inception in 1977. The three major solar technologies are photovoltaics, concentrating solar power (formerly known as solar thermal electric), and solar heating and cooling systems. These technologies have been managed under various management structures over the years. The current Office of Solar Energy Technologies, established in FY 2002, manages photovoltaics (PV) and concentrating solar power (CSP) technologies. Solar, Heating and Cooling Systems management moved to the Office of Building Technologies in FY 2007.

Critical Operating Procedures

The Solar Energy Technologies Program (SETP) funds and works closely with the National Renewable Energy Laboratory and Sandia National Laboratories on solar research and development, and uses the Golden Field Office to manage industry contracts.

Recent Organizational Accomplishments and Strengths

Cost of Energy



Organizational Accomplishments:

- Implemented the $160 million Solar America Initiative (SAI) which has successfully focused the solar PV industry on reducing total system life cycle costs through the development of both near-term improved components and longer-term advanced systems;
- Developed 25 individual Solar American Cities partnerships that will address specific PV market barriers while increasing national PV visibility within major population centers;
- Led the formation of a national PV Board for Codes and Standards to help harmonize the industry on important market transformation issues;
- Completed the Renewable Systems Interconnection (RSI) Studies in collaboration with industry, the first in a series of steps to address grid requirements for high penetration of renewables;
- Revitalized development of CSP technology by awarding 12 contracts with U.S. industry under the CSP to develop low-cost manufacturing techniques for trough systems and advanced CSP systems; and
- Awarded grants for thermal storage of energy produced from concentrating solar power systems for use during off peak hours.

Organizational Strengths:

- A world-class capability in solar technology devices and systems engineering that is enhanced by strong relationships with universities and other global research centers;
- A deep understanding of the emerging solar industry across all parts of the value chain and the short and long-term trends and issues that are affecting the industry. The programs capabilities in this area are enhanced by very good relationships with private industry, the financial community, and other stakeholders;
- A track record of developing and managing partnerships with state and local governments and other stakeholders to address market transformation issues necessary for the wide-spread adoption of solar; and
- An entrepreneurial organization that adapts quickly to the changing demands of the rapidly growing solar market, while keeping focused on long term program goals.

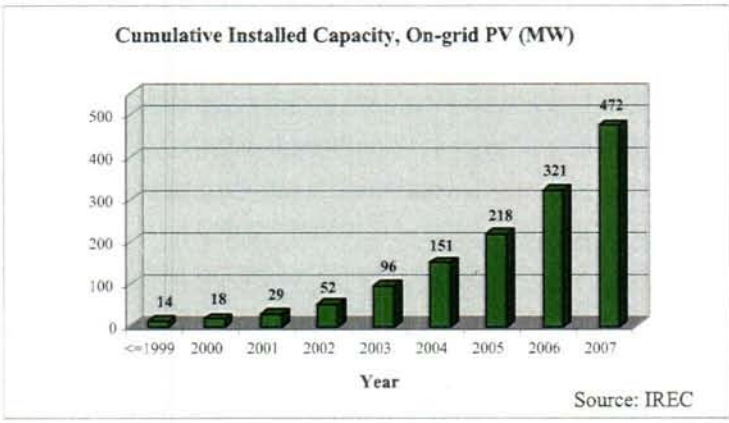
Leadership Challenges

Operating under a continuing resolution for the past couple of years, where the final budget was not available for costing until mid-year, resulted in higher than normal uncosted balances of close to 50 percent. In FY 2008, SETP was part of a GAO audit of EERE's uncosted funds. The challenge in FY 2009 will be to reduce the amount of uncosted funds to historical levels (25 percent) while providing responsible guidance to our lab, industry and university partners.

An additional challenge will be to maintain the ability to adjust program objectives and priorities in response to a diverse and rapidly changing solar industry in a manner that recognizes the U.S. need to increase reliable sources of domestic, renewable energy.

Key Strategies and Timing

PV (Residential and Commercial applications): SETP's strategy has been to fund PV development and system demonstrations that focus on a reduction in the total life-cycle cost of solar electric power with the goal of achieving cost parity with conventional grid electricity by 2015. Multiple technology paths are being pursued through a number of different industry and university teams to provide the marketplace with a wide array of solutions to select from. The program also contains key elements to address grid integration issues – a potentially larger issue as PV market penetration increases – as well as industry wide market transformation issues in adopting solar technology. Specific market transformation efforts are taking place through the Solar America Cities partnerships, currently established with 25 U.S. municipalities. Research and development of longer term and next-generation PV technologies are also addressed under this program.



CSP (Utility scale application): SETP's strategy has been to fund the development of component technologies that can be applied across a diverse set of utility CSP technologies. These include new thermal storage materials, materials and manufacturing of mirrors, and heat collection elements. Funding of these efforts will be based on the potential of these component technologies to reduce total life cycle cost with the goal of CSP achieving parity with centralized peak power pricing by 2015 and base load pricing by 2020. SETP will also address grid integration issues related to CSP, potentially including the development of new storage technologies.

Critical Events and Action Items

3-month events

January 2009

- First Stage Gate Review will be completed for all eleven Technology Pathway Partnership projects. These reviews will allow SETP to leverage the remaining funding to those projects meeting predetermined goals, and down select those that are not advantageous for the program.

6-month events

March 2009

- Release of PV Supply Chain and Cross-Cutting Technologies Solicitation. This solicitation will address the grid parity goals of SAI by developing subsystem components, materials, or processes that can be supplied across the industry to reduce cost, enhance performance, or extend lifetime over today's technology.

12-month events

September 2009

- Draft Programmatic Environmental Impact Statement (PEIS) regarding CSP on federal land and make the PEIS available for public comment. The PEIS could support developing a solar energy program of environmental policies and mitigation strategies that would apply to the deployment of solar energy projects on BLM-administered lands or other federal, state, tribal, or private lands. These future projects could improve the ability of solar generated electricity to meet the SAI target of grid parity by 2015.
- Release of industry solicitation for High Penetration PV Demonstration which will focus on advanced R&D activities with industry partners that will easily integrate PV and enable high penetration of PV systems.

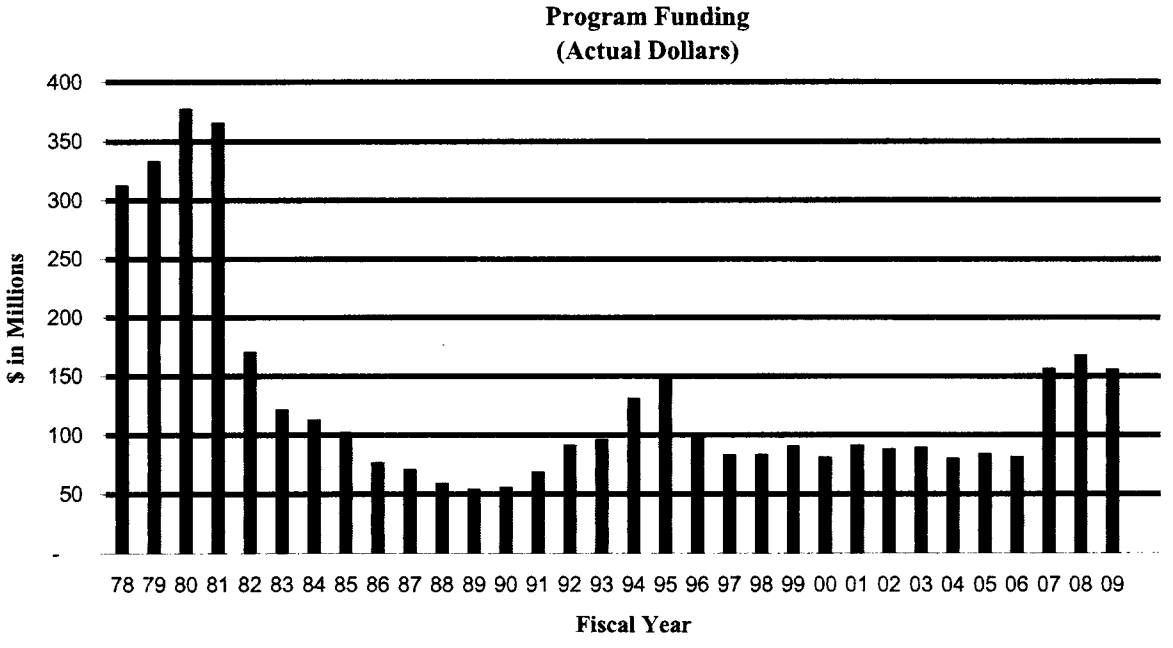
Hot Issues

The following policies/initiatives will have a significant impact on the market penetration of solar technologies:

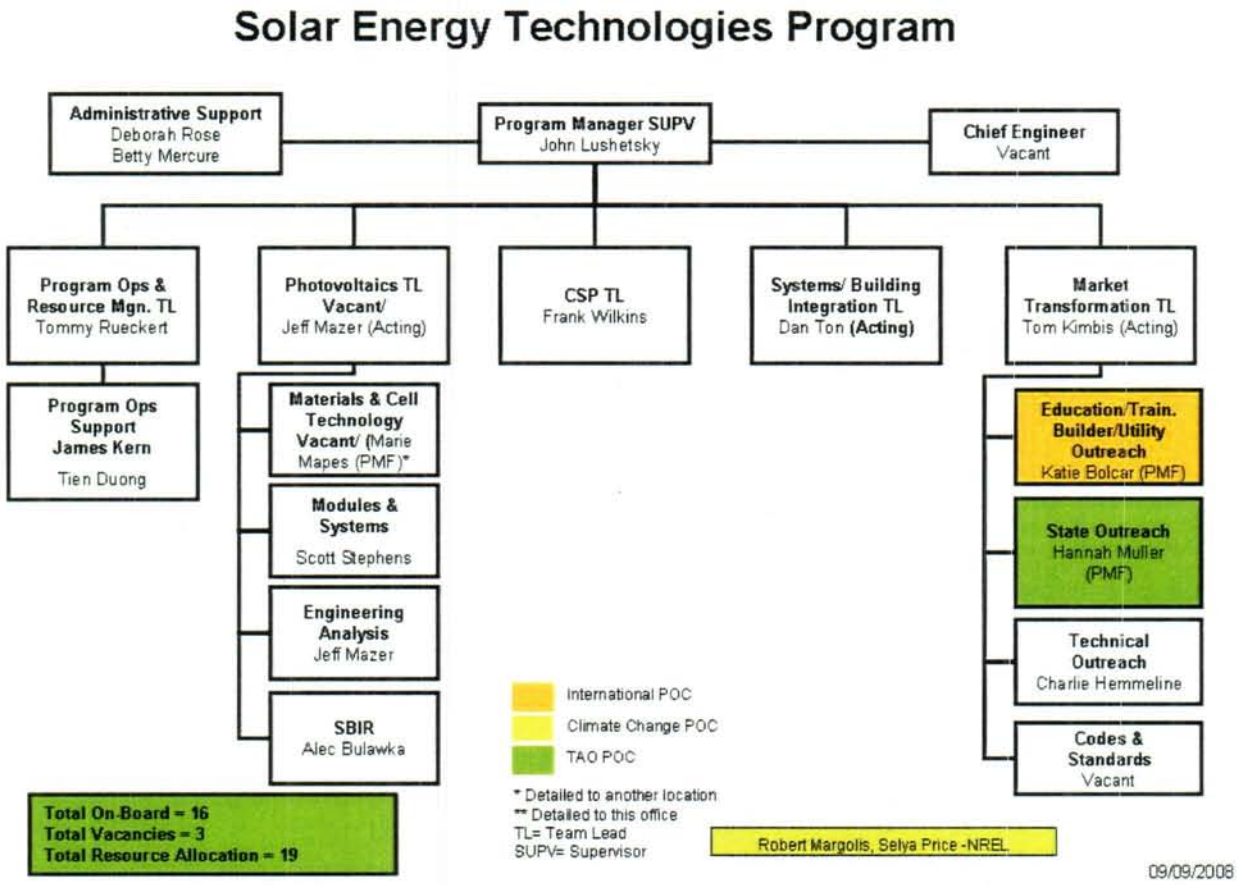
- Recent passage of the 30 percent investment tax credit;
- Interconnection and net metering standards;
- A new solar workforce training initiative;
- Electrical energy storage for distributed and centralized renewable energy that is integrated with the electrical grid; and
- Thermal energy storage for concentrating solar power technologies that will provide a dispatchable renewable energy source for utility applications.

Program Funding

Dollars in thousands		
Energy Efficiency and Renewable Energy	FY2008 Current Appropriation	FY2009 Congressional Request
Solar Energy	168,453	156,120


Program Funding
(Actual Dollars)
$ in Millions
400
350
300
250
200
150
100
50
-
78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00 01 02 03 04 05 06 07 08 09
Fiscal Year

Current Organizational Chart



Wind Energy Program

Organization Information

Organization Name:

Wind Energy Program

Address:

1000 Independence Ave., S.W.
Room 5H-048
Washington, DC 20585

Organization Phone Number:

202-586-7950

Organization Website:

http://www1.eere.energy.gov/windandhydro/

POC E-mail Address:

Megan McCluer <megan.mccluer@ee.doe.gov>

Supporting the DOE Mission

Strategic Theme 1 – Energy Security
- Strategic Goal 1.1 – Energy Diversity
- Strategic Goal 1.2 – Environmental Impacts of Energy
- Strategic Goal 1.3 – Energy Infrastructure

Mission Statement

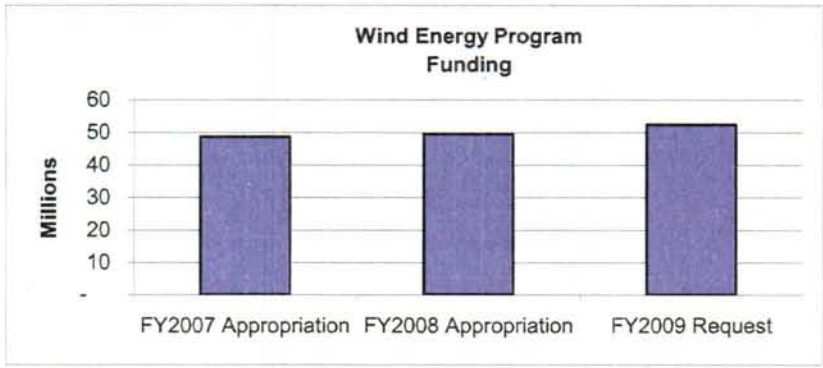
Lead the Nation's research, development, and deployment efforts to improve wind energy generation technology, enhance domestic economic benefit from development, and to address barriers to the use of wind energy in coordination with stakeholders, resulting in greater energy security and a cleaner and more diversified electricity supply.

Target Market

The program is primarily focused on expanding markets for land-based, bulk power applications for megawatt scale wind turbine technology in large wind farms via efforts to address technology cost, reliability, and deployment challenges. The program also provides some targeted support for community and distributed scale applications of smaller turbines (typ. under 100 kW). The program is currently providing limited support for emerging off-shore wind energy markets, and plans to complete a formal assessment of off-shore opportunities and needs for federal program support in FY 2009. The keys for expanding market penetration of wind energy are availability of electric transmission infrastructure along with appropriate utility planning and operations practices, facilitated siting and permitting processes addressing land/airspace use and environmental issues, reduced cost and increased reliability, and increased supply chain capability for wind energy equipment.

Status

Budget:



FY2009 Congressional Request: $52,500,000 (nominal dollars)

People:

Estimated number of Federal FTEs (HQ plus Golden Field Office): 13
Estimated number of HQ on-site contractor FTEs: 6
Estimated number of HQ FTEs: 11
Estimated number of on field-site FTEs (Golden Field Office): 2
Estimated number of Reimbursable FTEs (National Energy Technology Laboratory): 1

Facilities:

Two (2) program facilities:

- National Renewable Energy Laboratory/National Wind Technology Center
- Sandia National Laboratories/Bushland, TX Field Test Site

Two (2) public/private partnership facilities in development:

- Lone Star Wind Alliance Test Center – Corpus Christi, TX
- Massachusetts-NREL Wind Technology Testing Center – Boston, MA

Performance:

PART rating: Moderately effective
FY07 PART measure status: 4 met, 1 unmet[1], 0 unknown
FY07 4th quarter Joule status: 3 Green, 1 Yellow, 0 Red

History

The federal Wind Energy Research and Development (R&D) Program dates back to the early 1970's, with earliest roots under the National Science Foundation in response to the 1973 energy crisis. Early program R&D efforts led to development of very large (up to 3.2 MW) wind turbines, in partnership with NASA and industry, as well as development and testing of numerous smaller turbine concepts. While the early large machines based on existing technology (e.g. propellers) proved uneconomic and marginally reliable, industry leveraged the technology base to develop smaller (25-100kW) turbines for the first utility power applications.

[1] One PART measure, the number of states targeted to reach 100 megawatts of installed capacity, was unmet (achieved 21 states, versus target of 22). Achievement of this measure was reliant, in large part on private sector installation of wind. Current wind farms are under construction that will lead to achieving the target number by the end of 2008.

The program continued applied research on wind turbine aerodynamic and structural needs, and in the early 1990's launched a series of public/private advanced turbine development projects, continuing through 2007 and leading to development of turbines in commercial service today. In 1999, the program launched Wind Powering America, which has facilitated wind power development in over 30 states. Over the last decade of substantial growth in U.S. wind power, the program has developed a strong capability for addressing power systems integration challenges with wind energy. Based on accelerating growth of wind energy since 1999 and scale of the viable resource, the President's 2006 Advanced Energy Initiative recognized that windy areas of the Nation have the potential to supply at least 20 percent of the Nation's electricity needs. As wind energy surpassed the milestone of generating 1 percent electricity in 2007, the federal program, wind industry, and other interested parties are now focusing collaborative efforts on strategies in the context of this 20 percent potential.

Critical Operating Procedures

The program currently funds activities at seven national laboratories, with emphasis at the National Renewable Energy Laboratory (NREL) and Sandia National Laboratories (SNL), as well as a number of States, NGO's, and contractors with assistance from the Golden Field Office and other field sites. All funded activities in the program fall under the responsibility of an assigned member of the program federal staff. Each lead area manager is responsible for strategic and operational direction of assigned activities, receiving key planning inputs from program peer review, strategic planning meetings, participant and stakeholder interaction, and guides annual budget development and implementation activities, under overall direction of the program manager as assisted by the team leads. All plans, schedules, milestones, deliverables, and other project management information are captured in annual operating plans from each laboratory and other key participants. For R&D activities, the program invests in both laboratory research activities as well as collaborative partnerships with industry to achieve targeted objectives. For technology application and deployment, the program works closely with industry and regional, state, and local community groups as well as other federal agencies to remove barriers to wind technology acceptance. The program's multi-year plan, available on the program's website, includes a section "Program Portfolio Management" that describes the operating procedures for the program.

Recent Organizational Accomplishments and Strengths

Organizational Accomplishments:

- Published the report, "20 Percent Wind Energy by 2030," with contributions from industry in May 2008, providing extensive information concerning the viability and implications of meeting 20 percent of the Nation's electricity needs from wind by 2030. The report has generated both public and private interest in developing a technology development and deployment roadmap and understanding of all the technical, political, and market barriers wind energy faces (http://www1.eere.energy.gov/windandhydro/pdfs/41869.pdf).
- Partnered with industry since the early 1990s to support development of state-of-the art wind turbines now seeing extensive commercial service.
- Partnered with industry to develop small (under 10 kW) wind turbines for distributed applications with improved cost effectiveness, reliability, and acceptance.

- Launched wind working groups (WWG) in over 30 states via the Wind Powering America program, facilitating the strong growth of wind energy in the U.S. over the last decade. The first WWG started in 2000, and Wind Powering America started four new ones in 2008 (Nebraska, Maine, Kansas, and Arkansas this year). There are currently 33 WWG total.
- Launched comprehensive regional renewable integration studies with utility stakeholders to establish basis for infrastructure planning needed for penetration of wind and other renewables to levels of 20 percent or higher. The regional renewable integration studies were launched this fiscal year. The program has one in the West and one in the East which are just beginning.
- In 2007, established cooperative R&D agreements with Massachussets and Texas consortia to partner in developing new, larger capacity wind component research and test facilities. These test facilities are essential to reduce the technical and financial risk of deploying mass-produced wind turbine blades.
- Achieved significant progress toward Wind Energy Program cost of energy goal for land-based systems (see cost of energy chart below).

DOE activities resulted in an onshore wind cost of energy calculation, a normalized R&D metric factoring out external market driven variations of 3.8 cents, well ahead of the 4.1 cent target. R&D and technical studies undertaken under the Low Wind Speed and Supporting Research and Testing key activities have direct impact on wind technology cost and performance.

The work conducted in FY 2007 achieved a cost of electricity of 9.9-10.7 cents/kWh, resulted in the completion of a 5 year effort to improve the cost effectivenss of residential and commercial size turbines. This will support the goal of expanding the market for distributed wind technologies five-fold from where it existed in 2007.

Organizational Strengths:

- A track record of relevance to public and private sector needs in support of accelerating U.S. use of wind energy, as demonstrated through numerous success stories underlying strong commercial growth in the last decade.

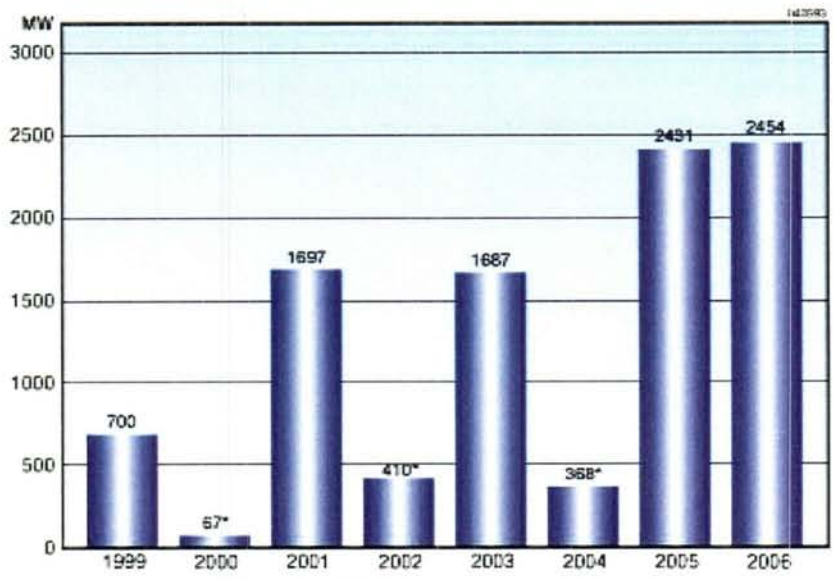
- World class expertise and research/testing capabilities in wind energy technology, and close collaboration with international interests in wind energy.
- Effective partnering with public and private organizations for achieving strategic objectives in both R&D and technology commercialization.

Leadership Challenges

In September 2005, GAO prepared a report "Wind Power: Impacts on Wildlife and Government Responsibilities for Regulating Development and Protecting Wildlife," which reviewed major scientific studies and reports on direct impacts from wind power on avian species and other wildlife in Mid-Atlantic states. The report recommended that the U.S. Fish and Wildlife Service (FWS) reach out to state and local regulatory agencies with information on the potential wildlife impacts due to wind power and on the resources available to help make decisions about the siting of wind power facilities. The report and related wind-wildlife regulatory interactions led to formation of a Federal Advisory Committee Act (FACA) in March 2007 by the Department of the Interior to advise their Secretary on effective measures to avoid or minimize impacts to wildlife and their habitats related to land-based wind energy facilities. DOE and NREL program members were nominated as a committee member and alternate, respectively, to provide technical advice. DOE's involvement in siting challenges and environmental risk research is likely to be critical.

Key Strategies and Timing

Years with/without Federal Production Tax Credit



*Years without Federal production tax credit (2000, 2002, 2004)

The program's key strategies fall into 3 areas:

Systems Integration: The lack of electric power transmission lines has been recognized as one of the largest impediments to producing 20 percent of our Nation's electricity demand with wind energy. The program intends to:

- Support new transmission planning and business processes.

- Perform high-penetration renewable energy integration studies, including detailed mesoscale and wind plant modeling to facilitate regional deployment.
- Develop broader market cooperation, asset management and dispatch strategies, to enable lower cost system balancing at higher wind penetration levels.
- Support grid code development and improve wind plant models to reflect system stability requirements and new wind turbine technology capabilities.
- Develop improved wind forecasting tools and control room strategies for effective wind plant management and grid operations.
- Evaluate the feasibility and cost of installing large-scale storage options into the grid to facilitate grid management.
- Establish national and international forums to exchange technical information on system operation with wind plant interconnection.

Key systems integration milestones include:

- Establishing Renewable Energy Zones (REZ) in Western states by 2010.
- Completing transmission and integration studies for 80 percent of the U.S. electricity generation and loads by 2011.
- Conducting 1-3 regional assessments of large-scale storage technologies by 2010.

Siting and Environment: Siting wind plants can raise concerns in local communities, impact wildlife habitat and individual species, and create concerns when sited in close proximity to radar installations. Siting and environment R&D activities in support of the 20 percent wind scenario include:

- Understanding wind conditions and new resource potential in diverse environments.
- Leading consortia to research wildlife habitats and identify effective mitigation strategies.
- Conducting systematic risk research that examines the full range of human, ecological, and socioeconomic effects of wind project siting.
- Developing strategies to identify sites highly favored for wind energy development with ecological risks and community conflict and the mitigation strategies to address the risks and conflicts.
- Developing uniform and streamlined permitting processes and address public concerns.

Key siting and environment milestones include:

- Disseminating siting best practices for adoption by states and counties by 2009.
- Demonstrating widely accepted radar mitigation techniques by 2010.
- Providing validated wind resource maps at modern wind turbine hub-heights in the Midwest and the Great Lakes states by 2015.

Wind Turbine Technology: For wind energy to contribute a larger percentage of our nation's energy generating needs, the technology must continue to evolve, building on earlier successes to further improve reliability and operability, increase capacity factors, and reduce costs.

Future technology R&D activities in support of the 20 percent wind scenario include:

- Improving the reliability of gearboxes, towers, blades and power electronics to lower operation and maintenance costs.
- Establishing remote research affiliate partnerships (RemRAPs) to evaluate turbine performance and reliability in diverse operating environments.
- Developing a national database to track the reliability and performance of components, turbines, and wind plants.
- Forming international coalitions to improve wind plant power performance by understanding the windflow conditions produced in complex terrains and multiple array configurations.
- Exploring innovations to enhance capacity factor and efficiency including taller towers and enhanced rotor technologies.
- Lowering turbine component costs through the development of new materials, designs, and manufacturing processes.
- Maintaining accredited national test facilities and actively participate in international certification and standards programs to mitigate risk and facilitate investment in wind technology.

Key wind turbine technology milestones include:

- Increase gearbox meantime-to-failure to 15 years by 2015.
- Populate national reliability database with 10 percent of U.S. wind generation by 2012.

Critical Events and Action Items

3-month events

January 2009

Release roadmap detailing government and private sector action plan for achieving 20 percent of U.S. electricity from wind energy by 2030.

February 2009

Complete designation of boundaries for Western Renewable Energy Zones in coordination with Western Governors Association.

March 2009

Complete formal review of offshore wind technology and market status for the U.S. to determine appropriate DOE Wind Program role for R&D and commercialization assistance.

12-month events

April 2009

Complete detailed modeling and simulation of scenarios for the Western Wind and Solar Integration Study to examine the operating impacts and mitigation options due to the variability and uncertainty of wind and solar power on the utility grids for several states in the West.

August 2009

- Complete resource data collection and environmental assessment for 30 MW wind farm on the Sandia National Laboratory/Kirtland Air Force Base site, in support of the Transformational Energy Action Management (TEAM) initiative.
- Commission Siemens 2.3 MW and GE 1.5 MW wind turbines at the NWTC for research to improve performance and reliability of utility scale turbines.

September 2009

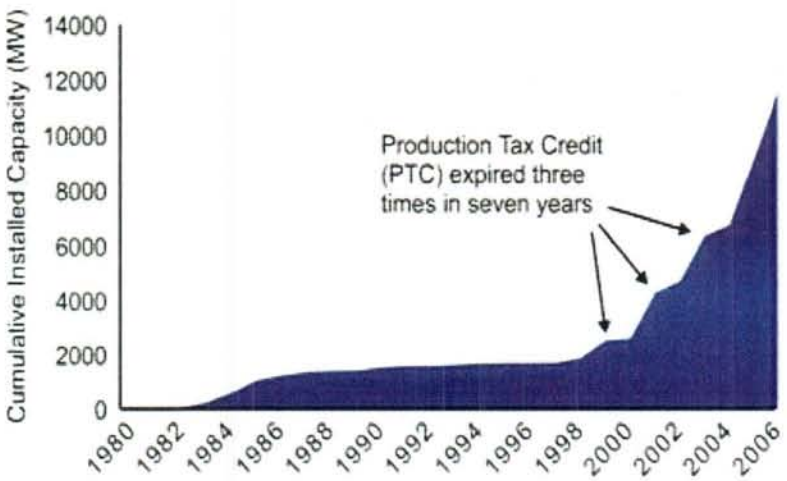
Issue U.S. Wind Industry Reliability Report, deriving from newly developed national reliability database, annual reliability workshops, and analysis to determine the systemic sources of unreliability, forming a basis for program and industry action to ensure confidence in the quality, durability, and reliability of wind turbines throughout the fleet as installations accelerate toward the 20 percent goal.

December 2009

Complete Phase I field tests, dynamometer tests, and design analyses for the Gearbox Reliability Collaborative to improve the design and reliability of utility-scale wind turbine gearboxes.

Hot Issues

U.S. Wind Capacity – PTC Impact



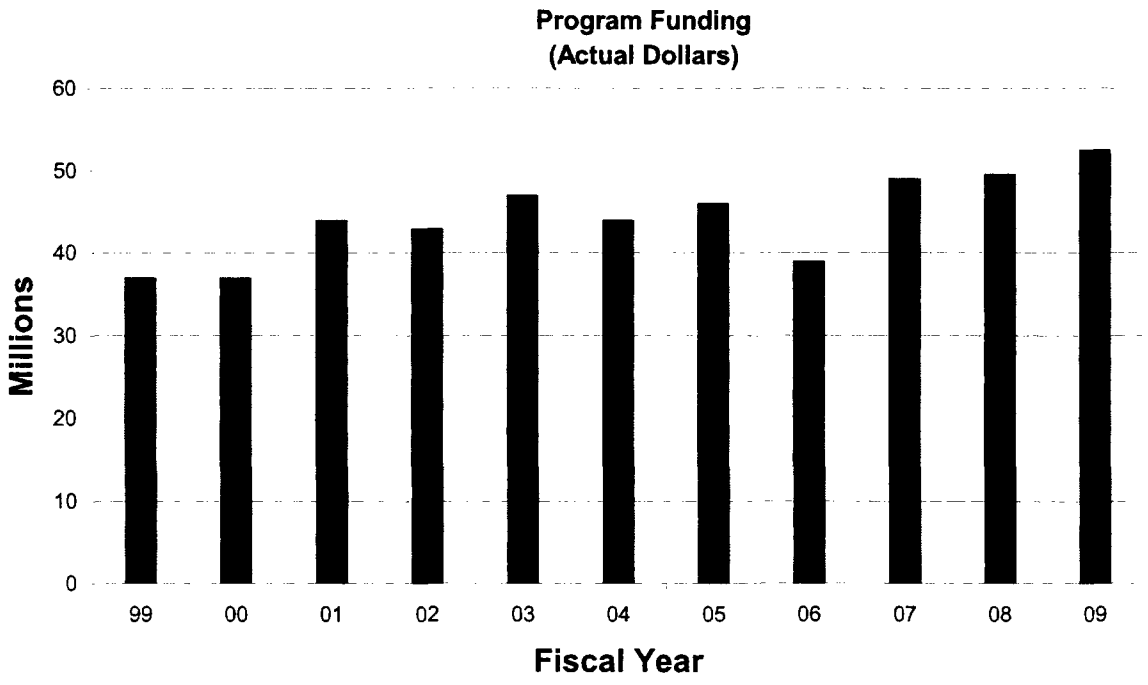
Production Tax Credit (PTC) - The PTC has been one of the major drivers of the current surge in construction and planning of wind farms, geothermal plants and other grid-connected renewable energy facilities. The PTC had been renewed multiple times since its origination, but each time for only a few years, limiting the renewable energy industry's planning horizon. The PTC was again extended on October 3, 2008, for a period of one year, expiring December 31, 2009. The lack of a long-term, stable federal policy has caused boom and bust cycles in the wind industry, leading to equipment supply shortages and higher equipment and construction prices.

Improved connectivity for large-scale variable or intermittent renewable energy - New transmission infrastructure is needed to move remotely-generated renewable power to urban markets, and changes are needed in the treatment of variable and intermittent renewables by transmission and distribution operators to level the playing field for wind and large-scale solar energy.

Need for enhanced U.S. wind energy system manufacturing capabilities and technical training to supply, develop, maintain and operate wind systems at 3-5 times current rates - The program is embarking on joint projects with industry under a new Memorandum of Understanding to address the key supply chain challenges – reducing manufacturing costs, expanding the domestic manufacturing base, and supporting development of the workforce needed. Lack of availability of wind turbine systems and a trained workforce is currently restricting growth and driving up costs, and must be quickly addressed to allow wind energy to maintain the growth rate needed to realize the goal of wind energy supplying 20 percent of the Nation's electricity needs.

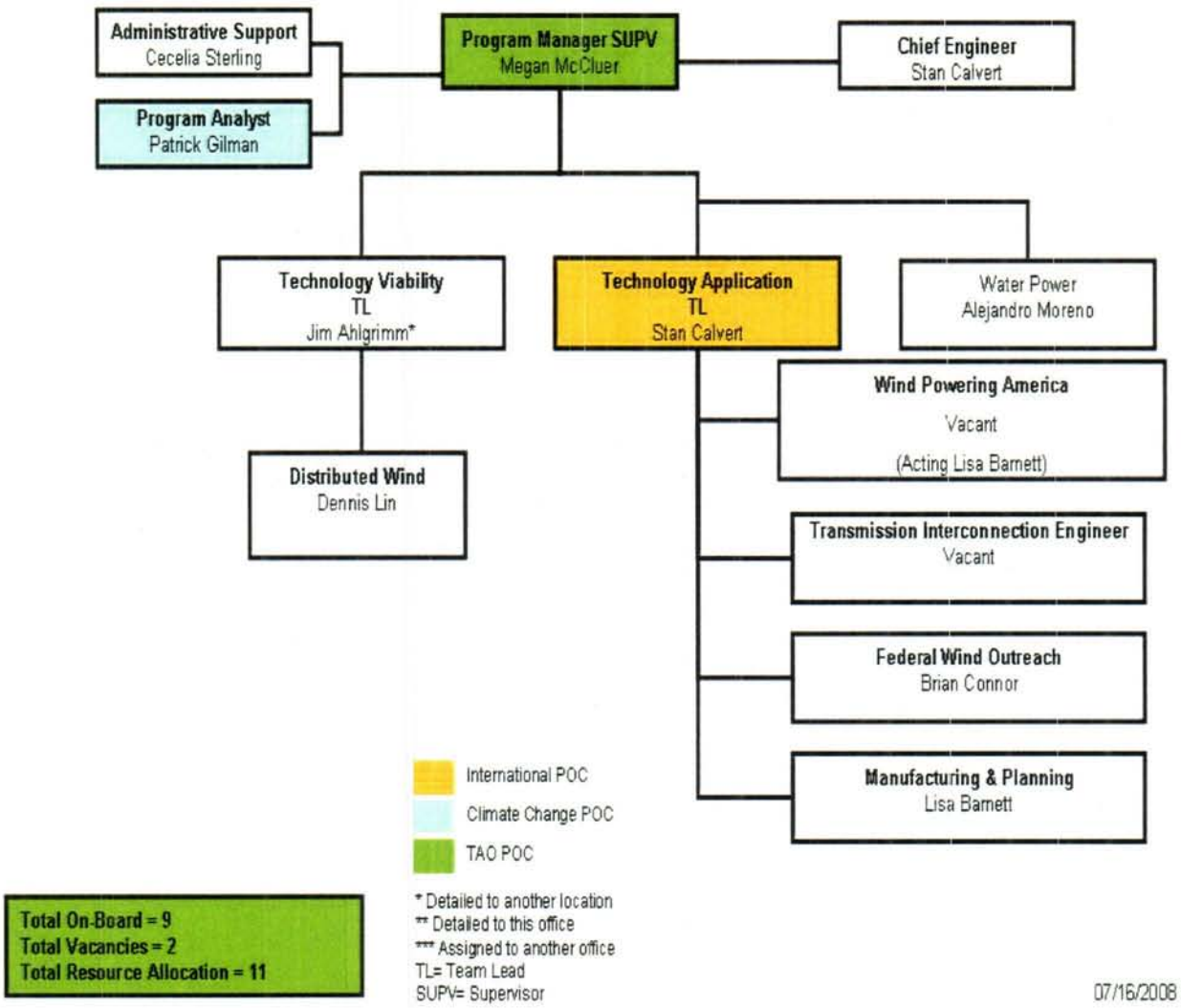
Funding Profile

Dollars in thousands		
Energy Efficiency and Renewable Energy	FY2008 Current Appropriation	FY2009 Congressional Request
Wind	49,545	52,500


Program Funding
(Actual Dollars)
60
50
40
30
20
10
0
Millions
99
00
01
02
03
04
05
06
07
08
09
Fiscal Year

Current Organizational Chart

Wind Energy Program



Water Power Technologies Program

Organization Information

Organization Name:

Water Power Technologies Program (formerly Hydropower)

Address:

1000 Independence Ave., S.W.
Room 5H-070
Washington, DC 20585

Organization Phone Number:

202-586-5348

Organization Website:

http://www1.eere.energy.gov/windandhydro/

POC E-mail Address:

Megan McCluer<megan.mccluer@ee.doe.gov>

Supporting the DOE Mission

Strategic Theme 1 – Energy Security
- Strategic Goal 1.1 – Energy Diversity
- Strategic Goal 1.2 – Environmental Impacts of Energy
- Strategic Goal 1.3 – Energy Infrastructure

Mission Statement

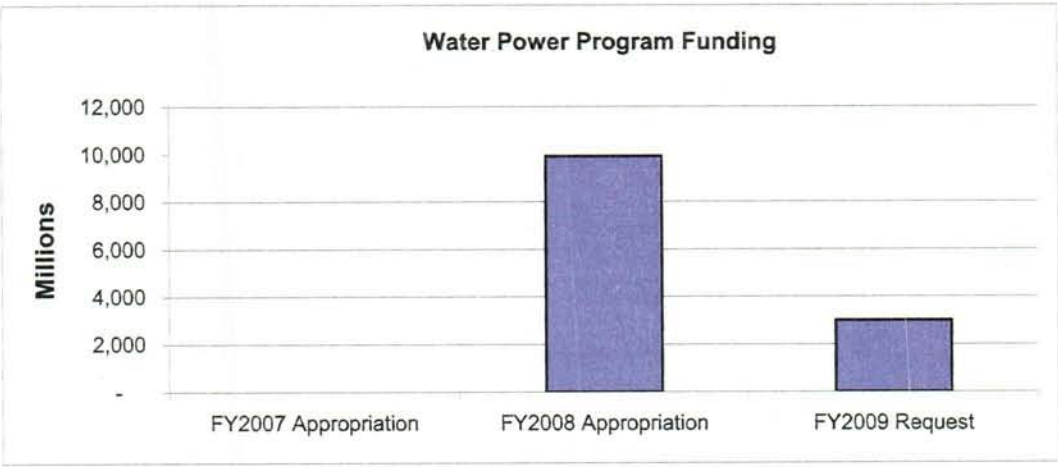
Research, test and develop (as appropriate) innovative and effective technologies capable of generating electricity from the water. These technologies include those that harness marine and hydrokinetic energy resources, (such as wave, ocean, tidal and river current, and ocean thermal energy) and certain advanced conventional hydropower technologies.

Target Market

The program is focused on collaborating with industry and academia to assist in the development of effective technologies; support the evolution of a competitive market-base by addressing non-technical barriers to development; and establish university-based RD&D/test centers to support the domestic industry.

Status

Budget:



FY 2009 Congressional Request: $3,000,000 (Nominal Dollars)

People:

Estimated number of Federal FTEs (HQ plus Golden Field Office): 3
Estimated number of HQ on-site contractor FTEs: 0
Estimated number of HQ FTEs: 2
Estimated number of field site FTEs (Golden Field Office): 1
Estimated number of Reimbursable FTEs (National Energy Technology Laboratory): 0

Facilities:

Concentrated Lab activities at National Renewable Energy Laboratory (NREL), Sandia National Laboratory (SNL), Oak Ridge National Laboratory (ORNL), and Lawrence Berkeley National Laboratory (LBNL)

Performance:

None, developed initial program start-up and strategy.

History

The DOE Hydropower Program was established in 1976 in response to the Teton Dam collapse. Through the 1980s, the program focused primarily on small hydro feasibility studies and demonstration projects, and funded environmental studies. The Advanced Turbine Development Program was initiated in 1995, and continued through 2005. The DOE Hydropower Program was closed out in FY 2006, and received no funding in FY 2007. The program was re-initiated in FY 2008 by the Consolidated Appropriations Act, 2008, to support both traditional hydropower and emerging water power technologies.

Critical Operating Procedures

The Water Power Technologies Program is part of the Wind and Hydropower Technologies Program (WHTP). The program awards the majority of its funding through competitive solicitations, but also funds National Renewable Energy Laboratory (NREL) and Oak Ridge National Laboratory (ORNL) for technical and environmental support activities, with programmatic and technical support also provided by Sentech, Inc.

Recent Organizational Accomplishments and Strengths

Recent Accomplishments

- On April 15, 2008, DOE issued a Funding Opportunity Announcement (FOA) for Advanced Water Power Projects. The Closing Date for Applications was June 16, 2008.
- On September 18, 2008 DOE announced the winners in three topic areas. The FOA topic areas include:
  - Advanced Water Power Renewable Energy In-Water Testing and Development Projects;
  - Marine and Hydrokinetic Renewable Energy Market Acceleration Projects; and
  - National Marine Renewable Energy Centers
- In response to Energy Independence and Security Act of 2007 (EISA 2007) requirements, DOE is preparing a report for Congress that addresses the potential environmental impacts, including impacts to fisheries and marine resources, of marine and hydrokinetic renewable energy technologies.
- DOE anticipates completion of a database identifying and characterizing the various hydrokinetic technologies and the companies that manufacture/deploy them by October 2008.

Organizational Strengths

Through the Water Power Technologies Program, DOE is:

- Actively engaging with technology developers and water power experts in order to establish a world-class program focused on the RDD&D requirements of this burgeoning industry.
- Extensively collaborating with other federal agencies to help build a broad base of knowledge and support for water power technologies throughout the government.
- Working with domestic and international communities to share knowledge and provide input into the global development of the water power industry.

Additionally,

- NREL has substantial expertise in the technology necessary for effective and reliable marine energy systems.
- ORNL is providing significant support in the areas of conventional hydropower and environmental analysis.
- SNL has successfully applied their wind turbine computational modeling and fluid dynamics models to hydrokinetic turbine systems.

Leadership Challenges

Depending on future appropriations, the Water Power Technologies Program is working towards opportunity to scale-up activities very quickly, which may require the program to increase

federal staffing levels. Current federal staffing is 3 FTE, which is adequate for the FY 2008 $10 million appropriation level.

Key Strategies and Timing

The Water Power Technologies Program is actively building partnerships with leading domestic and international research institutions and technology developers. Selections and funding for the first round of FOA awards for Advanced Water Power Projects were in place by the end of FY 2008. The program intends this to be a multi-year strategy through which critical RDD&D activities will be supported through competitively awarded, cost-shared joint ventures to advance the state-of-the-technologies, address key market and deployment barriers, facilitate inter-agency cooperation and collaboration, and foster university-led National Marine Renewable Energy centers.

The program is collaborating with the realm of federal agencies that are involved/impacted by marine renewables in order to proactively address the multitude of permitting, environmental and multi-use issues associated with the deployment of advanced water power technologies. Cooperative and collaborative activities will continue with Department of Interior's (DOI) Minerals Management Service, DOI's Fish and Wildlife Service, Federal Energy Regulatory Commission, Department of Commerce's National Oceanic and Atmospheric Administration, Department of Homeland Security's United States Cost Guard, Department of Transportation, Department of Defense (Naval Facilities Engineering Command-NAVFAC), and others, in order to establish mutually beneficial mechanisms, procedures, and relationships so that these technologies can be developed and deployed in a sensible and sustainable manner.

The program is engaging leading international research and development in order to leverage lessons-learned and partner on activities to further international applications and deployment of leading technologies (with the aim of furthering market opportunities for U.S.-based companies).

Critical Events and Action Items

3-month events

January 2009

- Issue second round of the Funding Opportunity Announcement (FOA) for Advanced Water Power Projects.

February 2009

- DOE internal review of National Oceanic and Atmospheric Administration/DOI comments on EISA-mandated environmental report.

March 2009

- OMB review of revised DOE draft of Energy Independence and Security Act of 2007 (EISA 2007) report.

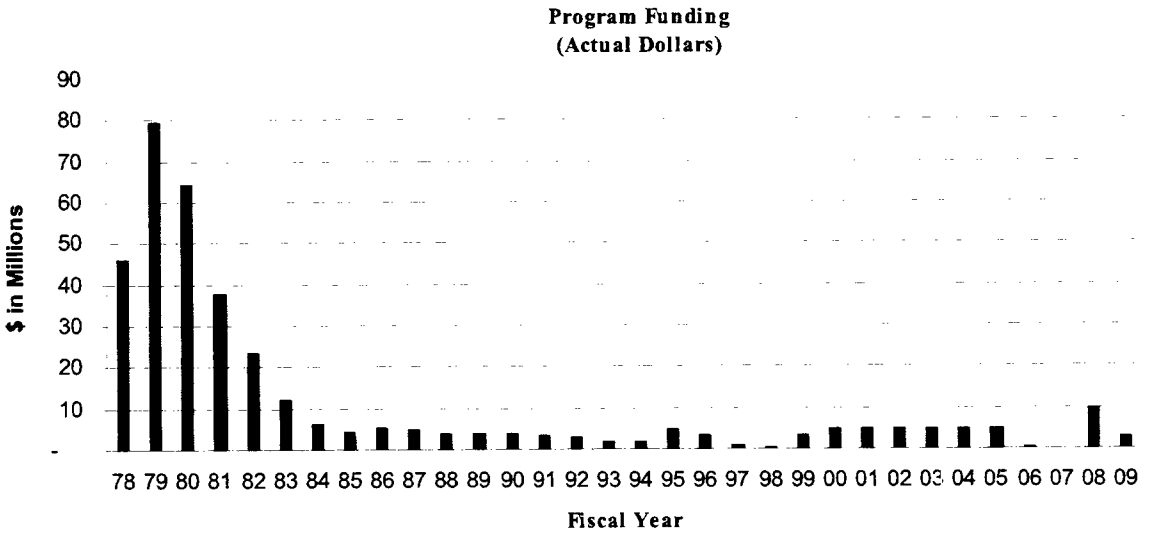
12-month events

June 2009

- EISA 2007 report (above) due to Congress.

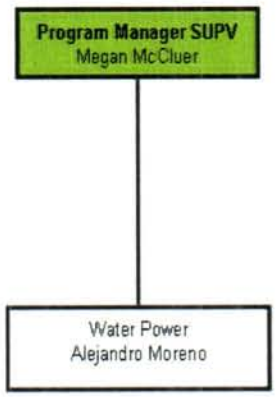
Funding Profile

Dollars in thousands		
Energy Efficiency and Renewable Energy	FY2008 Current Appropriation	FY2009 Congressional Request
Water Power	9,909	3,000



Current Organizational Chart

Water Power Technologies Program



International POC
Climate Change POC
TAO POC

* Detailed to another location
** Detailed to this office
*** Assigned to another office
TL= Team Lead
SUPV= Supervisor

Total On-Board included in Wind Energy Program

07/16/2008

Geothermal Technology Program

Organization Information

Organization Name:

Geothermal Technology Program (GTP)

Address:

1000 Independence Ave. S.W.
EE-2C
Washington, DC, 20585

Organization Phone Number:

202-586-0410

Organization Website:

http://www1.eere.energy.gov/geothermal/

POC E-mail Address:

Ed Wall <Ed.Wall@ee.doe.gov>

Supporting the DOE Mission

Strategic Theme 1 – Energy Security
- Strategic Goal 1.1 – Energy Diversity
- Strategic Goal 1.2 – Environmental Impacts of Energy

Strategic Theme 3 – Scientific Discovery and Innovation
- Strategic Goal 3.3 – Research Integration

Mission Statement

Conduct research and development on Enhanced Geothermal Systems (EGS)[1] to advance the technology as an economically competitive contributor to the U.S. energy supply.

Target Market

The program is focusing on EGS to supply base-load power to the Nation. Commercial development is expected to be accomplished by independent power producers. Research is projected to reduce the cost of power from EGS by increasing EGS well flow rates and well longevity and by reducing thermal drawdown.

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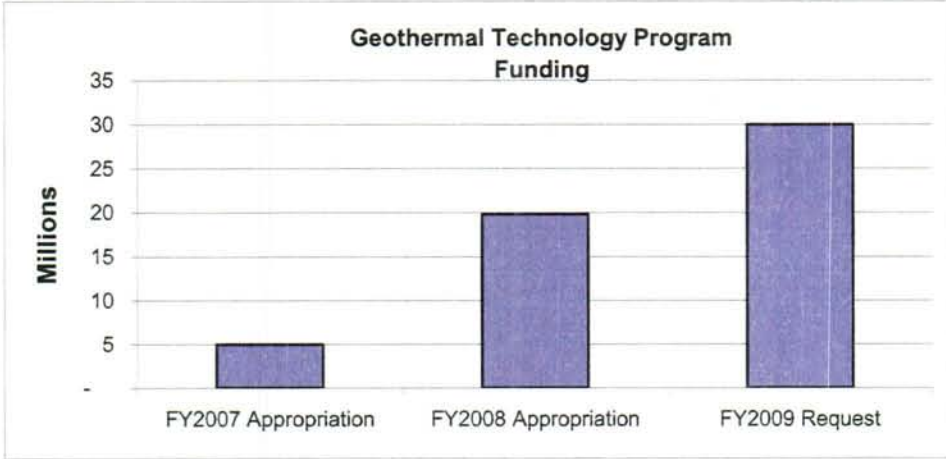
[1] Enhanced Geothermal Systems (EGS) are engineered reservoirs created to produce energy from geothermal resources deficient in economical amounts of water and/or rock permeability. Naturally occurring heat, water and rock permeability are know as hydrothermal resources. In simplicity, EGS are engineered hydrothermal resources.

Status

Budget:



FY2009 Congressional Request: $30,000,000 (nominal dollars)

People:

Estimated number of Federal FTEs (HQ plus Golden Field Office): 15
Estimated number of HQ on-site contractor FTEs: 1
Estimated number of HQ FTEs: 11
Estimated number of field site FTEs (Golden Field Office): 4
Estimated number of Reimbursable FTEs (National Energy Technology Laboratory): 0

Facilities:

Concentrated Lab activities at National Renewable Energy Laboratory (NREL), Sandia National Laboratory (SNL), and Lawrence Berkeley National Laboratory (LBNL)

Performance:

PART rating: Moderately effective
FY07 PART measure status: 0 met, 0 unmet, 0 unknown
FY07 4th quarter Joule status: 2 Green, 0 Yellow, 0 Red

History

The Geothermal Technology Program was authorized by the Geothermal Research, Development, and Demonstration Act of 1974.

Activities are devoted to understanding geothermal resources and developing technology to improve economic use of resources.

The DOE program led to widespread application of advanced technologies, such as binary-cycle conversion systems, heat-tolerant down-hole instruments and tools, high-temperature materials, handling equipment for saline brines, condensers and heat exchangers, drilling equipment, and the deployment of geothermal heat pumps.

DOE accomplishments include program-pioneered polycrystalline diamond compact (PDC) drill bits, which have become worldwide standard for oil & gas drilling and constitute more than a $200 million per year business. PDC bits were recognized as one of DOE's 100 major accomplishments in the agency's first 25 years.

Funding for the program was not requested in FY 2007 and FY 2008 based on industry and government priorities and indications that the current technologies for shallow, hot hydrothermal resources were mature. The Massachusetts Institute of Technology (MIT) report (2006) "The Future of Geothermal Energy" evaluated the potential of EGS; as a result, a new program emerged in FY 2008 focused on EGS technology development. The EGS technology requires significant knowledge base, long term advancement in R&D and capitalization to grow. EGS has the potential to contribute 100,000 MWe to the U.S. energy supply. Ultimately, commercial EGS could provide baseload, indigenous power and contribute to the security and diversity of U.S. energy supplies.

Critical Operating Procedures

The Geothermal Technology Program led by a program manager with a staff of seven DOE employees, two interns, and one full time contractor. The program manager makes assignments to staff members with particular technical expertise. Staff has special areas of emphasis beyond their technical expertise, such as budget preparation and defense, congressional affairs, education and outreach, international cooperation, risk analysis, climate change, and program planning.

Back-ups are assigned for each major area. Teleconferences are held weekly with staff at Golden Field Office and the national laboratories.

Recent Organizational Accomplishments and Strengths

Organizational Accomplishments

Through the Geothermal Technology Program, DOE:

- Cost shared the PureCycle geothermal power system that received a 2007 R&D 100 Award, a Green Power Leadership Award from EPA and DOE, and Project of the Year in the Renewable Energy Category from Power Engineering Magazine.
- Developed technological advances that received 8 R&D 100 awards over the last nine years.
- Issued a solicitation for EGS Research, Development, and Demonstration through Golden Field Office.
- Evaluated technology status and needs for future improvements to enable EGS to reach its market potential.

Organizational Strengths

- Program organization is flat, with the program manager as the only supervisory authority, avoiding multiple levels of information flow.
- Organization has broad scope, covering all aspects of technology development.
- Staff has experience in Geothermal Technologies Program ranging from six months to over 30 years, conducive to vetting ideas and alternative approaches to problem solving.

DOE has:

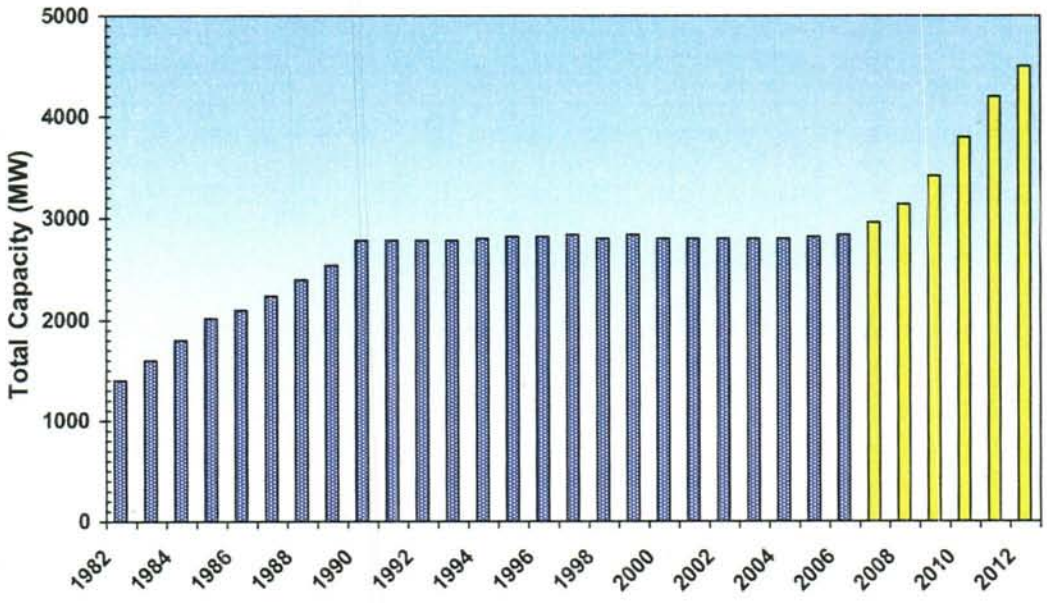
- Re-organized the program to focus on EGS in FY 2008.
- Concentrated lab activities at NREL, SNL, and LBNL, eliminating activities at three other national laboratories.

Leadership Challenges

Challenges include reestablishing strong working relationships with the geothermal industry, revitalizing R&D at DOE national laboratories to provide field projects with the necessary technical assistance and monitoring, and validating the current program emphasis on EGS by showing positive results.

Key Strategies and Timing

Geothermal Capacity Growth Chart



The program has adopted a three-fold strategy to achieve its goal using a cost-shared approach:

- Conduct research on EGS-related technologies that have the greatest impacts on EGS reservoir creation, operation, and management using a test site
- Develop EGS reservoirs at existing geothermal fields
- Provide improvements in EGS supporting technologies determined to have the broadest applicability and greatest impact on cost.

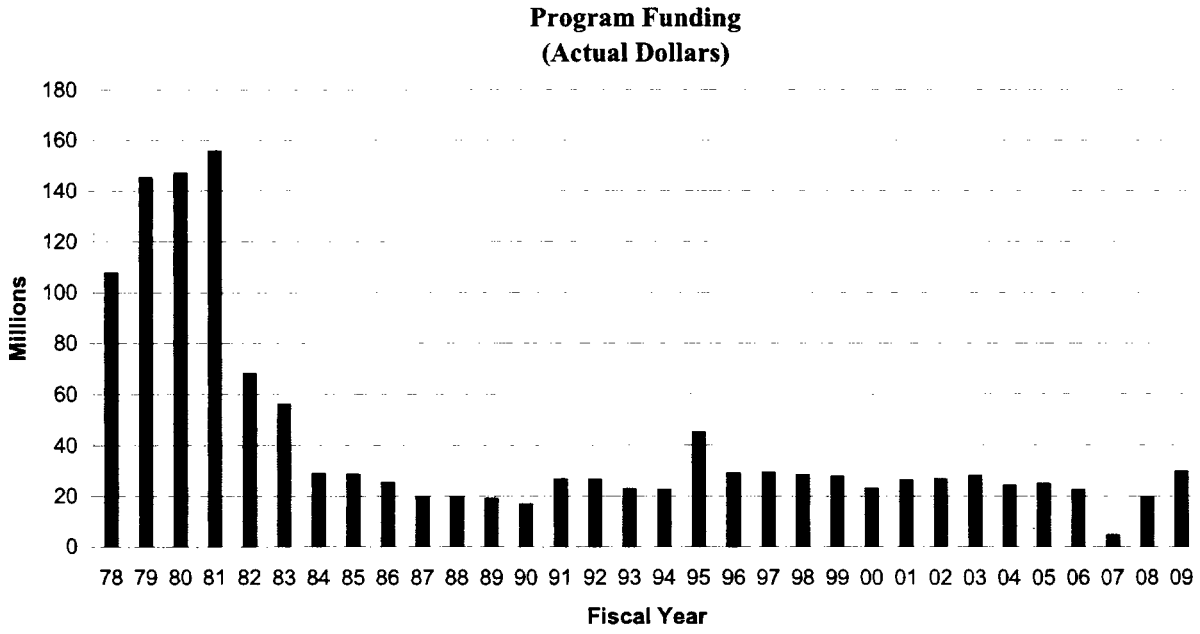
The program plans to initiate two to six EGS field projects by 2010, demonstrate a 5 MWe commercial scale power plant by 2015, demonstrate two to ten greater than 5 MWe commercial scale power plants in different geologic conditions by 2020, and reach EGS technology readiness for 100,000 MW base-load by 2025.

Critical Events and Action Items

February 2009
International Partnership for Geothermal Technology Steering Committee Meeting

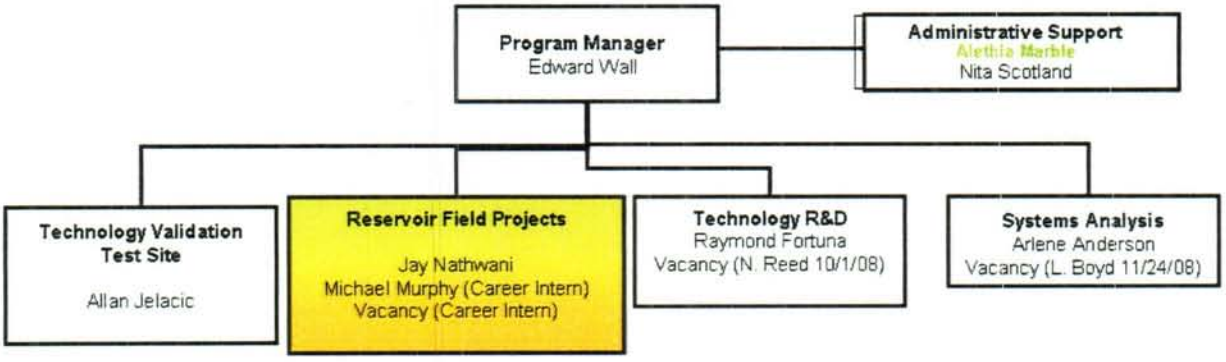
Funding Profile

Dollars in thousands		
Energy Efficiency and Renewable Energy	FY2008 Current Appropriation	FY2009 Congressional Request
Geothermal Technology	19,818	30,000



Current Organizational Chart

Geothermal Technology Program



International POC
Climate Change POC
TAO POC

* Detailed to another location
** Detailed to this office
TL= Team Lead
SUPV= Supervisor

Total On-Board =8
Total Vacancies = 3
Total Resource Allocation = 11

07/17/2008

Biomass and Biorefinery Systems Research & Development

Organization Information

Organization Name:

Biomass and Biorefinery Systems R&D (Biomass Program)

Address:

1000 Independence Avenue, SW
Room 5H-021
Washington, DC, 20585

Organization Phone Number:

202-586-5188

Organization Website:

http://www1.eere.energy.gov/biomass/

POC E-mail Address:

Jacques Beaudry-Losique <Jacques.Beaudry-Losique@ee.doe.gov>

Supporting the DOE Mission

Strategic Theme 1 – Energy Security
  Strategic Goal 1.1 – Energy Diversity
  Strategic Goal 1.2 – Environmental Impacts of Energy
Strategic Theme 3 – Scientific Discovery and Innovation
  Strategic Theme 3.3 – Research Integration

Mission Statement

Develop and transform our domestic, renewable, and abundant non-food biomass resources into cost-competitive, high performance biofuels, bioproducts and biopower through targeted RD&D leveraged by public and private partnerships.

Target Market

The Biomass Program partners with universities, national labs, and key industrial stakeholders such as ethanol producers, petroleum companies, and agri-business to foster breakthrough technologies needed to make cellulosic ethanol cost-competitive with corn-based ethanol by 2012 and supports the development of sustainable, market-ready domestic transportation fuels from biomass in support of the Renewable Fuels Standard (RFS).

- Through RD&D, make cellulosic ethanol cost-competitive, at a modeled cost for mature technology of $1.33 per gallon by 2012 and approximately $1.20 per gallon by 2017[1].

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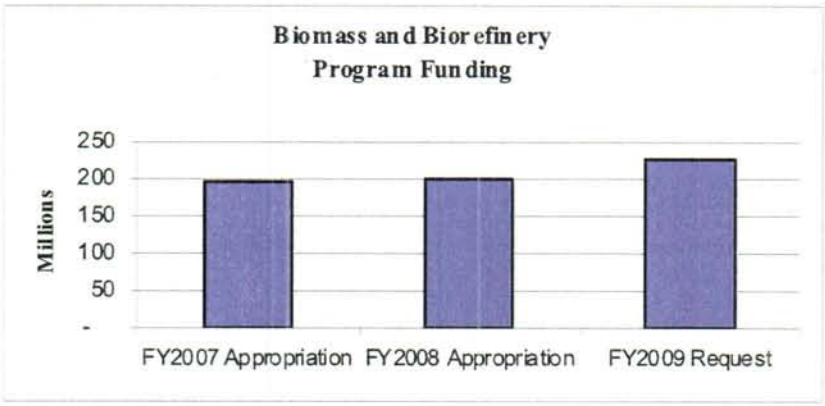
[1] These targets are updated periodically based on the latest state of technology and economic conditions.

- Increase the supply of renewable fuels to 36 billion gallons by 2022.
- Build upon wide market acceptance of grain-based ethanol to pave the way for cellulosic ethanol.
- Demonstrate integrated biorefinery systems at scale to prove economic viability.
- Ensure infrastructure readiness.
- Significantly increase Flex-Fuel Vehicle production volumes and E85 stations.
- Develop other advanced biofuels, such as biobutanol, hydrocarbons from algae, and Fischer-Tropsch gasoline that can contribute to the RFS.

Status

Budget:



FY 2009 Congressional Request: $225,000,000 (nominal dollars)

People:

Estimated number of federal FTEs (HQ plus Golden Field Office): 32
Estimated number of HQ on-site contractor FTEs: 5
Estimated number of HQ FTEs: 21
Estimated number of field site contractor FTEs (Golden Field Office): 11
Estimated number of reimbursable FTEs (National Energy Technology Laboratory): 0

Facilities:

Four (4) Facilities at two National Laboratories:

National Renewable Energy Laboratory

- Alternative Fuels User Facility/Integrated Biorefinery Facility
- Thermochemical User Facility
- Biomass Characterization Laboratory

Pacific Northwest National Laboratory

- Bioproducts, Sciences and Engineering Laboratory (paid for by Washington State University and Battelle)

Performance:

PART rating: Adequate
FY07 PART measure status: 3 met, 0 unmet, 0 unknown
FY07 4th quarter Joule status: 5 Green, 0 Yellow, 0 Red

History

Energy from biomass has been a part of DOE since its establishment in 1977. Biomass can be converted by both biochemical and thermochemical conversion technologies to produce biofuels, biopower, and bioproducts. Before 2002, these end uses were represented by different offices in EERE. After 2002, the focus has been on research, development, and deployment (RD&D) to meet our highest national priorities by enabling integrated biorefineries to produce liquid transportation fuels including:

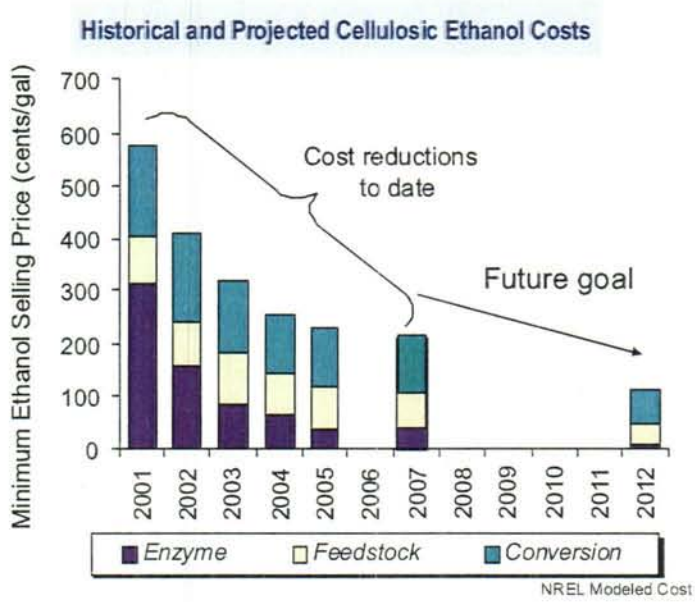
- Feedstock production and logistics (harvesting, handling, storage, and transport) which are vital program components.
- Sustainability of bioenergy systems, which is a critical, need and must include life cycle analysis.
- Infrastructure and end use development which was added to the biomass portfolio over the last two years.
- Supporting Legislation: Biomass R&D Act of 2000, Healthy Forest Restoration Act of 2004, Energy Policy Act of 2005 (EPACT 2005), Energy Independence and Security Act of 2007 (EISA 2007), and Food, Conservation, and Energy Act of 2008.

Critical Operating Procedures

In addition to Headquarters staff, the Biomass Program is strengthened by a Systems Integration team at NREL and a Project Management team at the Golden Field Office.

The Biomass Program has established procedures to enhance the effectiveness and efficiency of our communications.

Recent Organizational Accomplishments and Strengths



Organizational Accomplishments

Through the Biomass and Biorefinery Program, DOE:

- Reduced the modeled ethanol production cost to $2.43 per gallon from about $6.00 per gallon in 2001 based on bench scale data projected to commercial scale.
- Established Regional Feedstock Partnerships with USDA to evaluate feedstock production and logistics through field trials.
- Announced Selections:
  - February 2007: Commercial-Scale Biorefineries (up to $272 million) - Four cost-shared, integrated biorefinery demonstration projects to produce annually up to 100 million gallons of cellulosic ethanol in five years using a variety of conversion technologies and cellulosic feedstocks.
  - January, April, and July 2008: 10 percent-Scale Biorefinery Validation (up to $240 million) - Nine cost-shared, integrated biorefinery demonstrations using cellulosic feedstocks to produce renewable fuels.
  - March 2007: Ethanologen (organisms, yeast, bacterial or fungal that ferment sugar to ethanol) Solicitation (up to $23 million) - five selected research teams working on advanced microorganisms.
  - February 2008: Enzyme Solicitation (up to $33.8 million) - four teams selected to develop highly effective, inexpensive enzyme systems for commercial biomass hydrolysis; second phase: cellulase development with cost-sharing industry partners.
  - November 2007: Thermochemical (conversion process that utilizes heat, pressure and catalysts to convert plant materials to power, fuels, and chemicals) conversion (up to $7.75 million) - five selected to integrate the technologies for gas clean up and fuel synthesis following biomass gasification.

- March 2008: Joint DOE-USDA Solicitation ($18 million) - 21 selected under Biomass R&D Initiative on feedstocks, conversion, products and analysis.
- September 2008: University Solicitation – six U.S. universities selected to pursue innovative biomass conversion technologies (up to $4.4 million).
- October 2008: Pyrolysis Solicitation - five projects selected to advance environmentally friendly biomass conversion by improving technology to stabilize biomass fast pyrolysis oils (up to $7 million).

- Established International Biofuels partnerships with critical countries: Brazil; China; the European Union; and India.
- Established a dedicated sustainability R&D program with over $3.5 million in funding for a wide range of projects and supported two multi-stakeholder workshops on the ecological dimensions of biofuels in Spring 2008, along with a National Laboratory Sustainability workshop in May 2008, which will serve as input to a bioenergy sustainability plan.
- Initiated a testing program with the Vehicles Technology Program to evaluate the effect of intermediate ethanol blends, E15 and E20 (gasoline blended with fifteen and twenty percent ethanol, respectively), on vehicles and small engines.
- The Program has grown from 11 FTE's in 2000 to 21 FTE's in 2008 by adding key staff in infrastructure development, communications, deployment, and platform R&D.

Organizational Strengths

Through the Biomass and Biorefinery Program, the Department has:

- Moved beyond R&D to demonstrate integrated biorefineries at scale.
- Continued R&D on advanced concepts in partnership with the Office of Science.
- Developed expertise in fuel blends in partnership with industry and vehicle technologies.
- Implemented systems integration and stage-gate management of the technologies across the biofuels supply chain.
- Engaged the financial and engineering communities regarding risk mitigation.

The Program leads interagency and industry partnerships.

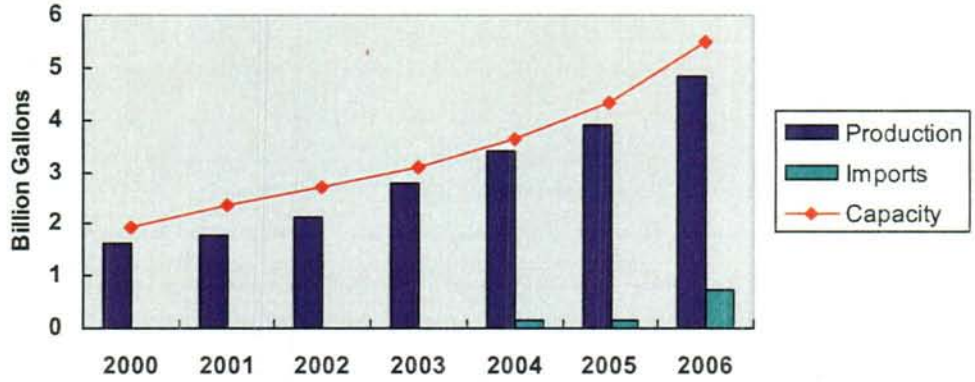
- The Biomass R&D Board coordinates biofuels R&D across federal agencies. Co-chaired by DOE and USDA, the Board is comprised of senior-level representatives from 11 agencies. The Board meets monthly and released a National Biofuels Action Plan in October 2008. Seven Interagency Working Groups have been established to implement the Plan.
- The Biomass Technical Advisory Committee is a Federal Advisory Committee to the Biomass Program and USDA Rural Development. Thirty members from industry, academia, and non-governmental organizations meet quarterly and provide recommendations.

Leadership Challenges

- Integrated Biorefinery project funding profiles lag budget request and appropriation levels from FY 2007 – FY 2009. Therefore, there have been significant uncosted balances in FY 2007 and FY 2008 which are likely to continue until demonstration projects begin the construction phase in FY 2010.

- Demonstration projects are being negotiated as two-part awards; award one (pre-construction) can only be roughly 10-15 percent of total DOE cost-share. Award two cannot be obligated until National Environmental Policy Act (NEPA) requirements are met, engineering design reviewed, and financing are in place. Funds cannot be sent to selected companies until the negotiation process is complete.
- Meeting the Renewable Fuel Standard mandates for production under EISA 2007. The graph below indicates increases over time in ethanol production, capacity, and imports.

Ethanol Production, Capacity, and Imports



Key Strategies and Timing

The overall performance goals set for the program reflect the current strategy of focusing on cellulosic ethanol as the most immediate path for meeting the President's goals, specifically for 16 billion gallons per year of cellulosic biofuels by 2022 (RFS).

- Through RD&D, make cellulosic ethanol cost-competitive, at a modeled cost for mature technology of $1.33 per gallon by 2012 and approximately $1.20 per gallon by 2017.
- Help create an environment conducive to enable:
  - Maximizing the sustainable production of biofuels by 2017, including cost-effective technology, sufficient infrastructure, appropriate policies, and supportive consumers.
  - Displacing 30 percent of 2004 gasoline use (light duty vehicles) by 2030.

The performance goals for each of the technical program elements are summarized below.

Feedstock Core R&D

- Reduce logistics cost contribution to biofuels (including harvesting, storage, preprocessing, and transportation) to $0.37 per gallon in 2012 and $0.33 per gallon in 2017. Validate a sufficient, high-quality feedstock supply of 130 million dry tons per year (MDT/yr) by 2012 and 250 MDT/yr by 2017.

Conversion Core R&D

- Reduce the processing cost of converting cellulosic feedstocks to ethanol to $0.82 per gallon by 2012 and $0.60 per gallon by 2017.

Integrated Biorefineries

- Demonstrate integrated biorefineries across various pathways by 2012. Validate mature plant modeled cost of ethanol production based on pioneer plant performance and compare to the target of $1.33 per gallon by 2017.

Biofuels Infrastructure

- In partnership with the Environmental Protection Agency (EPA) and the Department of Transportation (DOT), complete standards development and testing of E15 and E20 distribution systems and vehicles.
- Develop capacity to transport and distribute 36 billion gallons of biofuel by 2022.

Critical Events and Action Items

3-month events

January 2009

Issue Intermediate Ethanol Blends Reports:

- Final report on initial emissions testing for 16 vehicles.
- Final report on emissions, durability, operability, and full-useful life studies on small, non-road engines such as those used in hand-held lawn equipment.
- Interim report on subsequent phases of testing.

March 2009

Selection of RD&D projects aimed at accelerating the deployment of "hydrocarbon" compatible fuels, such as green gasoline and green diesel:

- Selection of University Feedstock Logistics Projects.
- Selection of Industry Feedstock Logistics Projects.
- Biomass 2009 Conference – the second annual conference that brings together a diverse audience of technical, business and policy experts to participate in discussion around biofuels and its role in the Nation's energy portfolio.

12-month events

- Award Phase II Integrated Biorefinery Contracts (construction phase of remainder of projects selected in 2007):
  - Abengoa
  - Bluefire
- Selection of third round of integrated biorefinery projects. This round will include pilot demonstrations and small scale engineering demonstrations,
- Award all of the small scale demonstration Phase 1 contracts,
- Release the updated version of the "Billion Ton" Feedstock Resource Assessment Report,
- Release the Program's Biofuels Sustainability Plan, and

- Ground Breaking for the Integrated Biorefinery Facility at NREL.

Hot Issues

NEPA Issues

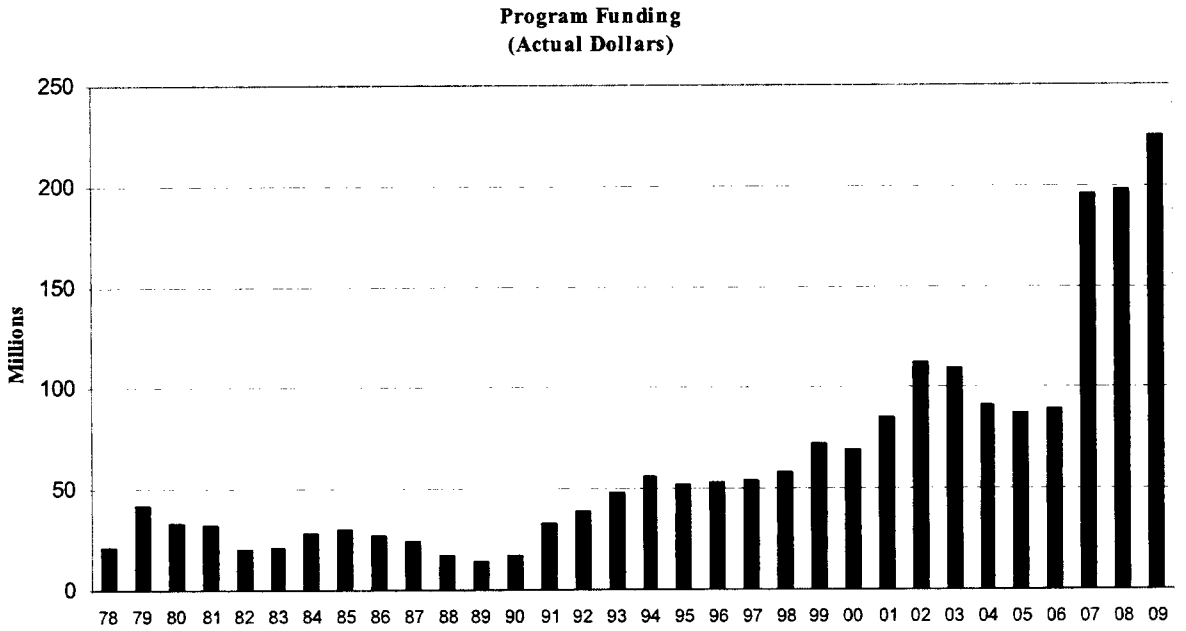
The Program continues to maintain a focus on the brick and mortar deployment of integrated biorefineries and as such, is subject to the elevated scrutiny of the NEPA process, which can add years to deployment projects. In anticipation of delays associated with this process, the Program has initiated efforts to engage the DOE NEPA Headquarters and field teams to streamline and hasten the NEPA compliance process while still maintaining its integrity. Such efforts, if successful, will result in the timely deployment and validation of biorefineries contributing to the Nation's energy security in a sustainable and environmentally benign way.

Key Public Issues

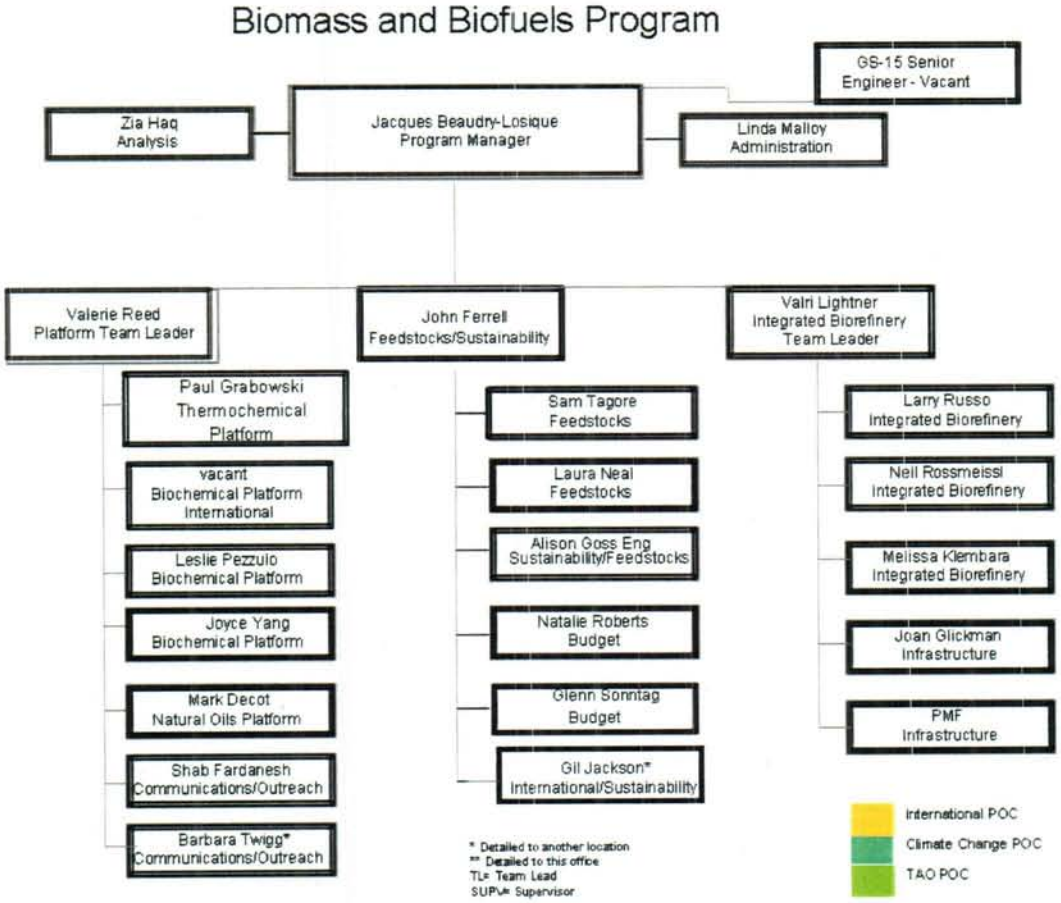
- Food vs. Fuel – The perception must be addressed that biofuels are a principal factor driving increased food costs and shortages. Multiple studies from DOE, USDA and others have shown the impact of biofuels on food costs to be less than 10 percent and that cellulosic biomass is a solution as it is a non-food resource. The Texas RFS Waiver request claimed that ethanol production is raising food prices. EPA rejected the request by the state of Texas on the grounds that biofuels were not causing a significant increase in food prices. EPA consulted with DOE on the Texas Waiver.
- Indirect Land Use – Biofuels have been criticized for possible indirect land use impacts, such as, increased green house gas (GHG) arising from clearing of land for planting biomass. DOE, USDA and EPA are working on better understanding how to model indirect land use impacts and GHG increases.
- Tariffs and Subsidies – Ethanol tariffs and blender subsidies were renewed in 2008 but will expire in 2010. The Department will need to continue to monitor this issue.

Program Funding

Dollars in thousands		
Energy Efficiency and Renewable Energy	FY2008 Current Appropriation	FY2009 Congressional Request
Biomass and Biorefinery R&D	198,180	225,000



Current Organizational Chart



Federal Energy Management Program

Organization Information

Organization Name:

Federal Energy Management Program (FEMP)

Address:

1000 Independence Ave., S.W.
Room 5E-080
Washington, DC 20585-0121

Organization Phone Number:

202-586-5772

Organization Website:

http://www1.eere.energy.gov/femp/

POC E-mail Address:

Richard Kidd <Richard.Kidd@ee.doe.gov>

Supporting the DOE Mission

Strategic Theme 1 – Energy Security
Strategic Goal 1.1 – Energy Diversity
Strategic Goal 1.4 – Energy Productivity

Mission Statement

Enhance energy security, environmental stewardship and cost reduction within the federal government by advancing energy efficiency and water conservation; promoting the use of renewable energy, alternative fuels for federal vehicles, sustainable building design, and distributed energy resources; and improving utility management decisions at federal facilities.

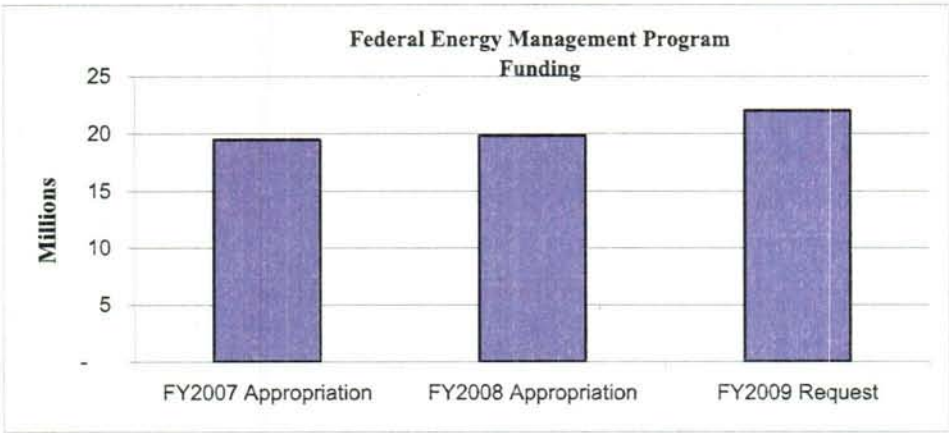
Target Market

FEMP's customer base includes all federal agencies owning, operating, or leasing facilities and/or motor vehicle fleets. The secondary market includes the building and the alternative fuel vehicle industries and state and local government and industry followers of federal government practices. Key technology drivers include current and emerging energy and water efficiency and renewable energy technologies and best practices, alternative fuel vehicles and non-petroleum fuels, and enabling authorities (e.g., Energy Independence and Security Act 2007 (EISA 2007), Executive Order (E.O.) 13423, and Energy Policy Act (EPACT) 1992 and 2005).

The federal government owns, operates, and leases over 500,000 facilities at about 8,000 sites nationwide. DOE owns, operates, and leases facilities at 62 sites nationwide. The federal vehicle fleet totals 650,000.

Status

Budget:



FY2009 Congressional Request: $22,000,000 (nominal dollars)

People:

Estimated number of federal FTEs (HQ plus Golden Field Office): 27

Estimated number of HQ on-site contractor FTEs: 8

Estimated number of headquarters FTEs: 23

Estimated number of field site FTEs (Golden Field Office): 4

Estimated number of reimbursable FTEs (National Energy Technology Laboratory): 2

Facilities:

None

Performance:

PART rating: Moderately effective

FY07 PART measure status: 1 met, 0 unmet, 0 unknown

FY07 4th quarter Joule status: 2 Green, 0 Yellow, 0 Red

History

During the time of the oil embargo, Federal agencies were directed to reduce their energy consumption and responsibility for this program was vested in the Interior Department's Office of Energy Conservation in June 1973. Later that year, an Executive Order established the Federal Energy Office (FEO) and the Federal Energy Management Program (FEMP) was established as a part of that office. In June 1974, the newly formed Federal Energy Administration (FEA) absorbed the programs and activities of the FEO, including FEMP. In 1977, the Department of Energy was formed which absorbed the programs of the FEA, including FEMP.

Since its establishment, the program has evolved as a result of numerous public law mandates, executive orders, Federal Acquisition Regulations, and directives from individual Federal agencies including the DOE. The authorities under which FEMP operates include, but are not limited to

- EPACT 1992 (Federal fleet goals);
- EPACT 2005 (Federal facility and fleet goals, advanced meters, ESPCs, etc.);
- EISA 2007 (federal facility goals, high-performance green buildings, revised building standards, Energy Saving Performance Contracts (ESPCs), and fleet infrastructure, etc.);
- E.O. 13423 (federal facilities and fleet goals, procurement of renewable power, etc); and
- E.O. 13221 (Standby Power Devices).

Major past events include:

- The statutory authority for the Energy Saving Performance Contract (ESPC) program expired on October 1, 2003. It was reauthorized by the EPACT 2005, until 2016 and then permanently reauthorized by EISA 2007.
- The signing of EISA 2007 into law created numerous obligations and requirements for FEMP.

The federal government serves as a unique test bed for DOE and non-federally sponsored technologies due to its large (1.4 percent of U.S. building space) and diverse building inventory which includes commercial, industrial, residential, research/laboratory, medical, agricultural, transportation, institutional, and cultural facilities. In addition, the federal government operates a large and diverse on- and off-road vehicle fleet.

The latest data reveals that the federal government's annual energy bill is $11.3 billion for its facilities and $6.2 billion to operate the federal motor vehicle fleet and transportation equipment.

Critical Operating Procedures

FEMP serves as the lead coordinator for ensuring federal sector compliance with existing laws and Administration policies regarding energy management. FEMP:

- Coordinates in depth inter-agency policy and technical reviews to obtain government-wide input on issues and barriers; reviews how mandates affect individual agency energy use, policies, and missions; and seeks input from customers on effectiveness of FEMP services. Coordination is accomplished through the Inter-agency Energy Management Task Force and the task force's individual working groups.
- Builds government-wide consensus and buy-in on the interpretation of new/revised authorities to ensure timely and accurate compliance with Congressional law and Administration policies, providing formal guidance on the interpretation of key legislative mandates.
- Provides federal agencies with technical and project financing assistance to plan, implement, and evaluate facility management projects and to select the most appropriate funding (or combination of funding) options to ensure that each agency achieves mandated federal energy management goals.

- Coordinates the planning, data collection, and analysis of DOE's Transformational Energy Action Management (TEAM) initiative to ensure that the agency's 62 sites achieve the Secretary's TEAM goals; developing TEAM to serve as a model for replication by other federal agencies.
- Coordinates all tasks associated with the promulgation of rules to improve Federal building efficiency.
- Conducts an active Communications and Outreach Program targeting federal agencies government wide and industry stakeholders involved in federal facility projects and vehicle fleets and their supporting infrastructure.

FEMP is managed by the program manager, who is served by four team leaders:

- Finance Acquisition Support Team
- Design, Operations, Maintenance, Procurement and Regulatory Team
- Reporting, Inter-agency Coordination, Communications, Fleet, Budget and Special Projects Team
- Climate Actions Team

Recent Organizational Accomplishments and Strengths

Recent Accomplishments:

- EISA 2007 Requirements: (June 2008) Issued guidelines/criteria on designating energy managers, identifying certification systems and efficiency levels for green buildings.
- TEAM Initiative: Conducted 23 Initial Proposal and 11 Final Proposal Reviews for ESPCs at DOE sites, and developed guidance to help DOE's 62 sites plan and implement their 10-Year Executable Plans.
- ESPC Awards: Thirteen awards government wide in FY 2008.
- Renewable Industry Day (February 2008): Attracted 200 industry stakeholders and introduced Request for Information (RFI) on renewables for TEAM; provided information on how to do on-site renewable projects receiving 28 industry responses.
- Federal Fleet Industry Day (June 2008): Attracted 90 stakeholders; served as networking forum for participants; held discussions on how to resolve existing issues.
- Utility Option Studies: Conducted a series of studies to identify most effective way of meeting facility requirements at laboratory facilities and completed Integrated Resource Planning for all DOE facilities.
- Departmental Utility Acquisition and Regulatory Intervention: Managed the Department's program to review the acquisition and management of utility services including electricity, natural gas steam and water worth approximately $400 million a year and provided technical assistance to the DOE's Office of General Council participating in utility rate proceedings to protect the DOE consumer and programmatic interests at its facilities.
- Utility Partnerships: Held two Federal Utility Partnership Working Group meetings in FY 2008 and held four Utility Energy Service Contracts (UESC) training events.
- Utility Energy Service Contracts: Provided direct UESC project assistance to a variety of agencies.

- Establishing Baseline and Meeting Water Conservation Goals of Executive Order 13423 Guidance: Developed via inter-agency consensus; issued January 2008.
- Washington International Renewable Energy Conference (WIREC): Organized interantional panel of public sector leadership
- Agency Guidance for Meeting Renewable Energy Goals: Energy Requirement for EPACT 2005 and Executive Order 13423. Developed via inter-agency consensus and issued January 2008.

Organizational Strengths

- FEMP has a dedicated staff with in-depth knowledge and understanding of technical and policy issues and extensive experience coordinating inter-agency consensus and agreements.
- Organized to provide federal customers with four critical core services: 1) planning, analysis, and evaluation; 2) technical assistance; 3) project financing guidance and support; and 4) outreach and communications.
- Recognized as the lead coordinator and information resource for federal energy management by federal agencies and industry stakeholders (e.g., utilities, Energy Service Companies (ESCOs), equipment manufacturers, building designers and operators).

Leadership Challenges

- FEMP will need to help Federal agencies meet aggressive goals for reduced energy intensity, increased use of renewable energy and increased use of alternative fuel use in federal fleets as established by the Energy Independence and Security Act of 2007 and the Energy Policy Act of 2005.

Key Strategies and Timing

FEMP will implement the following strategies:

- As part of the Secretary's Transformation Energy Action Management (TEAM) initiative, DOE is leading by example in promoting and utilizing the best available energy management technologies and practices through binding agreements that are being set up throughout the Program Offices that ensure that DOE will meet, exceed, and lead in the implementation of Executive Order (EO) 13423 and EISA 2007 goals.
- Identify high impact opportunities across federal agencies for increased use of energy efficiency and renewable energy, deploying these technologies through coordinated procurement, alternative financing or other means.
- Recommend strategies for improved energy security for critical needs at federal facilities.

Critical Events and Action Items

3-month events

April 9, 2009

- Report on the federal government's Use of Renewable Energy.

12-month events

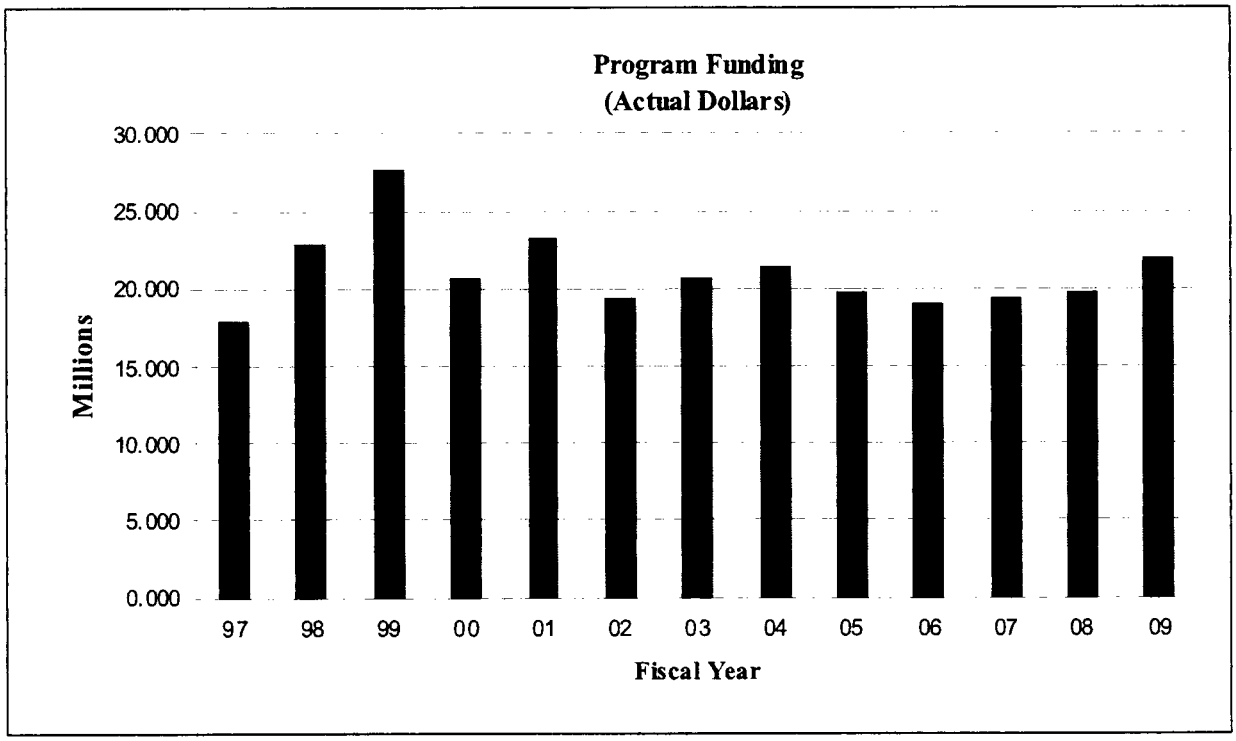
- Annual Report to Congress: FY 2008 Annual Report to Congress on Federal Government Energy Management and Conservation Programs will be submitted August 2009.

Hot Issues

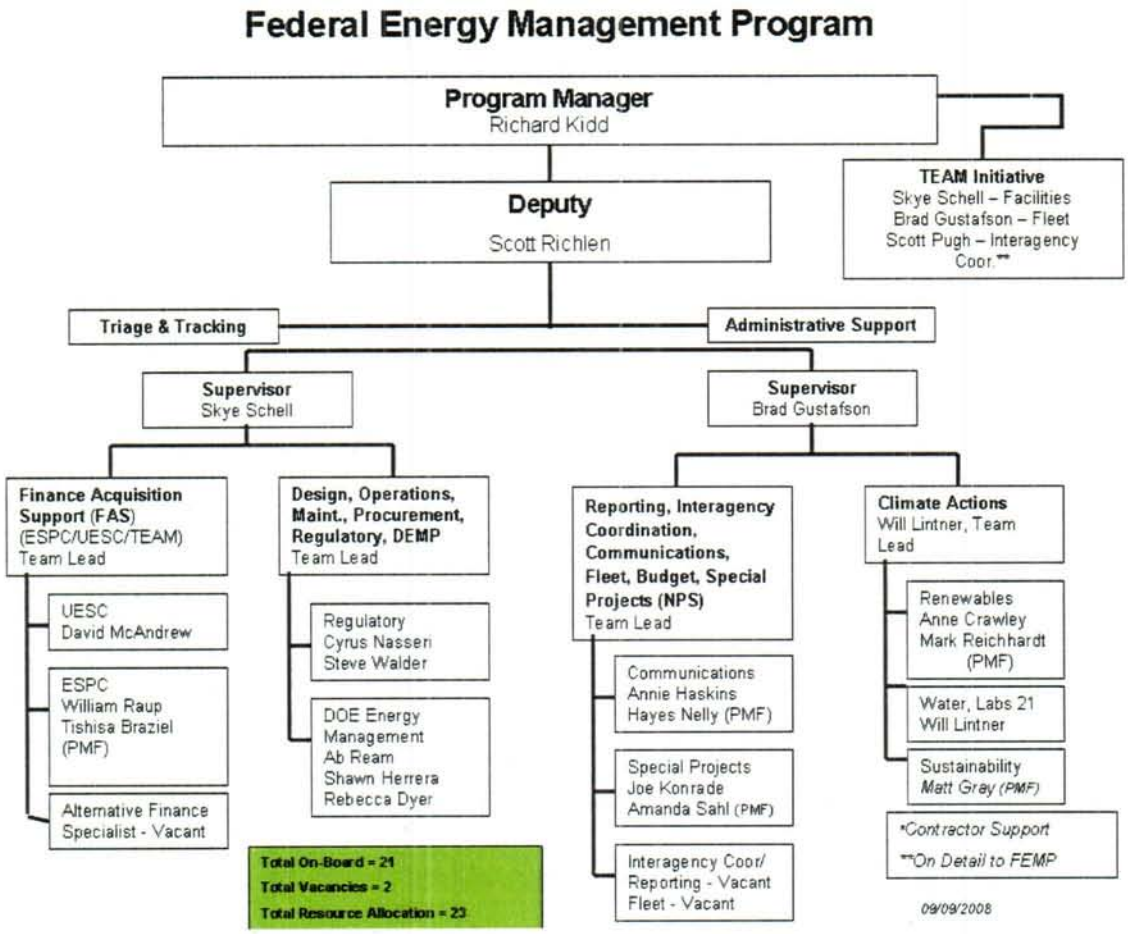
- One of the key issues facing the Department of Energy and other Federal agencies is the task of meeting the legislative requirements for Federal agency use of energy efficiency and renewable energy in an environment where funds for investing in capital projects will be limited. The most promising means of meeting this challenge will be through the use of the newly competed Energy Savings Performance Contract which has the potential for supporting $50 billion worth of projects. It is paramount that FEMP overcome the business process and legislative impediments that stand in the way of an effective implementation of this tool.

Funding Profile

Dollars in thousands		
Energy Efficiency and Renewable Energy	FY2008 Current Appropriation	FY2009 Congressional Request
Federal Energy Management Program	19,818	22,000



Current Organizational Chart



Industrial Technologies

Organization Information

Organization Name:

Industrial Technologies Program (ITP)

Address:

1000 Independence Ave, S.W.
Room 5F-065
Washington, DC 20585

Organization Phone Number:

202-586-5264

Organization Website:

http://www1.eere.energy.gov/industry/

POC E-mail Address:

Douglas Kaempf <douglas.kaempf@ee.doe.gov>

Supporting the DOE Mission

Strategic Theme 1 – Energy Security
  Strategic Goal 1.2 – Environmental Impacts of Energy
  Strategic Goal 1.4 – Energy Productivity
Strategic Theme 3 – Scientific Discovery and Innovation
  Strategic Goal 3.3 – Research Integration

Mission Statement

Reduce the energy intensity of the U.S. industrial sector through a balanced portfolio of collaborative technology investments, validation, and dissemination of information on energy-efficiency technologies and best energy management and operating practices that are used and replicated. Reductions in energy intensity support carbon emission reductions; improved national energy security, climate, and environment, and economic competitiveness.

Target Market

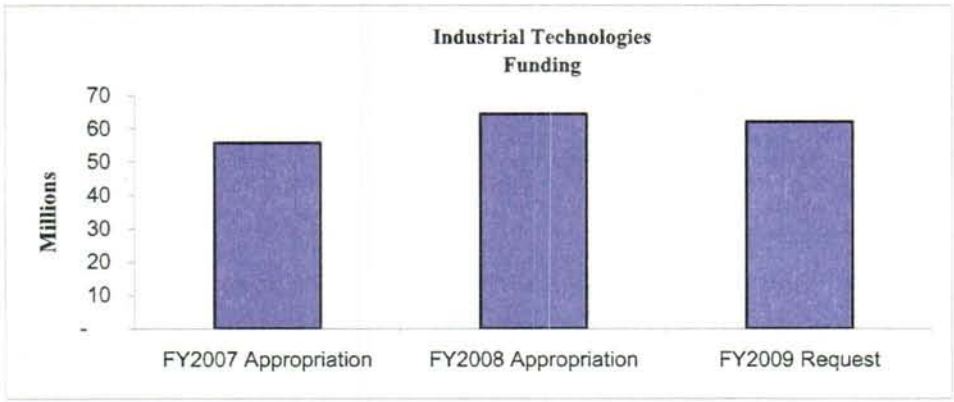
The program is focusing on driving energy efficiency and carbon reduction throughout the manufacturing value chain, from extraction of raw materials through assembly of commercial products. ITP works with:

- Energy-intensive industries such as chemicals, forest products, and steel;
- Major value-adding industries such as food processing, automotive, and fabricated metals; and

- High-growth industries such as computers and electronics, data centers, and new energy supply industries.

Status

Budget:



FY2009 Congressional Request: $62,119,000 (nominal dollars)

People:

Estimated number of Federal FTEs (HQ plus Golden Field Office): 32
Estimated number of HQ on-site contractor FTEs: 5
Estimated number of HQ FTEs: 22
Estimated number of field site FTEs (Golden Field Office): 10
Estimated number of Reimbursable FTEs (National Energy Technology Laboratory): 4

Facilities:

No major facilities

Performance:

PART rating: Adequate
FY07 PART measure status: 3 met, 0 unmet, 0 unknown
FY07 4th quarter Joule status: 3 Green, 0 Yellow, 0 Red

History

Due to the significant amount of energy consumed by the industrial sector, energy R&D on industrial activities has been a vital part of the federal government's energy programs. Industrial activities began as a conservation program in 1975 and included industrial processes in 1977. Around 1990, EERE reorganized the programs, and the Office of Industrial Technologies (OIT) was created as one of four energy sectors foci (others were transportation, buildings and power). In 2002, as part of an EERE management streamline reorganization effort, OIT became one of eleven EERE programs and was renamed the Industrial Technologies Program (ITP).

Since its inception, EERE's industrial R&D programs (ITP and its predecessors) have had great success in the development and implementation of energy-efficient technology. ITP sponsored R&D has won 47 R&D 100 Awards[1] and 235 patents since 1990; additionally, over 190 technologies have been commercialized, resulting in more than 5 quadrillion (cumulative) Btus of energy saved.

Critical Operating Procedures

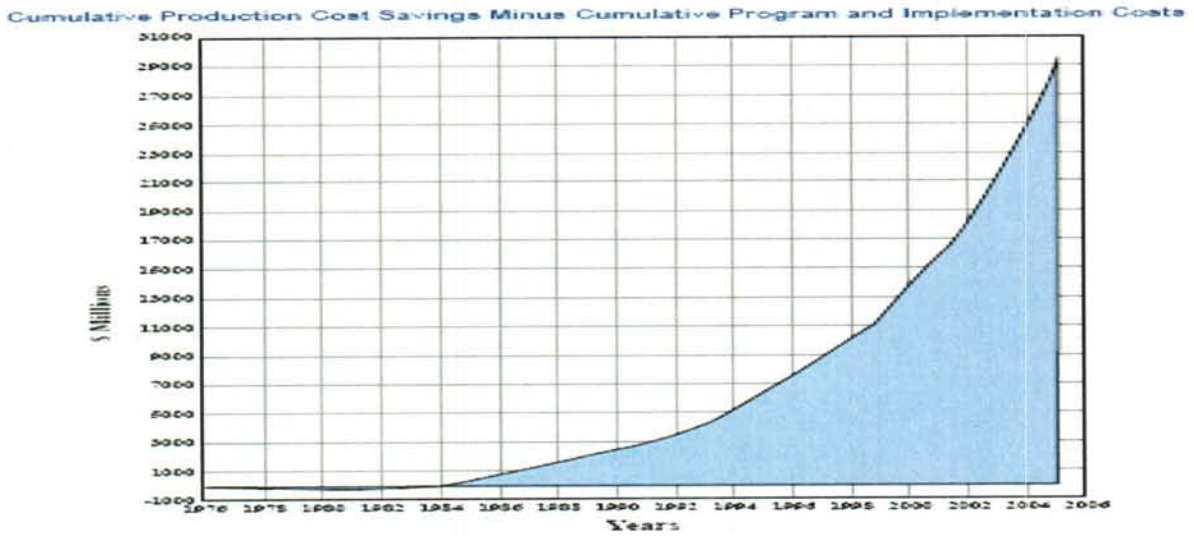
ITP is managed by a program manager who is supported by two supervisors, two team leaders and one special assistant, providing program level support, budget and financial activities coordination, and one administrative support:

- Technology Development –one team lead.
- Energy Technology Delivery –one team lead

In addition, there are fifteen (15) technology managers at headquarters with diverse technical and industry expertise supporting the program. ITP also uses the Golden Field Office and the National Energy Technology Laboratory to manage industry contracts and financial assistance agreements.

Recent Organizational Accomplishments and Strengths

ITP: Net Program Impact



[1] R&D 100 awards, given out by R&D Magazine, are selected by an independent panel of judges based on the technical significance, uniqueness and usefulness of projects and technologies from across industry, government and academia.

Organizational Accomplishments

Through ITP, DOE:

- Commercialized 14 new technologies with industrial partners in 2006;
- Won 11 prestigious *R&D 100*[2] Awards in 2006-2007;
- Completed 450 industrial plant energy assessments (2006-2007);
- Assisted industry in saving nearly 500 trillion Btu in 2006;
- Assisted industry in reducing carbon emissions by 9 million metric tons of carbon equivalent in 2006;
- Initated effort to develop an American National Standards Institute (ANSI)-accredited process for plant energy management, as well as, energy efficiency improvement; and
- Established plant energy assessment programs with 19 state energy offices.

Organizational Strengths

Through ITP, DOE has developed the following strengths:

- A leadership role in national efforts to reduce industrial energy intensity and carbon emissions;
- A national reputation as an unbiased source of technical information on advanced technologies and practices;
- A strong history of collaborative partnership with industry to tackle the toughest technological problems facing our Nation's manufacturers; and
- A nimble organization and flexible strategy that respond quickly to emerging issues and market conditions affecting our industrial stakeholder base in order to best achieve ITP's strategic objectives. These objectives include conditioning the market, investing strategically in technology R&D, and delivering highly efficient technologies and practices to industry.

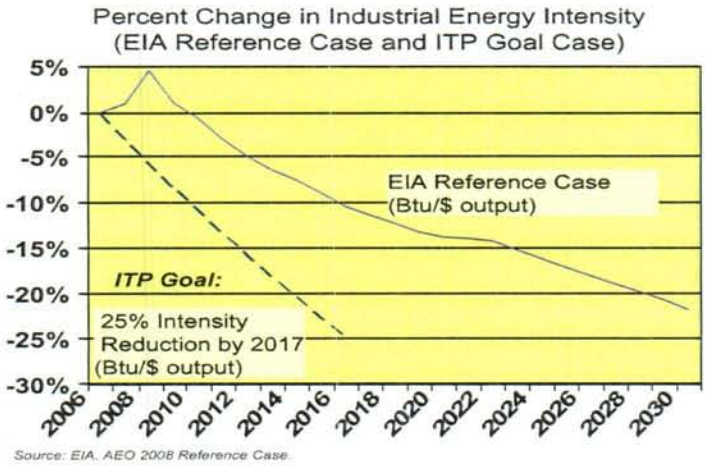
Leadership Challenges

ITP is working to develop partnerships to improve energy intensity and reduce carbon emissions across *all* industries of a very diverse U.S. industrial sector that operates in an intensively competitive global market.

[2] R&D 100 Awards, given out by R&D Magazine, are selected by an independent panel of judges based on the technical significance, uniqueness, and usefulness of projects and technologies from across industry, government, and academia.

Key Strategies and Timing

Industrial Energy Intensity:
EIA Projection vs. ITP Goal



ITP has a three-part strategy designed to deliver results:

- Sponsors research, development, and demonstration (RD&D) of technologies to reduce energy and carbon intensity;
- Conducts technology delivery activities to help plants access today's technology and management practices; and
- Promotes a corporate culture of energy efficiency and carbon management within industry.

ITP has embraced an overarching goal of driving a 25 percent reduction in industrial energy intensity by 2017, in accordance with the Energy Policy Act of 2005 (EPACT 2005).

Critical Events and Action Items

3-month events

March 2009

- Demonstration of Industrial Distributed Energy technology at plant in Killingly, CT planned for Spring 2009.

12-month events

Throughout 2009

- Regional summits on industrial energy efficiency to raise awareness and build national partnerships to improve industrial energy efficiency.

June 2009

- Develop concept of baseline protocol for the American National Standards Institute (ANSI) Management System for Energy (MSE).

September 2009

- Initiate focused regional efforts, partnering with 16 states, to launch aggressive state-level Save Energy Now campaigns.
- Conduct federal data center efficiency demonstration.

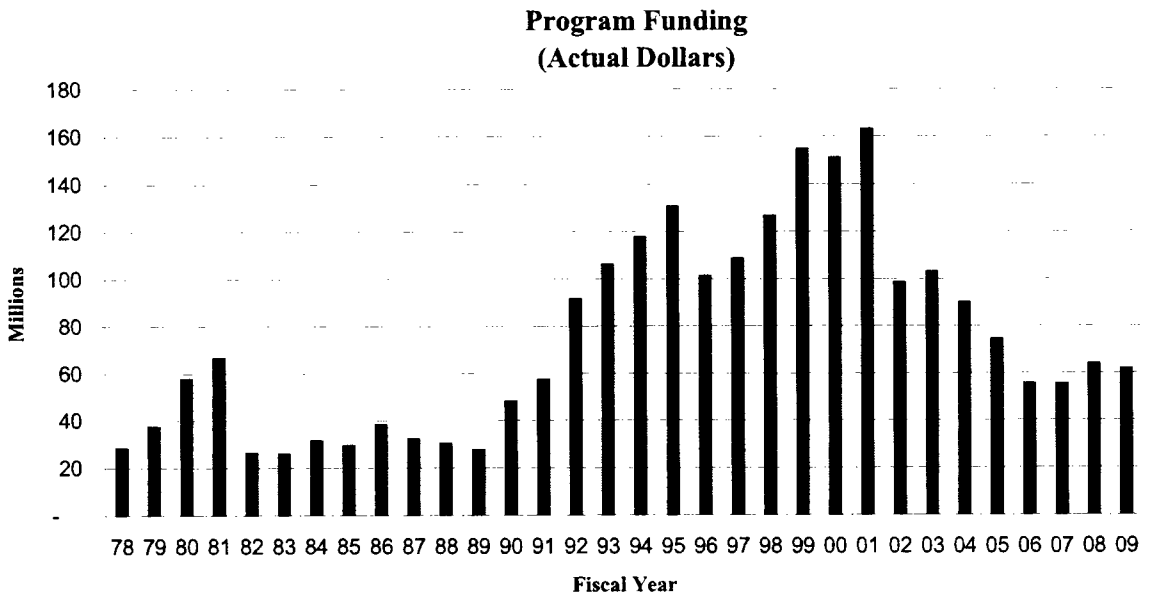
Hot Issues

To realize the large potential savings in the industrial sector will require:

- Highly focused, collaborative regional efforts by U.S. industrial companies, utilities, state energy offices, the investment community, and other key organizations by:
  - Building synergies and partnership opportunities for industrial energy efficiency and carbon reduction.
  - Developing better understanding of the risk, payback, incentives (state- and utilities-based) and investment and access to capital to increase commercialization of technologies and increase public awareness and recognition of industrial energy efficiency.
- Development of a recognized baseline methodology to assist industrial companies action to reduce energy intensity and carbon emissions.
- Coordination with the International Organization for Standardization (ISO) to develop a new international energy management standard (ISO 50001), as well as, creating a voluntary ANSI-accredited certification program in the U.S. for energy efficiency improvement at manufacturing plants.

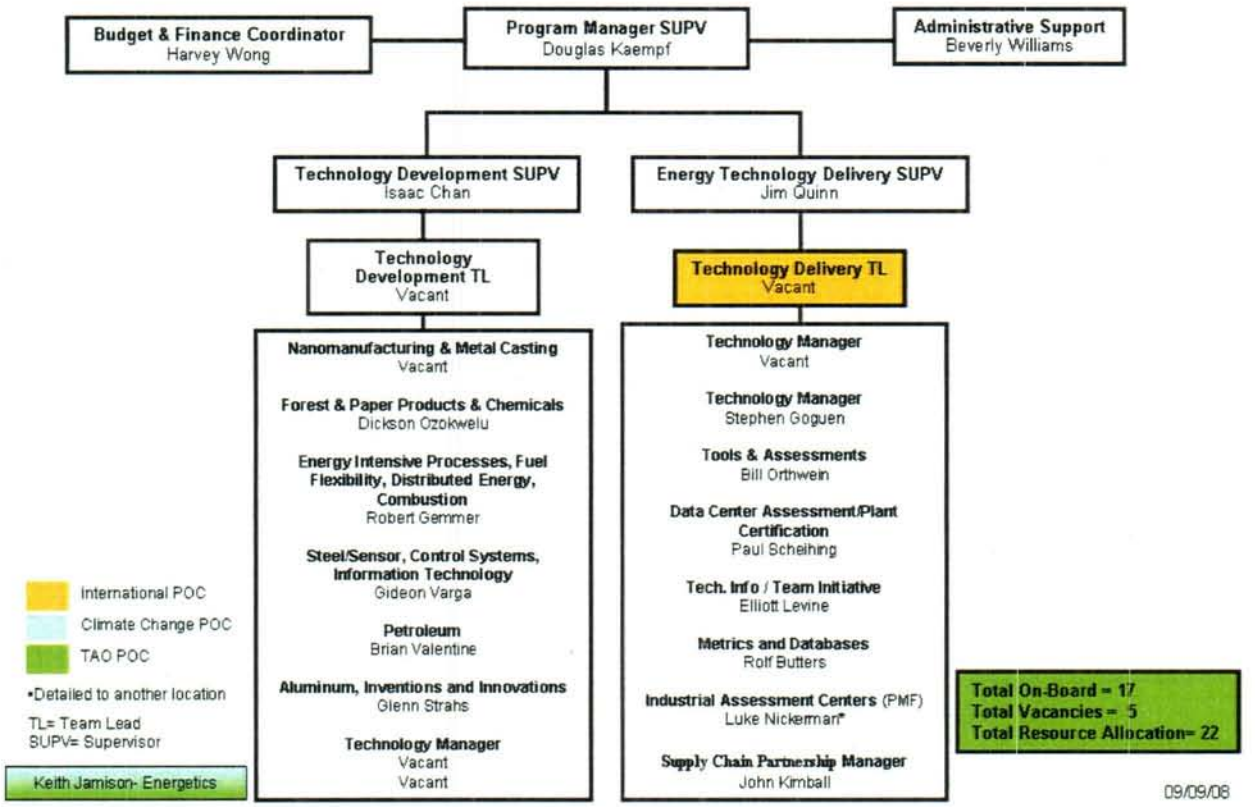
Funding Profile

Dollars in thousands		
Energy Efficiency and Renewable Energy	FY2008 Current Appropriation	FY2009 Congressional Request
Industrial Technologies	64,408	62,119



Current Organizational Chart

Industrial Technologies Program



Building Technologies Program

Organization Information

Organization Name:

Building Technologies Program (BTP)

Address:

1000 Independence Ave., S.W.
Room 1I-030
Washington, DC 20585

Organization Phone Number:

202-586-5523

Organization Website:

http://www1.eere.energy.gov/buildings/

POC E-mail Address:

David Rodgers <david.rodgers@ee.doe.gov>

Supporting the DOE Mission

Strategic Theme 1 – Energy Security
- Strategic Goal 1.2 – Environmental Impacts of Energy
- Strategic Goal 1.4 – Energy Productivity

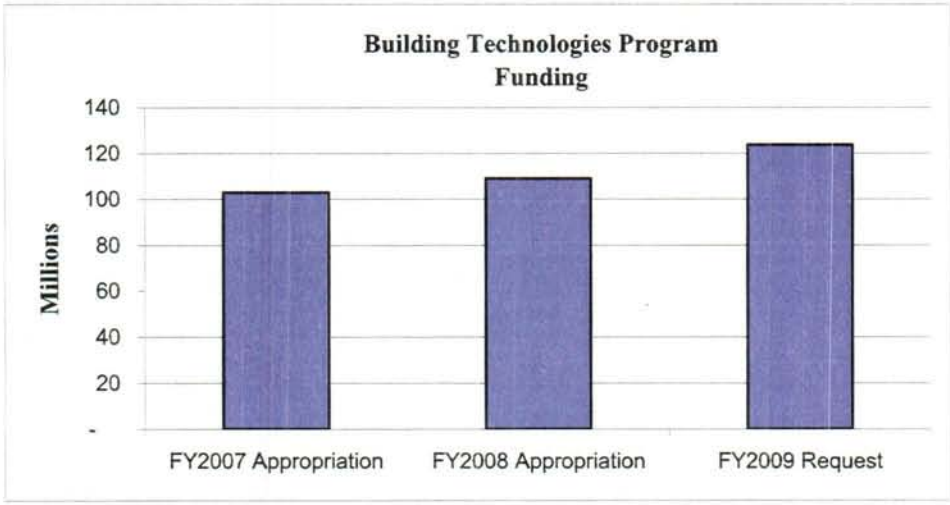
Strategic Theme 3 – Scientific Discovery and Innovation
- Strategic Goal 3.3 – Research Integration

Mission Statement

Develop and deploy technologies, techniques, and tools for making residential and commercial buildings more energy efficient, productive, and affordable.

Status

Budget:



FY2009 Congressional Request: $123,765,000 (nominal dollars)

People:

Estimated number of Federal FTEs (HQ plus Golden Field Office): 49
Estimated number HQ on-site contractor FTEs: 17
Estimated number of HQ FTEs: 48
Estimated number of field site FTEs (Golden): 1
Estimated number of Reimbursable FTEs (NETL): 15

Facilities:

Concentrated laboratory activities at Lawrence Berkley National Laboratory, National Renewable Energy Laboratory, Oak Ridge National Laboratory, and Pacific Northwest National Laboratory.

Performance:

PART rating: Adequate
FY07 PART measure status: 8 met, 0 unmet, 0 unknown
FY07 4th quarter joule status: 5 Green, 0 Yellow, 0 Red

History

The Energy Conservation and Production Act (ECPA) was passed in 1976 and called for upgrading of model energy codes.

During the1980s, the Buildings Program R&D focus shifted away from its earlier emphasis of commercialization of technologies to long-term research projects.

The period from 1989 to 2001 saw a dramatic increase in the resources allocated to the program. During this period, the research activity expanded from the narrower focus on long-term projects to also include research into the development and commercialization of buildings technologies.

The program increased its efforts to develop partnerships with private industry and to make energy efficient building technologies more accessible and commercially acceptable. In this sense, this latest period can be seen as a combination of the commercialization focus of the late 1970s and the long-term research from the 1980s.

Research goals during this period also focused more on specific appliances and building components as a means for making buildings more energy efficient. Measures adopted, including appliance standards, upgrading building codes, and expansion of the ENERGY STAR and Building America programs, encouraged more efficient designs and technologies.

In 2001, the program moved from goals based on static quads saved by a certain year to a more strategic goal of Zero Energy Buildings in 2025. The move was to create a more tactical environment for selecting and conducting our research. The program realized, given our success in reducing energy intensity over the previous 25+ years, future energy savings were going to prove more difficult to achieve. After careful examination, it became clear a more focused approach, recognizing the interactions and trade-offs (energy/cost) occurring in buildings, would be needed. The new goal builds on the success of our integration programs, while also providing direction for project selection in a flat or decreasing budget environment.

Key Legislative Events

- 1975: Energy Policy and Conservation Act
- 1976: Energy Conservation and Production Act
- 1977: Department of Energy Organization Act
- 1978: The National Energy Conservation Policy Act (NECPA)
- 1987: The National Appliance Energy Conservation Act (NAECA)
- 1992: Energy Policy Act of 1992 (EPACT 1992)
- 2005: Energy Policy Act of 2005 (EPACT 2005)
- 2007: Energy Independence and Security Act of 2007 (EISA 2007)

Critical Operating Procedures

The BTP is organized into three key areas: Research and Development, Equipment Standards and Analysis, and Technology Validation and Market Introduction.

- Research and Development works to improve the energy efficiency of our Nation's buildings through innovative new technologies and better building practices.

- Equipment Standards and Analysis works to improve appliance and equipment standards. These efforts lay the groundwork for reduced energy use and lower operating costs.

- Technology Validation and Market Introduction accelerates the introduction and widespread use of efficient building technologies, as well as deployment of R&D programs through activities such as ENERGY STAR.

To manage the program, BTP follows EERE best practices as set forth in the Program Management Guide.

Recent Organizational Accomplishments and Strengths

Recent Accomplishments

- Solid State Lighting: An awardee of the SSL solicitation, demonstrated a cool white multichip LED component prototype with efficacies of 88-95 lm/W at 350 mA.
- Solid State Lighting: A collaboration of private industry developed an LED PAR lamp that produces 54 lm/W, which is four to five times more efficient than incandescent.
- In May 2008, DOE launched the Bright Tomorrow Lighting Prize (L Prize) competition, challenging the lighting industry to develop ultra-efficient solid-state lighting products to replace the common light bulb. EISA 2007 authorizes up to $20 million in cash prizes; the exact amount will be determined based on DOE Congressional appropriations and supplemental contributions from foundations and utilities.
- Building America, a private/public partnership sponsored by the DOE that conducts research to find energy-efficient solutions for new and existing housing that can be implemented on a production basis, has identified best practices achieving 30 percent energy efficiency improvements in all major climate zones.
- BTP launched the Builders Challenge in February 2008, at the International Builders Show to an audience of thousands of builders, manufacturers and media partners. The Builders Challenge is a voluntary effort that challenges America's homebuilders to build 220,000 high performance homes by 2012.
- The 2007 Solar Decathlon had 20 participating teams, 150,000 visitors to the solar village on the National Mall, and 1,048 print, television, and radio impressions.
- The Retailer Energy Alliance (REA), one of three alliances that have been announced, was launched in February 2008 and quickly attracted dozens of retailers. These alliances are made up of critical stakeholders who will collaboratively work on some of the following: develop best practices, technical tools and training, collaborate on pilot projects of energy-saving technologies and facilitate projects to bring energy-efficient technologies to market at a competitive price.
- BTP has worked collaboratively with the American Society for Heating, Refrigerating and Air-conditioning Engineers (ASHRAE), the American Institute of Architects, the Illuminating Engineering Society of North America, and the U.S. Green Building Council to create an innovative series of design guides — the Advanced Energy Design Guide series — to provide a sensible approach to achieving high performance buildings.
- In March 2008, DOE introduced the EnergyPlus Plugin for drawing software popular among architects. Architects can factor energy efficiency into the early "form" decisions of the building design, optimizing energy performance without adding to the cost of the design.
- The BTP continues to maintain its schedule to the backlog of appliance standards required under the Energy Policy and Conservation Act of 1975, simultaneous with implementation of the new requirements of EPACT 2005 and EISA 2007. The Department published the final rule for the distribution transformers energy conservation standard and the final rule for the central air-conditioning and heat pumps test procedure. The Department also published the final rule for the furnaces and boilers rulemaking.
- BTP revised ENERGY STAR requirements for Compact Fluorescent Lamps and Clothes Washers. It established qualifying criteria for Residential Hot Water Heaters. DOE also

adopted qualifying criteria which became effective on September 30, 2008, for several types of SSL products.

- The Department of Defense (DOD) and DOE joined to launch the "ENERGY STAR" OPERATION CHANGE OUT – THE MILITARY CHALLENGE. This is the first national, military-focused energy-efficiency campaign to encourage every serviceman and woman to save energy, money, and protect the environment by replacing their inefficient, incandescent light bulbs with ENERGYSTAR qualified bulbs. The overarching goal of OPERATION CHANGE OUT is to replace at least one incandescent light bulb with an ENERGYSTAR qualified model in each residential unit at participating military installations.

Organizational Strengths

Historically, BTP activities have provided energy savings and produced the following results:

- The latest report on federal residential appliance standards states that the cumulative net present value of consumer benefit will amount to $93 billion by 2020, and will grow to $125 billion by 2030. (Realized and Prospective Impacts of U.S. Energy Efficiency Standards for Residential Appliances: 2004 Update," S. Meyers, J. McMahon, M. McNeil, Lawrence Berkeley National Laboratory, May 2005, LBNL- 56417.)
- Three DOE buildings R&D innovations – low emissivity glass, electronic ballasts for fluorescent lamps, and advanced refrigerators - saved $30 billion in cumulative net cost savings.

BTP has also played a major role in shaping the building communities approach to energy use technology and techniques. Through the BTP, DOE has:

- Become a national and international leader in building systems engineering and equipment design/use;
- A broad understanding of the building industry, its many players and key decision making points and an in depth knowledge of the key drivers impacting building energy use; and
- A proven track record of developing, providing, promoting and actually creating energy saving technologies.

Leadership Challenges

- BTP will continue to work under a court-ordered consent decree to set energy efficiency standards for the 20 product categories whose statutory deadlines have passed. BTP is currently operating under a five-year plan that outlines how DOE will address the appliance standards rulemaking backlog and meet all of the statutory requirements established in the EPCA and the EPACT 2005.

- BTP is working to improve the management of its responsibilities under the ENERGY STAR program.

Key Strategies and Timing

BTP has embraced the strategic goal of developing net-zero energy buildings to reduce national energy demand. The program has defined its strategic goal more specifically as:

- To create technologies and design approaches that enable net-zero energy buildings at low incremental cost by 2025. A net-zero energy building is a residential or commercial building

with greatly reduced needs for energy through efficiency gains (60 to 70 percent less than conventional practice), with the balance of energy needs supplied by renewable technologies. These efficiency gains will have application to buildings constructed before 2025 resulting in a substantial reduction in energy use throughout the sector.

- BTP's challenge is to address the opportunities with strategies and design programs that consider the marketplace and address barriers to energy efficiency. To accomplish this, the BTP will implement the following strategies:
  - Focus the R&D portfolios to ensure that the most promising, revolutionary technologies and techniques are being explored, align the Residential and Commercial Integration subprograms to a vision of net zero energy buildings, and appropriately exit those areas of technology research that are sufficiently mature or proven to the marketplace, and close efforts where investigations prove to be technically or economically infeasible.
  - Increase minimum efficiency levels of buildings and equipment through codes, standards, and guidelines that are technologically feasible and economically justified. BTP develops standards through a public process and submits codes proposals to the International Energy Conservation Code (IECC) and the American Society of Heating, Refrigerating, and Air Conditioning (ASHRAE).

At the core of that strategy is Research and Development activities that supports the net-zero energy building in the five strategic areas:

- Residential Buildings Integration R&D Activities: Provide the energy technologies and solutions that will catalyze a 70 percent reduction in energy use of new prototype residential buildings that when combined with onsite energy technologies result in zero energy homes (ZEH) by 2020 and, when adapted to existing homes result in a significant reduction in their energy use.
- Commercial Buildings Integration R&D Activities: In order to reach net zero energy buildings by 2025, DOE will develop integrated whole-building strategies to enable commercial buildings to be designed, constructed, and operated to use 60 to 70 percent less energy relative to ASHRAE Standard 90.1-2004 by 2025.
- Emerging Technologies (ET) Activities: Accelerate the introduction of highly-efficient technologies and practices for both residential and commercial buildings through research and development of advanced lighting, building envelope, windows, space conditioning, water heating and appliance technologies.
- Equipment Standards and Analysis: Increase the minimum efficiency levels of buildings and equipment through codes, standards, and guidelines that are technologically feasible, economically justified, and save significant energy. By 2010, issue 13 formal proposals, consistent with enacted law, for enhanced product standards and test procedures.
- Technology Validation and Market Introduction: Accelerate the adoption of clean and efficient domestic energy technologies through such activities as Rebuild America, ENERGY STAR, and Building Energy Codes.

BTP strategies will result in significant cost savings, reduction in the consumption of energy, and increase in the substitution of clean and renewable fuels. Thus, these strategies will lower carbon emissions and decrease energy expenditures.

Critical Events and Action Items

3-month

March 2009 – Final Rules are due on the following topics by March 31, 2009:

- Fluorescent Lamp Ballasts, - Standby Test Procedure Final Rule.
- Home Appliances – 1 Final Rule (standards for ranges and ovens and commercial clothes washers).
- Home Appliances – 2 Standby, (test procedures for clothes dryers and room air conditioners to address energy use in standby model).

12-month

- Appliance Standards, Consent Decree - Consent decree updates are due to the courts at 6 month intervals. November 6 and May 6 of each year.
- Products, final rules, and key initiations - Final rules scheduled for completion within the next 12 months include Home Appliances (Ranges and Ovens, Commercial Clothes Washers), and Lamps (Incandescent Reflector Lamps, Fluorescent Lamps). Initiations of additional rulemakings include Walk-In Coolers and Freezers and Residential Clothes Washers.
- Solid State Lighting (SSL) Solicitation - The high priority tasks are competitively bided and awarded to entities whose proposals meet these priorities and the SSL portfolio's stated objectives.
- National energy alliances - Establishment of the Net-Zero Energy Commercial Buildings Initiative, as authorized in Title IV, Subtitle B High-Performance Commercial Buildings (Sections 421-423) of EISA 2007.
  - 6 months - Launch University and College Energy Alliance
  - 8 Months - Launch Commercial Building Industry Alliance

Hot Issues

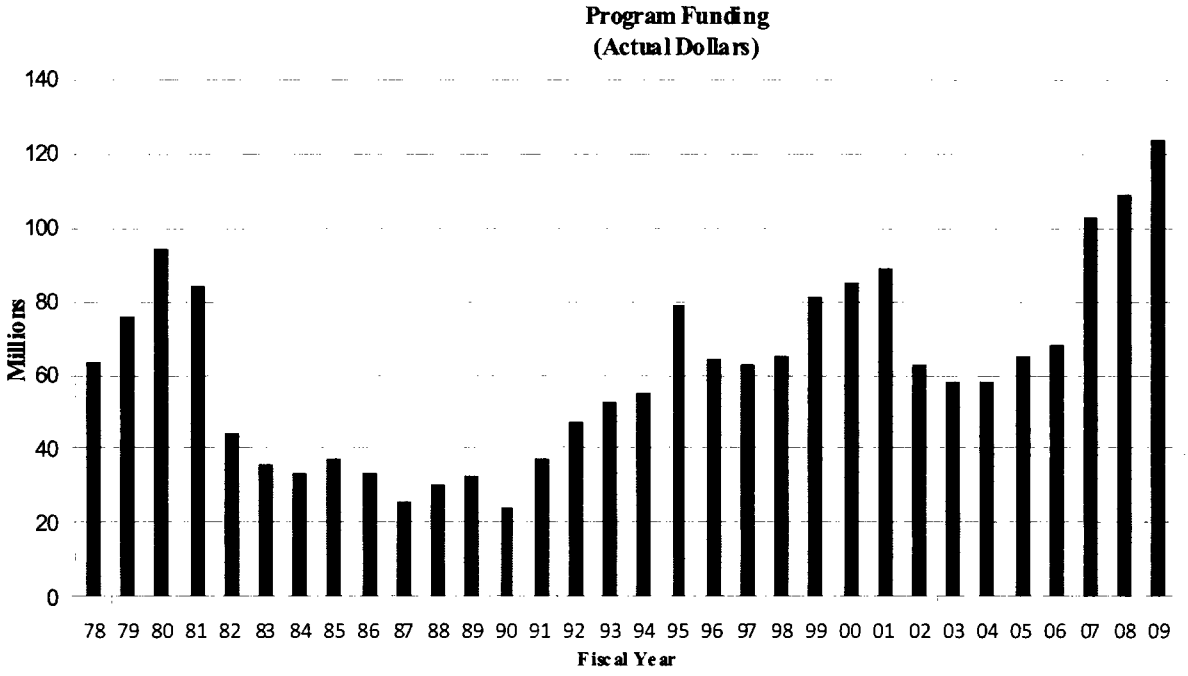
- **Staying on court-mandated schedule for appliance standards and building codes** – DOE is working under court-order to clear a backlog of appliance standards while simultaneously initiating several new rulemakings to keep up with the schedules set in EPACT 2005 and EISA 2007.

- **Establishment of the Commercial Buildings Initiative** - as authorized in the Statute. DOE is in the process of establishing the "Zero-Net-Energy Commercial Buildings Initiative" which is intended to reduce the quantity of energy consumed by commercial buildings located in the United States and achieve the development of zero-net energy commercial buildings in the US.

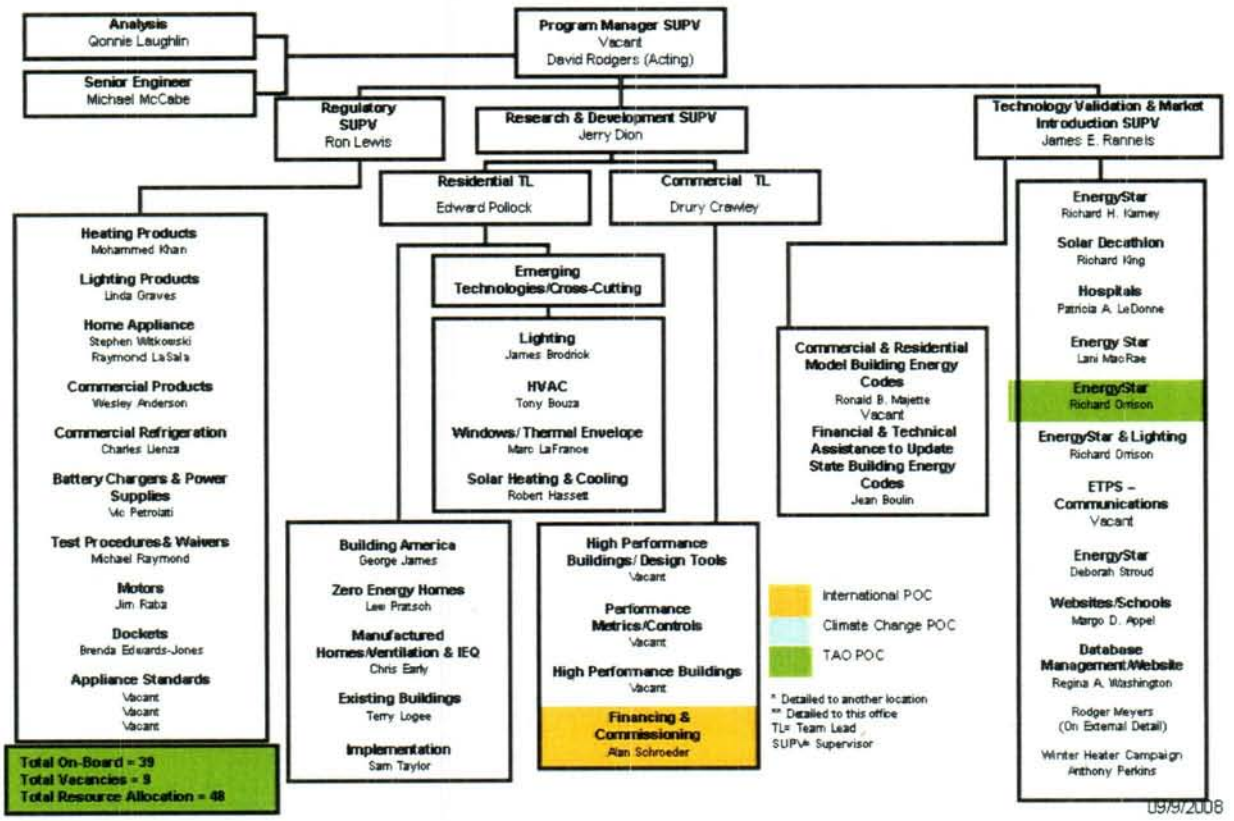
- The Department of Energy and the Environmental Protection Agency jointly manage the ENERGY STAR labeling program. A variety of technical and management issues have emerged since the original Memorandum of Cooperation (MOC) was signed in 1996.

Funding Profile

Dollars in thousands		
Energy Efficiency and Renewable Energy	FY2008 Current Appropriation	FY2009 Congressional Request
Buildings Technologies	108,999	123,765



Building Technologies Program



Weatherization and Intergovernmental Program

Organization Information

Organization Name:

Weatherization and Intergovernmental Program (WIP)

Address:

950 L'Enfant Plaza, S.W.
Room 6050
Washington, DC 20585

Organization Phone Number:

202-287-1644

Organization Website:

http://www1.eere.energy.gov/wip/

POC E-mail Address:

Gilbert Sperling

<gil.sperling@ee.doe.gov>

Supporting the DOE Mission

Strategic Theme 1 – Energy Security
Strategic Goal 1.2 – Environmental Impacts of Energy
Strategic Goal 1.4 – Energy Productivity

Mission Statement

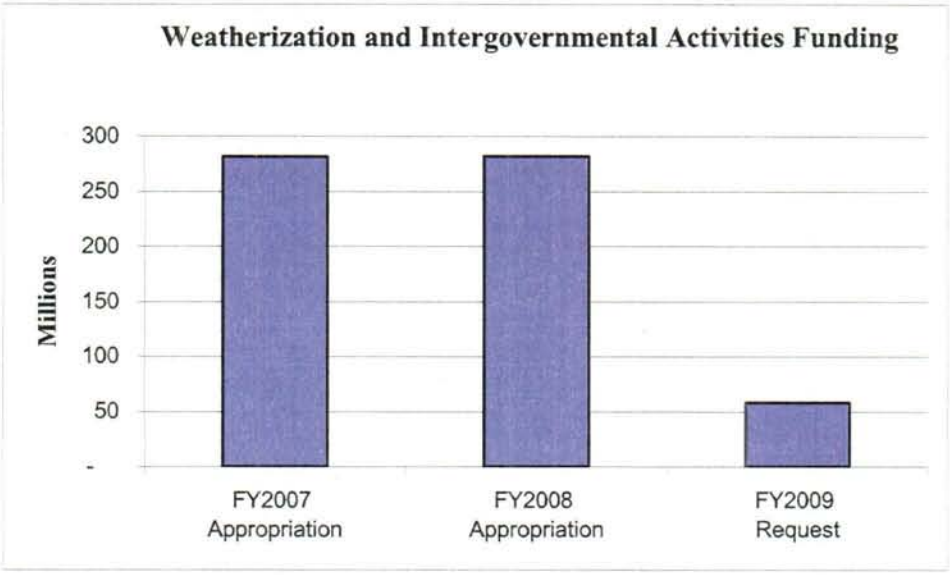
Develop, promote, and accelerate the adoption of energy efficiency, renewable energy, and oil displacement technologies and practices by a wide range of stakeholders. These include state and local governments, community agencies, companies, foreign and Native American governments.

Target Market

WIP works with state and local governments, community agencies, utilities and private entities, foreign countries and international agencies, and Native American tribes to deploy energy efficiency and renewable energy technologies, policies, practices and procedures.

Status

Budget:



FY2009 Congressional Request: $58,500,000 (nominal dollars)

People:

Estimated number of Federal FTEs (HQ plus Golden Field Office): 29
Estimated number of HQ on-site contractor FTEs: 7
Estimated number of HQ FTEs: 22
Estimated number of field site FTEs (Golden Field Office): 7

Facilities:

Technical assistance from DOE Laboratories, primarily the Oak Ridge National Laboratory (ORNL), the Lawrence Berkeley National Laboratory (LBNL), and the National Renewable Energy Laboratory (NREL)
Grants and project management through the National Energy Technology Laboratory (NETL) and the Golden Field Office (GO)

Performance:

PART rating: Weatherization Assistance – Moderately effective
State Energy: Results not demonstrated[1]
FY07 PART measure status: 1 met, 1 unmet, 0 unknown
FY07 4th quarter joule status: 4 Green, 0 Yellow, and 0 Red

History

[1] The 2004 State Energy Program PART (its initial review) resulted in a rating of "results not demonstrated" due to the perceived bias of the peer reviewed national evaluation conducted by Oakridge National Laboratory in partnership with the National Association of State Energy Officials.

WIP was established in 2003, combining several existing government directed EERE subprograms. The two oldest were both created in response to the rapid oil price increases in 1973 - 1974 and managed by the Federal Energy Administration. These programs were the Weatherization Assistance Program (WAP) which was established in 1976 and the State Energy (Conservation) Program (SEP) which was established in 1975. WAP provides state grants to increase the energy efficiency of housing occupied by low-income Americans and technical assistance to support a nationwide training infrastructure and to improve program effectiveness. SEP provides formula-based grants, competitive clean energy project grants, and technical assistance to the states and U.S. territories to promote energy efficiency and increase the use of renewable energy.

Over time, programs were developed that addressed other types or levels of government with similar goals. These programs include the Renewable Energy Production Incentive (1992), International Renewable Energy Program (2000), Tribal Energy Program (2002), and the Asia-Pacific Partnership (APP) (2006). The Renewable Energy Production Incentive (REPI) provides financial incentive payments to public and tribal utilities and not-for-profit electric cooperatives for renewable generation systems that use solar, wind, geothermal, or biomass technologies. The Tribal Energy Program, International Renewable Energy Program (IREP), and APP provide leveraged financial and technical assistance that accelerates the adoption of cost-effective clean energy technologies.

In FY 2009, the President's Budget Request for WIP was lower than the previous year's appropriation. Funds were requested to be redirected to R&D programs, which have historically shown a high return on the public investment put into them.

Of the mix of programs within WIP, funds were requested for only three in FY 2009: SEP, Tribal Energy and APP.

- SEP serves to reduce energy use and cost, develop environmentally conscious economies, increase renewable energy capacity and production and lessen dependence on foreign oil. The program also strengthens energy security by funding the development and maintenance of energy emergency planning at the state and local levels.
- Tribal energy activities build DOE partnerships with tribal governments to assess and meet Native American energy needs across the full spectrum of end use activities (commercial, residential and industrial). The program provides technical and financial assistance for energy efficiency and renewable energy project development.
- The APP encourages clean energy technology deployment and meets goals for energy security, national air pollution reduction and climate change in way that promote sustainable economic growth and poverty reduction. Partners include Australia, China, Canada, India, Japan and South Korea.

Critical Operating Procedures:

The program is managed at the portfolio level at DOE Headquarters. Key areas are: 1) establishing strategic program priorities and results; and 2) managing resources to meet current and future objectives. The Corporate Planning System (CPS) is used primarily for project and financial planning, execution and reporting. States and the Project Management Center (PMC)

utilize the WIP developed WinSAGA system for application submission and review, grant award processing and notification, and progress and financial reporting.

Successful WIP implementation is supported by:

- Technical assistance from DOE Laboratories, primarily the ORNL, the LBNL, and the NREL;
- Grants and project management through the NETL and the GO; and
- Strategic partnerships formed with national organizations representing key decision-makers and market leaders, such as the National Governors Association, National Conference of State Legislatures, National Association of State Energy Offices, National Association of State and Community Service Programs, United States Conference of Mayors, and other critical delivery partners.

International energy efforts, due to their vital importance, are managed at the Principal Deputy Assistant Secretary level.

WIP legislation, regulations, guidance, publications and plans, and project summaries are available on the EERE's website: www1.eere.energy.gov/office_eere/factsheets.html.

Recent Organizational Accomplishments and Strengths

Organizational Accomplishments

Through the Weatherization and Intergovernmental Program, DOE:

- Awarded $6.6 million in competitive grants in FY 2008 for 15 state-level projects that support development of: 1) gigawatt-scale clean energy policies (9 grants) and 2) advanced building codes (6 grants);
- Helped facilitate a more robust National Renewable Energy Certificate Trading Program, which supports renewable energy projects by providing a stream of revenue;
- Managed a comprehensive partnership with the Nation's utilities to put energy efficiency on an even footing with generation in meeting the Nation's energy needs;
- Initiated a national effort with states and the energy services industry to accelerate the use of energy saving performance contracting in state and local government buildings, schools, universities, and hospitals;
- Weatherized approximately 100,000 low-income homes in 2006 (2007 data pending) and 5.8 million homes cumulatively over thirty years;
- Supports the infrastructure, including training, for thousands of energy efficiency specialists who deliver energy efficiency retrofits in homes; and also supports the annual retrofit of approximately 13,000 buildings to reduce energy consumption and the adoption of new building codes that promote energy efficiency; and
- Funded ninety-three tribal energy projects totaling $16.5 million since 2002; funding was leveraged by $6.4 million in cost sharing efforts, for the evaluation and deployment of renewable energy and energy efficiency measures across Indian countries.

Organizational Strengths

. Specific programmatic strengths include:

- A nationwide network of cooperative working relationships with states, local governments and related associations, including National Governors Association, state energy officials, state legislatures, tribal government organizations, counties, mayors etc;
- Ability to transform markets: the SEP implemented market transformation approaches that strengthen America's energy security, environmental quality and economic vitality. Specific areas include: renewable energy trading platforms (renewable energy portfolio standards, renewable energy certificates, green tags, white tags), utility energy efficiency incentives (National Action Plan for Energy Efficiency), and performance contracting; and
- A nationwide infrastructure for delivering home efficiency improvements in low income households.

Leadership Challenges

Increase Program Effectiveness - WAP annually weatherizes less than 1 percent of the income eligible households.

Build Confidence - Address stakeholder alienation related to the budget process.

Communicate Better - Residual effects from the closing of field offices include loss of timely communications and interface identified as critical by state energy offices.

Build Support for Innovation - Recent SEP funds were allocated for the first time 50 percent by formula grant and 50 percent by competitive solicitation. This approach resulted in decreased base funding to all states.

Increased Staffing Needs - The Energy Efficiency and Conservation Block Grant Program was established in the Energy Independence and Security Act of 2007 (EISA 2007). Funding has been authorized at $295 million for this program. If this program is funded, EERE will not have the staffing capacity to handle the workload associated with program.

Key Strategies and Objectives

WIP facilitates the integrated delivery of technologies, practices, and policies across technologies and markets. This differs from the narrower technology-specific focus of most DOE research and development programs.

WIP strategies:

- Leverage federal dollars by requiring or serving to attract state, local and private matching funds on a more than one to one basis;
- Form partnerships with state and local governments to transform energy markets to promote energy efficiency and renewable energy by removing market barriers and facilitate the adoption of incentives;
- Stress technology innovation by supporting competitive practices utilized in the implementation of WIP funding at the state and local level;

- Utilize collaboration with national and regional organizations representing key decision-makers (e.g., governors, mayors, state legislators, end users, and product and service providers) to establish policies and practices that encourage conservation and the expansion of renewable energy;
- Develop partnerships with tribal governments and support the planning and deployment of clean energy projects on tribal land;
- Broaden international climate change initiatives through sharing effective technology tools and policies with a large number of countries; and
- Improve cost effectiveness and technological innovation in the weatherization of low income homes.

Critical Events and Action Items

3-month

January 2009

WIP prepares and distributes FY 2009 WAP and SEP grant program guidance to the PMC.

March 2009

First round of FY 2009 weatherization assistance grants awarded by the PMC.

12-month

June 2009

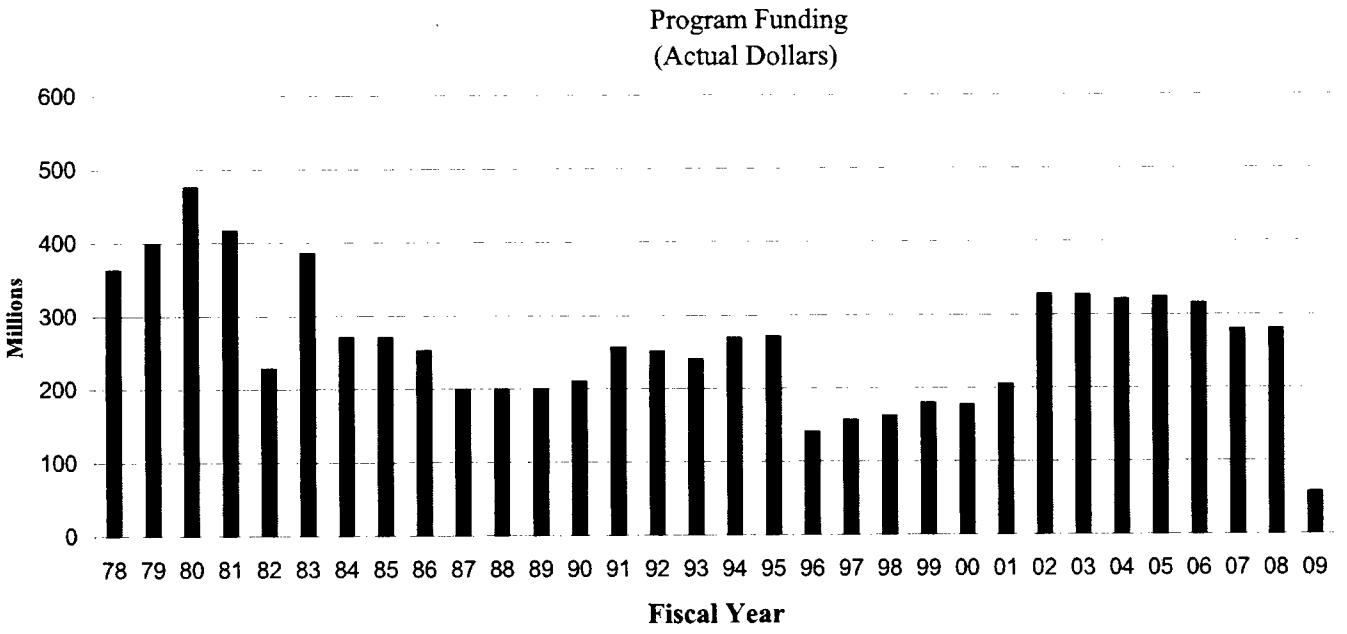
First round of FY 2009 State Energy and second round of FY 2009 weatherization assistance grants awarded by the PMC.

Hot Issues

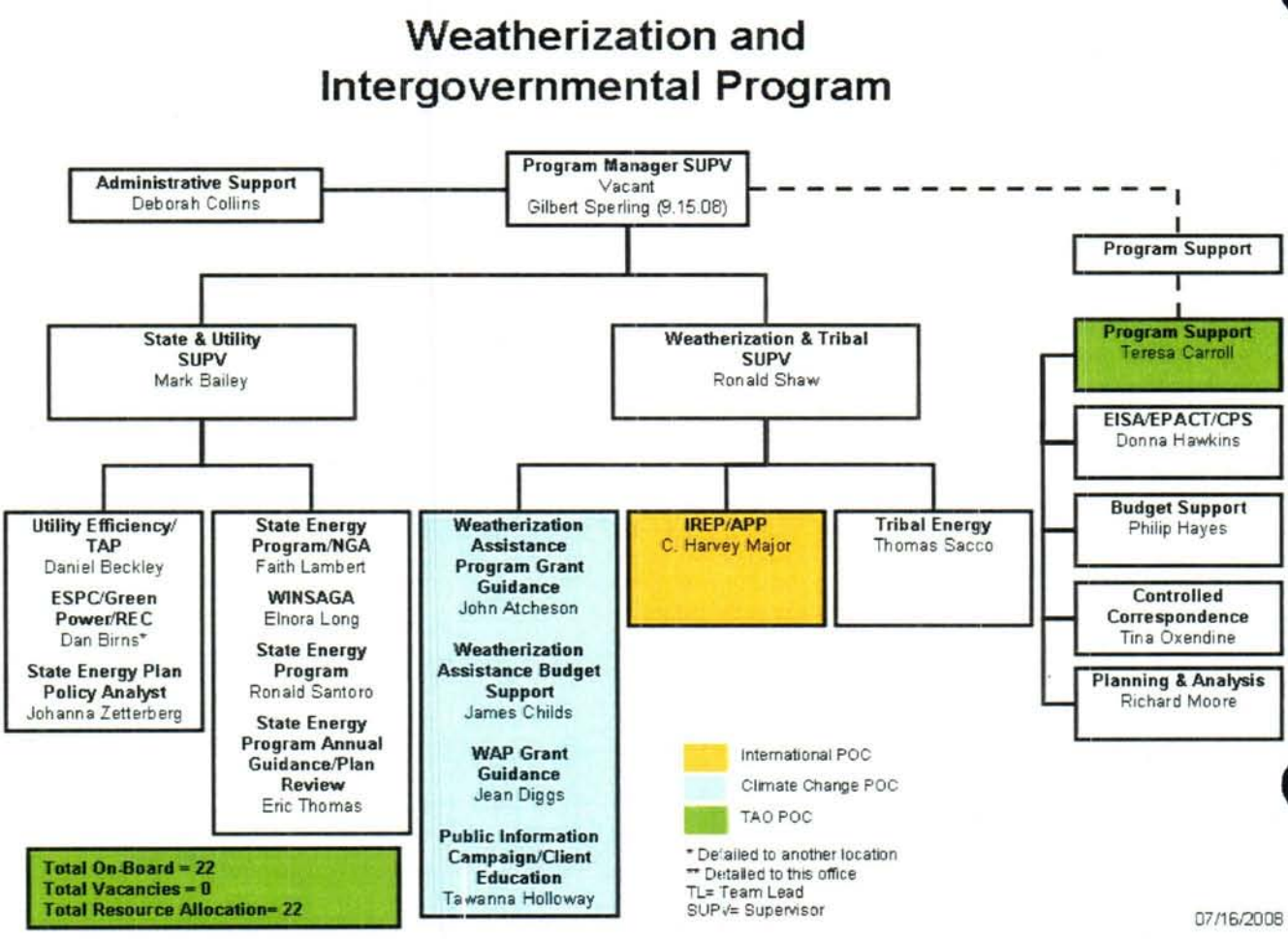
The next administration will need to determine if the Weatherization Program remains in DOE or is transferred to another agency.

Funding Profile

Dollars in thousands		
Energy Efficiency and Renewable Energy	FY2008 Current Appropriation	FY2009 Congressional Request
Weatherization and Intergovernmental Activities	282,217	58,500



Current Organizational Chart



EERE Program Support

Organization Information

Organization Name:

Energy Efficiency and Renewable Energy Planning Analysis & Evaluation (PAE) & Technology Advancement and Outreach (TAO)

Address:

1000 Independence Ave., S.W.
PAE – Room 6B-038
TAO – Room 6A-035
Washington, DC 20585

Organization Phone Number:

PAE – 202-586-6294
TAO – 202-586-0462

Organization Website:

PAE – http://eere-intranet.ee.doe.gov/BA/OPBA/index.html

https://apps3.eere.energy.gov/ba/pba/analysis_database/about_pae.php

TAO – http://eere-intranet.ee.doe.gov/CAO/index.html

POC E-mail Address:

PAE – Avon Meacham <Avon.Meacham@ee.doe.gov>

TAO – Kevin Brosnahan <Kevin.Brosnahan@ee.doe.gov>

Supporting the DOE Mission

Strategic Theme 1.0 – Energy Security
- Strategic Goal 1.1 – Energy Diversity
- Strategic Goal 1.2 – Environmental Impacts of Energy
- Strategic Goal 1.3 – Energy Productivity

Strategic Theme 3 – Scientific Discovery and Innovation: Strengthening U.S. scientific discovery, economic competitiveness and improving quality of life through innovations in science and technology.
- Strategic Goal 3.3 - Research Integration: Integrate basic and applied research to accelerate innovation and to create transformational solutions for energy and other U.S. needs.
- Strategic Goal 5 – Management Excellence

Mission Statement

Enable EERE management at all levels to achieve program goals and contribute to Departmental goals. This is done by providing corporate and integrated information to inform decisions for portfolio investment and market adoption of EERE based processes, individual technologies, and

energy systems. The EERE offices use that information to guide and provide direct support to satisfy both corporate and program needs resulting in best-in-class strategic management system products which enable EERE to meet the requirements of the President's Management Agenda and to effectively achieve its goals. Program support also enables regular, consistent outreach mechanisms and products that keep EERE stakeholders advised of corporate management issues affecting EERE operations.

The Planning, Analysis, and Evaluation subprogram establishes and maintains the methods, information base, and standards for planning and policy analysis, budget formulation, and performance management and evaluation. The subprogram provides direct expertise and funds contracts that provide technical, economic, and policy analyses and support for strategic and multi-year planning, performance and budget integration, Government Performance and Results Act (GPRA) benefit estimation for all DOE Renewable and Energy Efficiency programs, and foundational understanding of current and future energy and technology markets. Each of these activities is central to achieving the goals of the President's Management Agenda (PMA), each implements the requirements of GPRA, and each is also key to effective management of DOE; Energy, Science, and Environment (ESE); the EERE programs; and to informing decisions on the optimal allocation of resources among the programs. Each provides key information that enables senior management and the technology programs to select portfolios and pathways that will best advance the Department's goals.

The Technology Advancement and Outreach subprogram manages and creates outreach mechanisms and products that keep EERE stakeholders advised of corporate management issues affecting EERE operations. The TAO also coordinates and manages efforts to make all of the other programs' work – their results and their potential – known to the public. This contributes both to the EERE programs' deployment goals and to Administration E-government initiatives to make government more transparent and accessible to the public. To accomplish these objectives, TAO maintains resources that provide information on request to the general public and other stakeholders through web based and toll free telephone services. Forming partnerships with industry, state and local governments, and non-government organizations (NGOs), the Office produces and disseminates documents in both English and Spanish to educate homeowners on energy saving techniques and technologies.

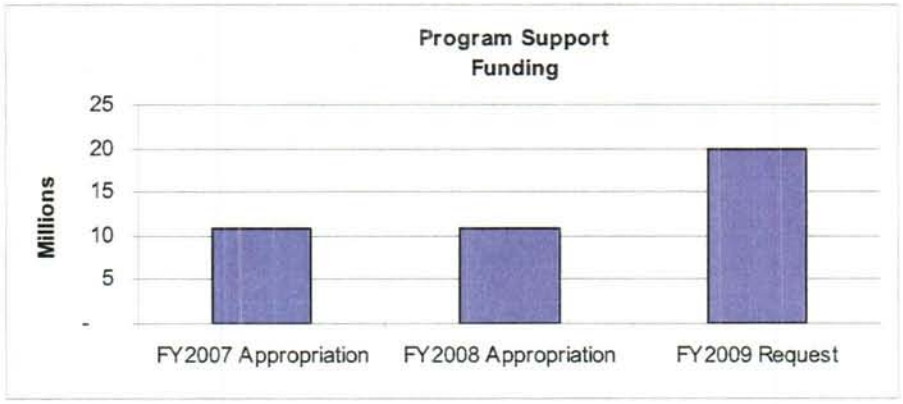
Target Market

PAE focuses on developing unbiased planning, analysis, and evaluation tools/products to meet the needs and requirements for internal DOE decision-makers, input to budget formulation, OMB, Congress, key stakeholders, and the general public.

TAO focuses on communicating EERE's programs and priorities to the general public, stakeholders, Members of Congress, and the media. There is significant growing interest in energy issues from all stakeholder groups. This level of interest is helping TAO and EERE to respond more productively to accelerate adoption of our R&D through more "education" through the media and interest from consumers.

Status

Budget:



FY2009 Congressional Request: $20,000,000 nominal dollars (PAE & TAO)

People:

Planning Analysis & Evaluation (PAE):

Estimated number of Federal FTEs (HQ plus Golden Field Office): 10
Estimated number of HQ on-site contractor FTEs: 3
Estimated number of HQ FTEs: 10
Estimated number of field site FTEs (Golden Field Office): 0
Estimated number of reimbursable FTEs: 0

Technology Advancement and Outreach (TAO):

Estimated number of Federal FTEs (HQ plus Golden Field Office): 18
Estimated number of HQ on-site contractor FTEs: 7
Estimated number of headquarters FTEs: 18
Estimated number of field site FTEs (Golden Field Office): 0
Estimated number of reimbursable FTEs: 0

Facilities:

PAE uses the NREL Strategic Energy Analysis & Application Center.

Performance:

PAE has been recognized by DOE, OMB and European Union (EU) as a 'state of the practice model' for elements of our planning, analysis, and evaluation portfolios. PAE had developed state of the art models and methods for technology and portfolio risk, uncertainty and probability; peer review; logic models; and integrated benefits. PAE also had led OMB and Departmental required efforts in creating common metrics, measures and assumptions associated with applied Energy R&D benefits based upon our corporate work.

History

PAE has focused on the development of EERE's corporate approaches for analysis such as the Government Performance and Results Act based results provided in the budgets (benefits analysis), planning, and evaluation. While these efforts have been ongoing in EERE, this program was formally started in 1990.

The office was formed in response to a need to provide comparable, integrated and strategic corporate level input to senior management and programs on planning, portfolio formulation and performance outside the influence of the individual or collective programs, energy sector or technology lines. That approach was validated with the development of the Climate Change Action Plan, the Government Performance and Results Act and OMB's management review.

TAO has focused on cross-cutting DOE outreach efforts such as the EERE clearinghouse for information, the EERE website, and a public outreach campaigns. While outreach efforts have long been EERE activities, this office was formally started in 2002.

Critical Operating Procedures

Key activities are conducted in response to: 1) Budget formulation requirements, 2) external requirements, and 3) topical analysis through a combination of multi-year planning, annual operating plans, performance management (evaluation), capacity building and expert analytic skills and tools. Funds are directed to analytic performers (National Labs, universities, and private sector) for timely, quality, independent specified products, studies, tools, expertise and analysis. Examples include strategic, topical and integrated analysis based input to advise the annual budget formulation processes and input and analysis of EIA's report of benefits of a legislative proposal. Bi-weekly meetings and interactive media are used for the exchange of ideas, status and communication operated as a learning organization.

TAO is responsible for coordination of all media relations for EERE including reactive inquiries and proactive outreach. TAO also manages communication standards for all EERE publications, websites, and collateral materials. While individual programs are responsible for their own web content, TAO sets standards and operating guidelines and provides templates for all EERE's websites TAO is also responsible for building strategic partnerships, such as those with the Ad Council, Disney, The National Building Museum, and other stakeholder groups. Finally, TAO's Correspondence Team is responsible for managing responses to congressional inquiries and reports, FOIA requests, and consumer inquiries.

Recent Organizational Accomplishments and Strengths

Organizational Accomplishments

PAE recently:

- Developed economic, environmental and energy expected benefits estimates from planned and possible technologies based upon expected markets (energy prices and sales) for the three specified FY 2010 optional budget levels, e.g.: 1) OMB specified target funding of program portfolios; 2) continuity of services funding to meet

implied mortgages for program planned technology targets; and 3) funding for EERE's contributions to accelerate and scale up our ability to meet our energy policy based goals such as the 450 ppm DOE Climate Change Technology Plan (these are known as Scenarios 1, 2 & 3).

- Developed a required analysis of potential energy savings based on extending daylight savings time as required by EPACT 2005.
- Developed and piloted an approach to incorporate risk as part of the analysis of program planning and program benefits estimation.
- Led the Departmental effort to meet OMB requirements to create common metrics, measures and assumptions associated with applied Energy R&D benefits (favorably peer reviewed).
- Reduced Federal costs, increased flexibility, reduced overhead waste, managed cyclical needs and made topical experts available on very short notice.

Through TAO, DOE has:

- Launched a nationwide 30-second television spot with Disney's movie Ratatouille that highlighted the need to use more efficient compact fluorescent light bulbs.
- Launched a multi-year, multimedia energy education campaign in the Fall 2008 with the Ad Council called Lose Your Excuse. The campaign targets 8-12 year olds with easy to accomplish energy saving tips. The campaign includes public service announcements on television and radio, as well as a complementary campaign website.
- In coordination with the Ad Council, produced 30-second television spots focused on energy efficiency. The spots are focused on 8-12 year olds and illustrates simple ways that kids can use energy wisely. The spots will air nationwide, in addition to online advertisements, and out of home (billboard) ads.

Organizational Strengths

PAE has developed and made use of a network of expert and analytical skills (lab, departmental, university, and private) to develop high quality analytical products such as out-year benefits estimation, peer review guidelines, multi-year planning guidelines, and required EPACT 2005 analysis reports. Additionally, EERE PAE is developing tools to improve quick turnaround analysis. A more detailed description of office resources and processes is at: www.eere.energy.gov.

Through TAO, the DOE has developed the following strengths:

- Strong stakeholder relationships with the Alliance to Save Energy, American Council of Renewable Energy, The National Building Museum, and others;
- Strong corporate communication standards for all EERE programs;
- A unified approach to website content development and design across all 12 EERE program areas. EERE has successfully implemented a content management system across the majority of EERE websites; and
- Coordinates the EERE Information Center, offering toll-free telephone, and web-based assistance for consumers and other stakeholders.

Leadership Challenges

PAE: Analysis takes place in several "venues" (corporate, topical, field and program) in EERE generally targeted at specific tactical needs. There is considerable opportunity to improve the productivity and leverage of the analysis portfolio. While the growth in analysis is necessary to support more complex systems and choices and the additional analysis has yielded positive results in performance, budget formulation and defense. This growth could be more productive with increased independent, integrated, strategically planned and managed analytic efforts. This would further support impartial and reliable information, reduce redundancy and achieve the benefits of integrated planning such as accelerated learning, leverage and productivity. This growth and organization is supported in the EISA 2007. Providing common, timely, complete and coordinated basic and topical analysis across the competing and integrated interests has frequently been a difficult task that leadership could effectively address.

TAO: Section 134 of the Energy Policy Act of 2005 (EPACT 2005) authorized DOE to pursue a "National energy education initiative".

Key Strategies and Timing

EERE PAE Near-Term: Continue to carry out portfolio of activities in coordination with EERE & DOE leads that will improve EERE's ability to analyze and plan its portfolio as well as meet requirements from EPACT 2005, EISA 2007, OMB, and other external requirements.

TAO Near-Term: Form partnerships with corporations, non-profit organizations and other government agencies to collaboratively promote the use of Energy Efficiency and Renewable Technologies through public outreach campaigns. Leverage resources of partners to support deployment of EERE's technologies.

Critical Events and Action Items

3-month events

February 2009

- Plan for the second year of EERE's Ad Council "Lose Your Excuse" campaign, initially launched in August 2008.

March 2009

- Provide analytically based portfolio decision input to upcoming budgets.

12-month events

October 2009

- DOE/EERE will host the 2009 Solar Decathlon on the National Mall. Twenty collegiate teams from around the world will compete to build the most energy efficient and effective solar-powered homes. Substantial coordination from DOE/EERE will be needed.

Hot Issues

The issues presented here are corporate cross-cut analytic elements and activities that are needed to provide the additional insights, analysis and planning basis required to determine EERE's increasingly integrated portfolio and budget assessment process.

Effectively Coordinating Electricity Grid policies, programs and technologies: Providing integrated measures and analysis to assess plans and pathways to select transmission and distribution changes to improve the grid and with clean alternative energy sources.

Creating a Credible Federal Renewable Energy Policy: Developing the analysis needed to evaluate tax stimulius initiatives will require skills and resources that were not anticipated in the current budget.

National Infrastructure Center: Creating a National Intelligent Infrastructure Center dedicated to systematically capturing, modeling and demonstrating our energy systems infrastructures

Carbon Policy Management: Assessing the potential impacts of proposed Federal carbon policy on DOE's applied energy R&D portfolio

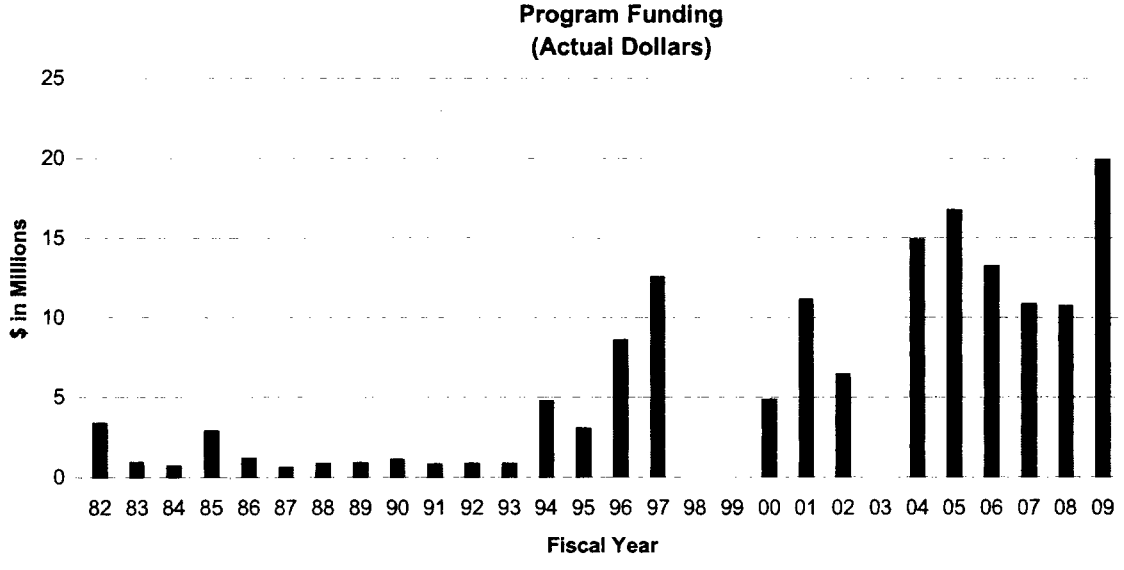
International Strategic Plan: Assessing and creating an integrated strategic plan and road-map of strategies

Integrated Analysis: Wide ranging and multiple purpose support exists for an "integrated energy analysis capability" at the applied energy program level to generate information that can help DOE management address cross-cutting issues related to planning, policy, and budget formulation and respond to inquiries and directives from OMB, and Congress.

Integrated Long Term Energy Plan: Many energy R&D platforms are constrained by goals and visions that work on a year to year or individual technology success timeframe. The critical national need is to provide the energy services the U.S. economy is built around while addressing the energy, environmental and economic needs of the Nation. A longer term view with specific quantified goals in each area is needed that addresses the integrated and infrastructure needs that the current energy plans do not and by their design and timeframe cannot.

Funding Profile

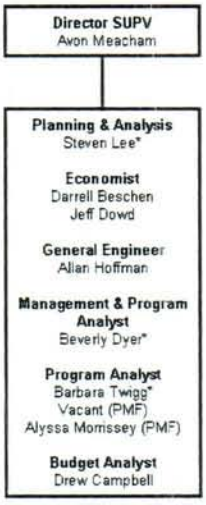
Dollars in thousands		
Energy Efficiency and Renewable Energy	FY2008 Current Appropriation	FY2009 Congressional Request
Program Support	10,801	20,000



NOTE: The Program Support funding for fiscal years FY98, FY99 and FY03 was covered under Program Direction. Within Program Direction, Support Services covered a broad range of activities such as "support service contractors, equipment, crosscutting activities, development and evaluation of performance measurement and quality metrics, Assistant Secretary Initiatives, and electricity restructuring activities. The budget does not specifically breakout the funding for the Program Support.

Current Organizational Chart

Planning, Analysis and Evaluation

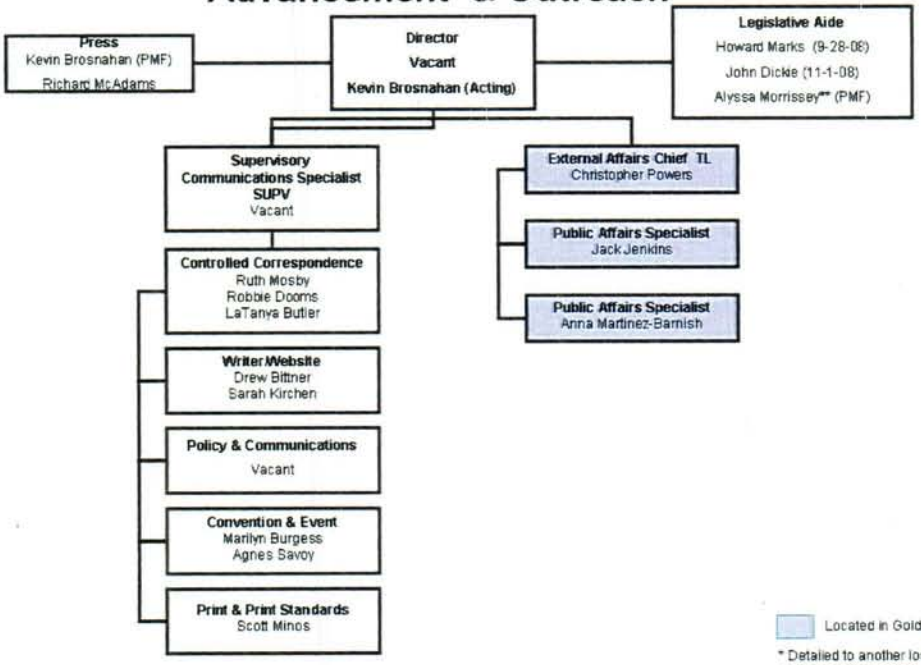


Total On-Board = 9
Total Vacancies = 1
Total Resource Allocation = 10

* Detailed to another location
** Detailed to this office
TL= Team Lead
SUPV= Supervisor

09/09/2008

Office of Technology Advancement & Outreach



Total On-Board: 13
Vacancies = 5
Total Resource Allocation = 18

Located in Golden

* Detailed to another location
** Detailed to this office
TL= Team Lead
SUPV= Supervisor

09/09/2008

Office of Energy Efficiency and Renewable Energy

National Renewable Energy Lab

Mission Statement

The National Renewable Energy Laboratory (NREL) is the Nation's primary laboratory for renewable energy research and development. NREL's mission is to develop renewable energy and energy efficiency technologies and practices, to advance related science and engineering, and to transfer knowledge and innovations to address the Nation's energy and environmental goals.

As national commitment to transform the energy system increases, so do expectations of NREL's contribution and impact. In order to meet these expectations and have a material impact on the Nation's energy challenges, the laboratory's strategic roadmap is focused on:

- **Speed**: accelerating the rate of technology development and deployment to meet the national urgency for transformation of the energy system.
- **Scale**: increasing the scale of applications and deployment of renewable energy and energy efficiency technologies in order to make a substantial impact on the Nation's energy security, environmental and economic goals.

History

NREL began operating in 1977 as the Solar Energy Research Institute. It was designated a national laboratory of the U.S. Department of Energy (DOE) in September 1991 and its name changed to NREL. The Alliance for Sustainable Energy recently was recently awarded the new M&O contract to manage the lab.

Single-program Laboratory

NREL is the principal research laboratory for the DOE Office of Energy Efficiency and Renewable Energy. It also provides research expertise for Office of Science; the Office of Electricity Delivery and Energy Reliability; the Office of Nuclear Energy; and the Nuclear Security and Safety Administration. NREL is managed for DOE by the Alliance for Sustainable Energy (ASE), an LLC that is jointly owned by Midwest Research Institute and Battelle.

Lab-at-a-Glance

Location: Golden, CO

Type: Single program lab

Contract Operator: Alliance for Sustainable Energy (ASE)

Responsible Site Office: Golden

Website: http://www.nrel.gov

Physical Assets:

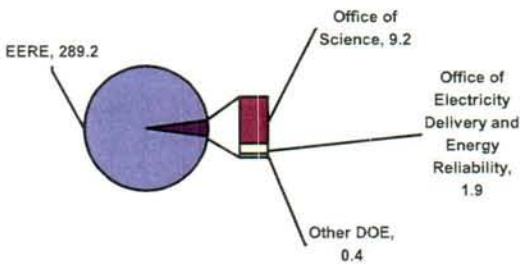
- 632 acres including a 327-acre site in Golden and a 307-acre site 20 miles north of Golden
- 20 buildings - 460,327 gsf DOE-owned; 274,608 gsf leased
- Replacement plant value: $185,341,669
- Deferred maintenance: $3,095,000
- Asset Condition Index
  - Mission Critical: Score 0.983
  - Mission Dependent: Score NA
- Asset Utilization Index: Score 1.0

Human Capital*:

- 1094 payroll employees (05/31/08) including 78 post doctoral researchers
- 201 contract or leased workers, research collaborators, and visiting professionals
- 145 undergraduate or graduate students (summer peak)

FY 2008 Total DOE Funding: $300.7M (est.)

FY 2008 DOE Funding by Source (est.)
(BA in Millions):



FY 2008 Total Non-DOE Funding: $21.1M

carried out in state-of-the-art laboratories and in the process development unit (PDU) pilot plant, which can process up to one ton of biomass feedstock per day.

- At the Outdoor Test Facility (11,247 gsf), researchers study the performance and reliability of advanced or emerging photovoltaic technologies under simulated, accelerated indoor and outdoor, and prevailing outdoor conditions.
- At the Thermal Test Facility (TTF) (10,682 gsf), researchers develop, test, and optimize advanced energy-saving technologies — focusing their efforts on cost-effective and environmentally friendly building equipment and energy systems. TTF houses the Energy Storage Laboratory, which supports DOE's Vehicle Technologies Program, and the U.S. Advanced Battery Consortium. In addition to providing state-of-the-art laboratory space, the TTF also serves as a large-scale, live-in laboratory. Researchers monitor such energy-saving features as high-efficiency lighting, space conditioning (heating, ventilating, and air-conditioning, or HVAC), water heating, and daylighting.
- Mesa Top Facilities (4,882 gsf total) provide indoor and outdoor facilities for continuously measuring solar and atmospheric radiation and other meteorological parameters important for renewable energy technologies and climate research. The High-Flux Solar Furnace generates power to expose, test, and evaluate many components — such as receivers, collectors, and reflector materials — used in concentrating solar power systems.

National Wind Technology Center (NWTC)

- Wind engineering analysis and research development is performed in the NWTC Bldg 251 (22,026 gsf).
- The NWTC Industrial User Facility (11,394 gsf) is a utility-class blade testing facility where researchers are able to simulate the effects of years of normal use on turbine blades in only a matter of months. This facility will serve as a test bed for development of new testing technologies and methods and for training staff for two new, larger blade test facilities that are being built by consortia in Massachusetts and Texas.
- The Distributed Energy Resources Test Facility (2,000 gsf) is a 2,000-square-foot test facility where researchers work closely with the distributed power community — especially those in industry — to study and evaluate systems integration and interconnection issues with large-scale deployment of renewable energy technologies. This facility houses the precursor capabilities that ultimately will be housed in a new Energy Systems Integration Facility.
  Other facilities at the NWTC, such as the megawatt dynamometer test stand and full-scale turbine testing sites help researchers test wind turbines and drive trains.

Leased Space

- The Fuel Chemistry Laboratory supports NREL's fuels performance work in its efforts to test and evaluate renewable and synthetic fuels and lubricants.
- Research at the state-of-the-art Energy Storage Laboratory helps battery developers and automobile manufacturers improve battery module and pack designs by enhancing performance and extending battery life.
- At the Ancillary Loads Reduction Laboratory, research is focused on improving fuel economy and reducing emissions by decreasing vehicle auxiliary loads, such as air conditioning, while maintaining passenger comfort.
- Researchers at the Electrical Systems Laboratory develop and test vehicle power management components and systems that significantly reduce cost, weight, volume and increase efficiency and reliability.

National Renewable Energy Lab

- The ReFUEL (Renewable Fuels and Lubricants) Laboratory is a high-altitude, heavy-duty engine and vehicle laboratory and is the first in the United States dedicated to researching and developing renewable and synthetic fuels and lubricants for heavy-duty transportation applications.

Major Research Facilities – Under Construction

- The Research Support Facility will provide DOE-owned work space for administrative staff who currently occupy leased space in the nearby office park. *(Funded)*
- The Integrated Biorefinery Research Facility is a one-of-a-kind facility that will develop and validate technology to support large-scale commercialization of integrated, cellulosic biorefineries based on biochemical and thermochemical processes. *(Funded)*
- The Energy Systems Integration Facility will provide hardware-in-the-loop capabilities to conduct R&D on integrated systems to assess the performance, interoperability, control and reliability of large-scale renewable deployment on the Nation's electricity delivery infrastructure. *(Partially funded; remainder of funds anticipated in FY 2009-2010)*

Science, Technology, and Deployment Challenges

- Implementing Renewables at the Gigawatts Scale – Reducing the cost of renewable electricity, increasing performance and reliability, improving dispatchability of renewables and ensure reliable operation of utility-scale and distributed energy systems.
- Displacement of Petroleum-Based Fuels – Reducing cellulosic ethanol cost and other advancing other cost-effective biofuels, ensuring life cycle sustainability of biofuels, improving fuels infrastructure, addressing demand and utilization.
- Reducing Energy Demand of Buildings, Vehicles, and Industry – Providing the technical foundation for model building codes, reducing the cost of, and increasing performance and reliability of new energy efficient technologies, and providing the tools to enable integration of technologies in cost-effective net zero energy buildings.

Lab Management Challenges

- Informing with Leading Analysis – Establishing a solid analytic foundation by strengthening internal capabilities and connecting NREL to leading national and international assets.
- Accelerating Market-Relevant Science and Technology Innovation – Strengthening and creating signature capabilities in biofuels systems biology, renewable fuels process engineering, photoconversion, and renewable power systems engineering. Expanding computational science to more rapidly move new knowledge from science through applied research to systems design, with a particular focus on the interface between science discoveries and applied research ('translational science'). Strengthening the connectivity between NREL's capabilities and leading science and technology capabilities with the national laboratory system and universities.
- Commercializing at Speed, Deploying at Scale – Moving market ready technologies rapidly to product lines and removing barriers to market penetration.
- Building the Campus of the Future – Designing and implementing a sustainable, mission-focused and flexible campus that supports staff and collaborators, linked to unique capabilities near the NREL site and at satellite locations.
- Developing an Innovative, Entrepreneurial, Safe, and Supportive Work Environment – Creating an environment that encourages innovation and entrepreneurship, enables staff to reach their full potential, is safe and respectful of health and the environment and is supported by highly effective business and operating infrastructure.

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National Renewable Energy Lab

Recent Accomplishments

- (2008) World Record Solar Cell Efficiency – Scientists at NREL set a world record in solar cell efficiency with a photovoltaic device that converts 40.8 percent of the incident sunlight that hits it into electricity. This is the highest confirmed efficiency of any photovoltaic device to date.
- (2008) R&D Magazine Laboratory of the Year – High Honors (NREL Science & Technology Facility) – In the 42nd Laboratory of the Year competition, the Science & Technology Facility at the NREL was one of only two laboratories recognized as trendsetters in laboratory design. The NREL Science & Technology Facility in Golden, Colorado, received the award for its unique sustainable design that reduces energy consumption by as much as 41 percent compared to similar facilities.
- (2008) R&D 100 Award for Inverted Metamorphic Multijunction Solar Cell – An ultra-light and flexible cell that also converts solar energy with record efficiency. Represents a new class of solar cells with clear advantages in performance, engineering design, operation and cost.
- (2008) R&D 100 Award for Hybrid CIGS (Copper Indium Gallium Diselenide) – The thin-film photovoltaic (PV) manufacturing process combines NREL's precursor inks with a rapid reactive bonding technique. The combination eliminates complex manufacturing methods and could create enough of the flexible film to turn entire buildings and other structures into small, self-sustaining power plants.

Awards

- 2008 Eni Award – Art Nozik was honored for his revolutionary work leading a large NREL team that is exploring future generation concepts for solar conversion. His team discovered and verified multiple exciton generation (MEG) in semiconductor nanocrystals, also called quantum dots, and recently found efficient MEG in silicon quantum dots.
- 2008 R&D Magazine Laboratory of the Year – High Honors (NREL Science & Technology Facility) for its unique sustainable design that reduces energy consumption by as much as 41 percent compared to similar facilities. The 71,000-square-foot, $22.7-million laboratory, where scientists conduct solar research, was the first federal laboratory building to achieve the highest Leadership in Energy and Environmental Design (LEED) Green Building rating from the U.S. Green Buildings Council.
- 2007 Dan David Prize – Jerry Olson and Sarah Kurtz honored for their pioneering effort in developing the multi-junction solar cell, which uses layers of semiconductor material to gain extremely high efficiencies in converting sunlight to electricity.
- 2006 World PV Award – Larry Kazmerski honored for his outstanding contributions to the worldwide advancements of photovoltaic (PV) science and technology. The award, sponsored by professional organizations from the European, Asian-Pacific Rim and American photovoltaic communities, recognizes superior and sustained leadership in solar photovoltaics.
- 17 R&D 100 Awards (since 2000)
- *Additional awards at http:// http://www.nrel.gov/awards/*

Office of Fossil Energy

Clean Coal Program

Organization Information

Organization Name:
Fossil Energy - Office of Clean Coal

Address:
1000 Independence Ave., SW, Washington, DC 20585

Organization Phone Number:
202-586-6150

Organization Website:
www.fossil.energy.gov and www.netl.doe.gov

POC E-mail Address:
Victor.der@hq.doe.gov

Supporting the DOE Mission

Strategic Theme 1 – Energy Security

Strategic Goal 1.2 – Environmental Impacts of Energy

Key Activities
The Clean Coal Program is comprised of a portfolio of research, development, and demonstration program areas designed to overcome the economic and environmental barriers to future use of coal in power generation and fuels. In partnership with the private sector, technology developments are focused on maximizing efficiency and environmental performance while driving down the cost for these new technologies. As coal will remain a strategic resource, the research activities focus on developing technologies that will result in coal-based energy systems operating with carbon capture and sequestration with minimum cost increase, maintaining U.S. energy technology leadership, and helping to sustain the domestic manufacturing capability.

The Research and Development portion of the program focuses on the major components and subsystems for near zero emissions systems. Work is carried out by creating public/private partnerships to provide technology to ensure continued electricity generation from the Nation's extensive U.S. coal resources. Additionally, one of the key R&D thrusts in the program is the Carbon Sequestration research effort that is aimed at developing technologies to capture, purify, and store CO_2. The major R&D programs in the Clean Coal program are:

- Gasification Technology R&D for Integrated Combined Cycle Systems
- Advanced Turbines, including Hydrogen Turbines
- Advanced Fuel Cells for Central Station and Distributed Generation Applications

- Innovations for Existing Plants with emphasis on Carbon Capture and Water Management
- Fuels-Hydrogen from Fossil Fuels
- Carbon Sequestration to Capture and Permanently Store Greenhouse Gases
- Advanced Research on new materials, catalysts, instrumentation and sensors, and advanced computer systems

In order for the R&D accomplishments of the Clean Coal Program to have a national impact, they must make it to the commercial market place. Private sector acceptance of new technologies is much more efficient when technologies have been demonstrated at a commercial-scale. The Demonstration portion of the program is focused on moving key technologies developed in the R&D program into the commercial marketplace. The Demonstration program is comprised of two subprograms: the Clean Coal Power Initiative (CCPI) and FutureGen.

- CCPI:
  - accelerate private sector development of new coal-based power technologies that can meet increasingly stringent environmental regulations, and
  - continue to build the technological foundation within the Nation's power industry for near-zero emission coal-based energy facilities.
- FutureGen:
  - accelerate deployment of carbon capture and storage technology,
  - demonstrate the ability to sequester CO_2, at an expected rate of at least 1 million metric tons/yr in geologic saline formation(s), and,
  - verify the sustained, integrated operation and the effectiveness, safety, and permanence of a commercial-scale coal conversion system with carbon sequestration.

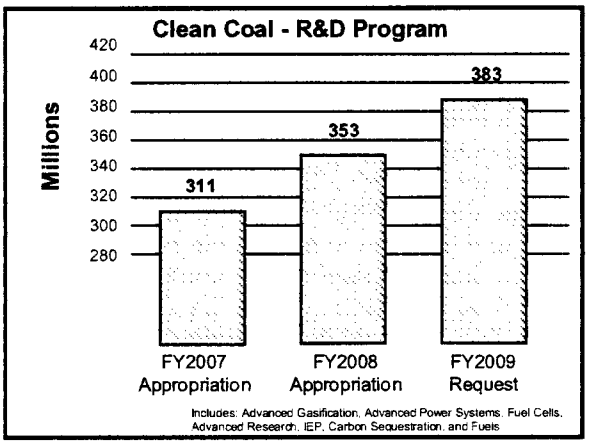
Mission Statement

To overcome the environmental and economic barriers associated with the future use of coal by developing and demonstrating a suite of enabling technologies for existing and advanced power plants and revolutionary, near-zero emission, multi-product, affordable, coal-fueled energy plants for the future, thus enabling economic prosperity and strengthening our Nation's energy security.

Status

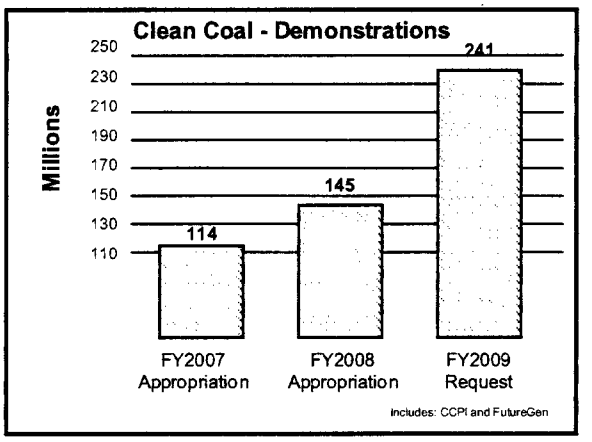
Budget: The Clean Coal Program Budget is as follows:

Clean Coal - R&D (FY2009 Congressional Request)		Carbon Sequestration	$149,132,000
		R&D Total	$382,732,000
Advanced Gasification	$69,000,000		
Advanced Turbines	$28,000,000		
Fuel Cells	$60,000,000		
Advanced Research	$26,600,000		
IEP	$40,000,000		
Fuels	$10,000,000		



Clean Coal - Demonstrations (FY2009 Congressional Request)

CCPI	$85,000,000
FutureGen	$156,000,000
Total	$241,000,000



People:

The following information is presented for the integrated composite Clean Coal Program:

NETL
Estimated number of federal FTEs: 299
Estimated number of contractor FTEs: 329
Estimated number of field site FTEs: None
Headquarters
Estimated number of federal FTEs: 117
Estimated number of contractor FTEs: 21

Facilities:

There are two categories of major facilities that support the Office of Fossil Energy's coal RD&D program, those that reside at the National Energy Technology Laboratory (NETL), and those "Program Facilities" directly supported by the performance of R&D projects under sponsored contracts, grants, and cooperative agreements. A brief description of each follows.

NETL Facilities

NETL is the only Federally owned and operated National Laboratory dedicated to achieving the mission and goals related to basic and applied research and development of fossil energy.

NETL operates and maintains facilities in five locations. At its **Morgantown**, **Pittsburgh**, and **Albany** (OR) locations it operates state-of-the-art research facilities and infrastructure that enable Federal scientists and engineers to collaborate with their peers in academia and the private sector in a cooperative effort to advance scientific understanding of key fossil energy technologies; generate new ideas and directions for future programs; and help to develop our Nation's future scientific and energy engineering experts. NETL's **Tulsa** (Southwestern Power Administration Lease) and **Fairbanks** (DOE Lease/University of Alaska-Fairbanks) facilities are involved primarily in technical program management functions and are housed in leased office space. In total, these sites have 119 government-owned facilities and trailers providing 1.05 million gross square feet of space. The average age of active NETL facilities is 41 years. The Replacement Plant Value (RPV) of the government owned facilities is about $465 million.

Research Facilities at NETL

Research facilities at NETL focus on providing a bridge between basic research and development and commercial deployment of highly efficient power and energy production systems that achieve affordable near-zero emission electric power and carbon capture technology and sequestration of CO_2 in geologic formations. NETL research facilities support carbon sequestration in five areas: capture; monitoring, mitigation & verification; non-CO_2 green house gas (GHG) mitigation; and breakthrough concepts. Additional research facilities also provide support for low-carbon fuels from coal development.

Clean Coal Program R&D Facilities

Key facilities involved in this portion of the coal program's R&D efforts are owned, operated, and controlled by DOE, universities, and private-sector partners. These organizations and the facilities they control, under the guidance and direction of expert NETL project managers, are presently supporting an integrated fossil energy research program with a portfolio that totals 260 active projects located in every state and 40 countries with a current total value of $6.5 billion. Private-sector funding accounts for approximately 60 percent of this total value.

- The Power Systems Development Facility (PSDF) is located in Wilsonville, Alabama and jointly owned by DOE and Southern Company Services (SCS). Work at the PSDF is broadening its traditional focus to include a Carbon Capture Research Center (CCRC). The CCRC plans to host the scale-up of promising pre-, post- and oxy-combustion systems currently under development by the Nation's leading technology producers.
- Regional Carbon Sequestration Partnerships consist of a national network of companies and professionals working to support sequestration efforts. This network is working toward the deployment of a new national infrastructure dedicated to

carbon capture, transport, and permanent storage. The Regional Partnerships' initiative is being implemented in three phases:

- During Phase I of the program, the Partnerships characterized the potential for CO_2 storage in deep oil-, gas-, coal-, and saline-bearing formations.
- In Phase II of the program, the Partnerships implemented a portfolio of small-scale geologic sequestration projects; the purpose of these tests was to validate that different geologic formations have the injectivity, containment, and storage effectiveness needed for long-term sequestration.
- In Phase III, the Regional Carbon Sequestration Partnerships are working to implement seven large-scale sequestration projects that will demonstrate the long-term, effective, and safe storage of CO_2 in the major geologic formations of the United States and portions of Canada. This is in addition to over 20 small-scale geologic storage tests that the Partnerships are implementing today.

Demonstration Program Facilities

A large number of facilities sponsored through DOE coal demonstration programs have been designed, constructed, operated, maintained, and upgraded, . Commercial-scale "Program Facilities," which are dedicated as host sites for the current portfolio of projects (including some in planning stages) in the Demonstration Program may be categorized in four major areas:

1) *Emissions control, efficiency improvement and cost reduction systems* for existing and new power plants (WE Energies Presque Isle Power Plant – Mercury and Multi-Pollutant Control and AES Greenidge Multi-Pollutant Control Project);
2) *Advanced power systems* for repowering existing plants and providing new power generation capability (two awarded projects in planning stages include Southern Company Services' 285-MW coal-based Transport Gasifier and Excelsior Energy's Mesaba, 606 MW Gasification Project);
3) *Clean coal fuels systems* for converting the Nation's vast coal resources to low-emission fuels (Great River Energies Lignite Fuel Enhancement Project); and
4) *Industrial applications for coal and waste-coal* (Waste Management Processors Inc.'s Gilberton Coal-to Clean Fuels and Power Co-Production Project selected under a CCPI solicitation and currently being negotiated).

Performance:

The following information is presented for the integrated composite Clean Coal Program:

PART rating: Adequate

FY07 PART measure results: 6 met, 0 unmet, 0 unknown

FY07 Joule Results: 7 Green, 0 Yellow, 0 Red

History

Fossil Energy

The Energy Reorganization Act of 1974 created the Energy Research and Development Administration (ERDA) to carry out a more aggressive energy development program. The

Office of Coal Research was transferred from the Interior Department to the newly-created ERDA, to become the core organization for the Fossil Energy program. In 1978, ERDA became a key organizational component of the newly formed Department of Energy. In the original Energy Department organization, Fossil Energy programs were managed as a division under the Assistant Secretary for Energy Technology. On October 1, 1979, the Fossil Energy program was elevated to its current Assistant Secretary-level status.

National Energy Technology Laboratory

Prior to 1999, NETL was known as the Federal Energy Technology Center (established in 1996) through consolidation of Energy Technology Centers at Morgantown, WV and Pittsburgh, PA. Designated as the Department's 15th National Laboratory in 1999, NETL has continued to expand its technical and scientific capabilities. In 2000, the National Petroleum Technology Office (NPTO) located in Tulsa, OK, was assimilated into NETL, adding unique oil and gas expertise and knowledge. This was followed by NETL opening the Arctic Energy Office, located in Fairbanks, AK, in 2001 and a satellite office in Anchorage, AK in 2005. Similarly, the key addition of the Albany Research Center located in Albany, OR in 2005, significantly expanded NETL's materials science and processing capabilities in metals, ceramics, and other materials required to design and construct higher efficiency energy systems.

Critical Operating Procedures

The Office of Fossil Energy (FE) and the National Energy Technology Laboratory (NETL) accomplish the Clean Coal Program mission by conducting on-site research and managing off-site R&D projects through contracts, grants, cooperative agreements, field work proposals to other national laboratories, and other mechanisms. The Program's hallmark is its ability to assemble industrial, academic, and governmental resources to create commercially viable solutions to energy and environmental problems.

To be successful, technologies emerging from Clean Coal research programs must be commercialized by the private sector. Therefore, active engagement and cost-sharing involvement by the private sector early in the R&D process provides an intrinsic technology transfer mechanism that accelerates the deployment of new technologies, ensures the relevance of our work, enhances understanding of end user needs, and helps assure that the new technologies will gain rapid acceptance in the marketplace. Cost sharing, public-private R&D partnerships provide the structure for our relationship with technology developers and ensure that cost, reliability, and environmental benefits offered by new technologies are more rapidly realized.

International Collaboration

The Clean Coal Program recognizes the value of global alliances in meeting both energy and environmental challenges. Many Nations depend on the same fuel sources as the United States. China and India for example — which will account for 30 percent of the world's total increase in global energy consumption over the next 20 years — are powering much of their economic growth with coal.

The Clean Coal Program has a long history of cooperation with many foreign countries through formal agreements and other mechanisms, including contract, grants, and cooperative agreements. Formal relationships currently exist with nearly 50 countries, mostly through

multilateral agreements, including active bilateral agreements with Canada, Brazil, Israel, Poland, and China. A number of important, high-level international commitments and initiatives are also supported, including the Carbon Sequestration Leadership Forum, the International Partnership for the Hydrogen Economy, the International Energy Agency, the Asia Pacific Economic Cooperation Forum, and the Asia Pacific Partnership on Clean Development and Climate.

Recent Organizational Accomplishments and Strengths

Organizational Strengths

- Ability to anticipate technology needs to solve important public policy issues;
- Ability to conduct technical, economic and engineering assessments of conventional and advanced technology options;
- Ability to conduct comprehensive life-cycle analyses of criteria pollutants and CO_2 emissions for all power and fuel systems;
- Ability to assemble industrial, academic, and governmental resources to create commercially viable solutions to energy and environmental problems, and;
- Ability to attract industrial partnerships providing greater than 50-percent cost share totaling billions of dollars to demonstrate the viability of advanced technologies at a commercial scale.

Recent Accomplishments

Coal R&D Program

- **Slip-stream testing of the transport desulfurizer (TDS) has been successful at pilot plant scale** – this warm syngas cleanup technology, key to achieving higher efficiency/lower cost gasification systems, began testing at the Eastman Chemical gasification facility in Kingsport, TN during fiscal year 2007 and continues today.
- **Novel adsorbents that remove chloride and arsenic from syngas have been successfully demonstrated at pilot scale** – testing at the PSDF is proving the performance of a simpler (single sorbent) less costly system's ability to remove mercury, arsenic, selenium, and cadmium from coal syngas.
- **Hydrogen turbine development** – system studies by GE and Siemens Power Generation produced results that identified turbine system parameters required to reach program performance goals for cost and efficiency. Hydrogen turbines are expected to provide the capability for Integrated Gasification Combined Cycle (IGCC) systems with 90 percent capture of CO_2. Work in this area began during fiscal year 2005 and continues today.
- **Design and cost estimate was completed for the Impurity Management System (IMS)** – this key "polishing" technology removes syngas impurities enabling operation of hydrogen separation membranes planned for use in advanced power production systems with >90 percent capture of CO_2 and increased thermal efficiency.
- **Testing has begun on an ion transport membrane (ITM)** – this membrane-based gas separation technology yields essentially pure oxygen at reduced operating costs and parasitic power requirements; prototype testing on a 6 TPD unit began during fiscal year FY2005 and has generated sufficient operating data to schedule start-up in 2011 of a 150 TPD unit which will, when operated, be integrated with a power producing gas turbine simulating the model design of early entrance commercial plants.

- **Fuel cells** – Recently completed systems analysis studies predict large efficiency improvements can be realized using solid oxide fuel cells in gasification processes to achieve cost-effective carbon capture.
- **Advanced Refractory Materials** – A new oxide material developed by NETL-Albany material scientists over the past several years is currently under production for commercial markets and is the 1st new refractory material to be deployed commercially in the United States in over 20 years. It is projected to extend refractory lifetime by 2 to 3 times that of current commercially available materials for advanced gasifiers.
- **Temperature sensor capable of operating in an extreme slagging gasification environment** – this sapphire-based sensor, developed under FE's AR program, has recently completed successful testing at the Tampa IGCC plant.
- **Advanced Process Engineering Co-simulator (APECS-EKM)** – this "open-source" modeling tool, capable of high-fidelity simulation of advanced power plants, enables plant designers to evaluate multiple device scale models in a seamless manner and analyze new power plant concepts with greater certainty. In use by the Nation's power industry today, it has earned three R&D 100 awards and two Federal Laboratories Consortium (FLC) national awards for excellence for the period from 2004 through 2008.
- **The high temperature hydrogen membrane (HTHM) nears commercialization** – Eltron is successfully testing a HTHM that, when coupled with a warm gas cleanup system, increases the overall efficiency by up to 6 percent for an IGCC system integrated with CCS while capturing over 90% of the CO_2.
- **Promising results were achieved toward reducing the costs associated with CO_2 compression** – Ramgen's Phase II test results during fiscal year 2007 attained a high compressor pressure ratio at the target mass flow which could result in a significant capital cost savings.
- **A CO_2 injection test well was completed** – The Midwest Regional Carbon Sequestration Partnership (MRCSP) completed an 8,000-foot well in April of 2007 at FirstEnergy's R.E. Burger Plant near Shadyside, Ohio, to be used in determining the feasibility of CO_2 storage in deep saline formations in the Appalachian Basin, a significant storage location in the region.
- **The National Carbon Database and Graphical Information System (NATCARB) was updated** – New databases and information layers were added to NATCARB at the end of calendar year 2006 including: (1) CO_2 emissions by state, (2) CO_2 pipelines, (3) electric transmission lines, (4) CO_2 emissions data using EPA and DOE databases up through 2006, and (5) an additional 45,000 entries to the brine database, providing a significantly enhanced tool for assessing progress towards research objectives.
- **Enhanced oil recovery (EOR) field testing was begun at Loudon Field** – The Midwest Geological Sequestration Consortium (MGSC) completed its first of four CO_2 enhanced EOR field tests in the final quarter of fiscal year 2007 to evaluate the performance and overall potential for geologic sequestration in mature Illinois oil reservoirs.
- **Saline injection test well completed alongside Gulf Coast Power Plant**– In April 2006, the Southeast Regional Carbon Sequestration Partnership (SECARB) completed a 9,715 foot deep injection well at Mississippi Power's Plant Daniel where over 3,000 tons of CO_2 will be injected into the Massive Tuscaloosa Sandstone formation.
- **Monitoring at EOR Facility in Aneth Field Utah** - The Southwest Partnerships has been working with an industry partner in the Aneth Field since mid-2007 to monitor the fate of over 500,000 tons of CO_2 injected for enhanced oil recover to determine the storage potential in

depleted oil field.

- **Testing began in North Dakota to recover coal-bed methane using CO_2 injection** – The Plains CO_2 Reduction (PCOR) Partnership began drilling operations in August of 2007 to determine the suitability of a North Dakota lignite coal seam to simultaneously sequester CO_2 and enhance coal bed methane production. Injection operations are moving ahead on schedule this fiscal year.

Demonstration Programs

With more than 30 completed major demonstration projects, the Clean Coal Program has become uniquely adept at establishing and executing collaborative, commercial-scale projects with the electric power industry and associated environmental technology developers. Recent advances resulting from Clean Coal demonstrations include:

- The **nearly completed AES Greenidge project** is demonstrating a low-cost integrated multi-pollutant control system designed for application at small plants
- An ongoing project is leading to an **enhanced lignite preparation process** that will improve the commercial marketability of low-rank coal.
- An ongoing project (WE Energies) has consistently **achieved ≥ 90% Hg removal** operating a flue gas stream sorbent injection process "24/7" over an 18-month span at a commercial power plant.
- Building on the successes of the only two commercial U.S. IGCC electric power generating facilities (Tampa Electric (TECO) and Wabash River – former DOE demonstrations, the program has **initiated the definition and development of a significantly larger commercial utility-scale IGCC plant (Excelsior)**. When it comes online in 2013, this demonstration is expected to surpass the the Energy Policy Act of 2005 (EPAct) 2020 goal for SO_x (0.024 lbs/mmBtu SO_2), the 2014 goals for NO_x (0.056 lbs/mmBtu) and Hg (≥ 90%), as well as the EPAct goal for particulate matter emissions (0.01 lbs/mmBtu). It will also be amenable to producing a concentrated CO_2 stream for carbon management.
- CCPI is also fostering economic competitiveness by **supporting the demonstration of another gasification technology, (Southern Company)** the transport reactor gasifier. The transport gasifier has a fuel-flexible design with the potential to have higher efficiency and lower capital and operating costs than the currently available oxygen-blown entrained-flow gasifiers.

Leadership Challenges

Successful deployment of the advanced power technologies being developed in this program raise several challenges. Among them are:

- In the Gasification area, DOE must ensure that facilities are available as hosts for engineering scale-up of promising technologies for testing on coal- and coal-biomass derived synthesis gas.
- In the Advanced Turbine area, DOE must maintain U.S. leadership in turbine-based materials and combustion science, and pursue the development of advanced power cycles including oxy-fuel turbines for zero emission power.

- In the Fuel Cell area, DOE must 1) ensure that fuel cell technology is fully integrated with parallel developments in advanced coal-based systems and progress in large volume CCS activity, and 2) continue to encourage spin-off distributed applications to take full advantage of the potential contributions of fuel cell technology.
- In the Advanced Research area, DOE must 1) develop enabling materials for a quantum leap in efficiency and temperature that will permit advanced power systems, 2) develop advanced modeling and simulation tools in order to enable fuel flexibility and alternative renewable fuel insertion in coal power production, and 3) develop advanced sensors and control systems that enable power systems to operate on multiple feedstocks and revolutionary hybrid turbine/fuel cell cycles, with CO_2 separation.
- In the Innovations for Existing Plants area, DOE must 1) reduce the significant parasitic power required to operate CO_2 capture systems and associated impacts on cost of electricity, and 2) scale-up and demonstrate the cost-effective deployment of post-combustion and oxy-combustion CO_2 capture technologies on the existing fleet of coal-fired boilers.
- In the Fuels area, DOE must spur the use of domestic resources, such as coal and biomass, to begin to offset the Nation's continued (and increasing) dependence on imported oil, with a secure and potentially carbon-neutral strategy, to mitigate the damaging effects that recent and persistent rising costs of imported liquid fuels have had on the U.S. economy.
- In the Sequestration area, DOE must 1) reduce the present uncertainty associated with how liability will be assessed and equitably distributed among the multiple parties involved in a CCS commercial venture, 2) determine regulatory requirements associated with environmental permitting and mineral rights (pore space ownership), and 3) define the requirements associated with building a new infrastructure associated with pressurizing, transporting, and injecting billions of tons of CO_2 in geology throughout the United States.
- In the Demonstration Program, DOE must overcome the barriers to deploying new technologies that reduce emissions from coal fired power plants, including emissions of carbon dioxide. The needs of the existing fleet of generation facilities as well as those of the power plants of the future that are focused on near zero emissions, cost competitiveness, and improved efficiency must be addressed. The key challenges derive from the high costs of deployment of new technologies, including CCS, in a newly deregulated, nationally dispersed, and technically diverse industry (including all coal ranks). Funding and timing are critical for both the CCPI and FutureGen Programs.
    - Current funding for both CCPI and FutureGen is sufficient to fund only one or at most two commercial-scale demonstrations of carbon capture and sequestration technologies under each program.
    - Commercial-scale demonstrations of carbon capture and sequestration technology applicable to the existing fleet of 1100 coal-based power plants are restricted by EPAct section 402 (b)(2)A to a maximum of 30% of funding. Until technically viable and cost effective solutions to significantly reducing carbon emissions for existing plants are demonstrated, there is no economic incentive or other mechanism for current power generation owners or potential investors to implement CCS.

Key Strategies and Timing

1) The **Advanced Gasification Program** conducts R&D and technology transfer activities in partnership with industry, government agencies, universities, and national laboratories. The

program targets technology to generate electricity from coal at 45 to 50 percent efficiency (HHV), based on a capital cost of $1,600/kW (2007$) by 2010.

2) The **Advanced Turbine Program** pursues R&D contributing to achievement of the near-zero emissions goal with technology capable of achieving 2 ppm or less NOx and enabling 90% or greater CO_2 capture.

3) The **Fuel Cell Program** is designed to reduce the cost of solid oxide fuel cell systems to $700/kW (2007$) for small scale systems (less than 10 kW) by 2010 to develop low-cost, fuel-flexible SOFC systems that can operate on coal gas, natural gas, bio-fuels, diesel and hydrogen.

4) The **Advanced Research Program** pursues a portfolio of activities primarily focused on solving cross-cutting technical issues and supporting critical Coal Power Block Systems-driven research needs associated with the development of computational modeling and simulation tools; high-temperature separations; high-temperature heat transfer materials capable operating at ultra-supercritical temperatures in the 1,400°F range; fundamental approaches to capture and sequester CO_2; and advanced instrumentation, sensors and controls.

5) The **Innovations for Existing Plants Program** is directed at the development of carbon capture, compression, and reuse technology and advanced water management processes and concepts for existing plants.

6) The **Fuels Program** with its traditional focus on hydrogen from coal recently broadened to address coal-to-liquid fuel R&D strategies capable of producing ultra-low carbon life cycle transportation fuels from coal and coal- biomass mixtures when combined with advanced carbon capture and sequestration technologies. These activities complement and expand the existing processes in the Sequestration Systems program with the goal of offering additional carbon management options that facilitate the development of technologies for converting coal to hydrogen, and other liquid and gaseous fuels and chemicals that have much lower life cycle GHG emissions than their comparable petroleum based products.

7) The **Carbon Sequestration Program** focused on technologies with great potential for reducing GHG emissions by capturing CO_2 from large stationary sources such as power plants and other coal-based energy systems, then sequestering CO_2 in geologic formations and the terrestrial ecosystem. The goal is to achieve less than a 10 percent increase in the cost of electricity for gasification based systems with 90% carbon capture by 2012.

8) The **Demonstration Program** will utilize multiple large-scale projects that are operated through the Clean Coal Power Initiative, a cost-shared research and development program; and through the FutureGen Program that will prove the feasibility of the near-zero atmospheric emission (including carbon) coal concepts. By 2015, multiple prototype plants will begin operation, each of which will produce electricity with near-zero atmospheric emissions and prove the effectiveness, safety, and performance of CO_2 sequestration.

Both FutureGen and CCPI provide expanded demonstration experience for integrated power plants with CCS. Both programs are critical in accelerating the deployment of CCS and aim to provide valuable commercial experience for clean coal technologies. FutureGen's goal of capturing as much as 90% of CO_2 along with CCPI's demonstrations to integrate CCS with power generation are complementary and necessary activities leading to affordable near-zero emission coal plants with CCS.

Critical Events and Action Items

3-month events

- Selection and award of new projects (such as the selection of the Restructured FutureGen projects)

12-month events

Please see 3-month events

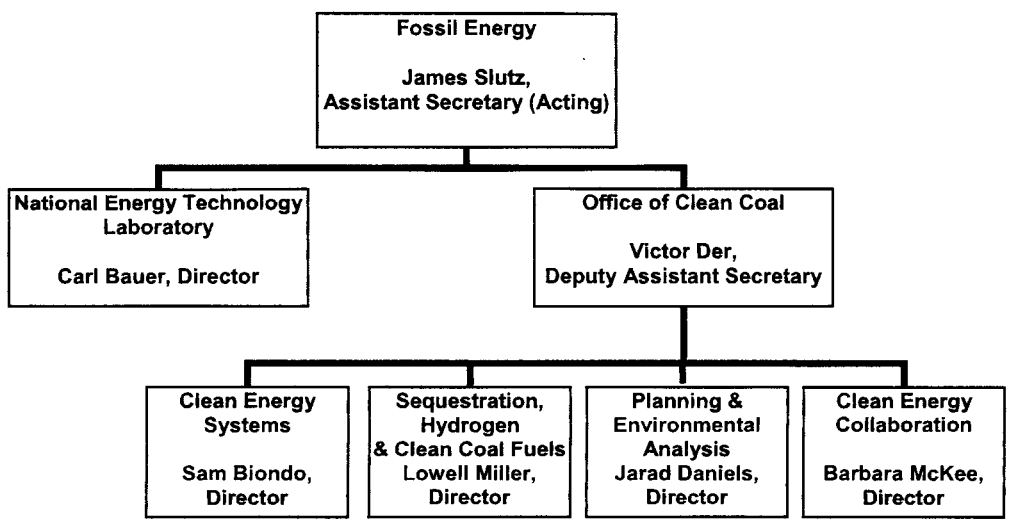
Hot Issues

How can DOE's demonstration programs supporting CCS deployment make available in an appropriate timeframe, widely deployable, cost-effective coal/CCS options for coal-fueled electricity generation plants.

Funding Profile

Office or Program Area	FY2008 Appropriated	FY2009 Request
Fossil Energy Office of Clean Coal RD&D		
Clean Coal R&D	$352,912	$382,732
Clean Coal Demonstrations	$145,000	$241,000

Current Organizational Chart



Methane Hydrate Program

Organization Information

Organization Name:

Office of Fossil Energy, Office of Oil and Natural Gas

Address:

1000 Independence Avenue, SW, Washington, DC 20585

Organization Phone Number:

202-586-5600

Organization Website:

http://www.fe.doe.gov/programs/oilgas/hydrates/index.html

POC E-mail Address:

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Supporting the DOE Mission

Methane hydrate is an ice-like substance composed of cages of water molecules enclosing a molecule of methane gas. Methane hydrate forms at high pressure and low temperature, where sufficient gas is present, and generally in two types of geologic settings: in the Arctic, where hydrate forms beneath permafrost, and beneath the ocean floor at water depths greater than about 500 meters. The hydrate-bearing deposits themselves may be several hundred meters thick. The world endowment of methane in hydrate form is huge, estimated to be larger than conventional natural gas resources. However, future production volumes are speculative because methane production from hydrate has not been documented beyond small-scale field experiments. The two major technical constraints to production are: 1) the need to detect and quantify methane hydrate deposits prior to drilling, and 2) the demonstration of methane production from hydrate at commercial volumes.

The growing recognition of the natural abundance of methane hydrate has increased interest in understanding the role of methane hydrate in global climate change. Methane is a powerful greenhouse gas and high levels of atmospheric methane in warmer periods in the geologic past have led to questions regarding whether methane hydrate could contribute to global warming in the future. Answering these questions as well as assuring that methane will not be released to the atmosphere during production is important to future development of this resource.

The methane hydrate program supports the Department of Energy Strategic Theme - Energy Security, Promoting America's energy security through reliable, clean, and affordable energy and has two goals:

Strategic Goal 1.1 – Energy Diversity

Natural gas from methane hydrate could provide a new, reliable, domestic supply of natural gas at a time, 10 to 20 years from now, when other domestic supplies of natural gas are declining. This would increase domestic and world energy and diversify energy supply, especially energy from areas outside the Middle East. To accomplish this, techniques to accurately locate and quantify naturally occurring deposits and a reliable production technology are required.

Key Activities focus on detection and quantification techniques and production technology:

- Develop new geophysical techniques to detect and quantify naturally occurring hydrate prior to drilling
- Participate in international exploration expeditions that help define the variability in natural hydrate deposits and validate geophysical techniques
- Conduct supporting laboratory research to understand the properties of methane hydrate and its response to pressure and temperature changes that influence production and commercialization
- Reservoir simulation to define production rates and economics
- Production experiments in the Arctic (2010) and Gulf of Mexico (2012)

Strategic Goal 1.2 – Environmental Impacts of Energy

The program contributes to Strategic Goal 1.2 – Environmental Impacts of Energy, by defining the role of methane hydrate in natural methane capture and release, and developing techniques to mitigate the potential release of methane gas (a powerful greenhouse gas) during gas production from hydrate deposits.

Key Activities focus on the role of methane hydrate in Global Climate Change in the geologic past and potential future impacts:

- Quantify the production, consumption, and flux of methane in oceanic and terrestrial environments
- Define influence of gas hydrate on the global carbon cycle and the response of gas hydrate accumulations to changing geologic/environmental conditions
- Integrate methane hydrate data and processes into ocean circulation, atmospheric, and climate models
- Develop and demonstrate drilling and production techniques that prevent methane release to the environment

The program also supports the Energy Policy Act of 2005 (EPAct), which amends the Methane Hydrate Research and Development Act of 2000. Section 968 of EPAct directs the DOE to conduct methane hydrate R&D in collaboration with six other federal agencies and through international collaborative efforts.

Government role in methane hydrate R&D
DOE involvement in this research and development is necessary because industry has not committed to long-term, high risk R&D because of the unfavorable short-term return on investment.

Mission Statement

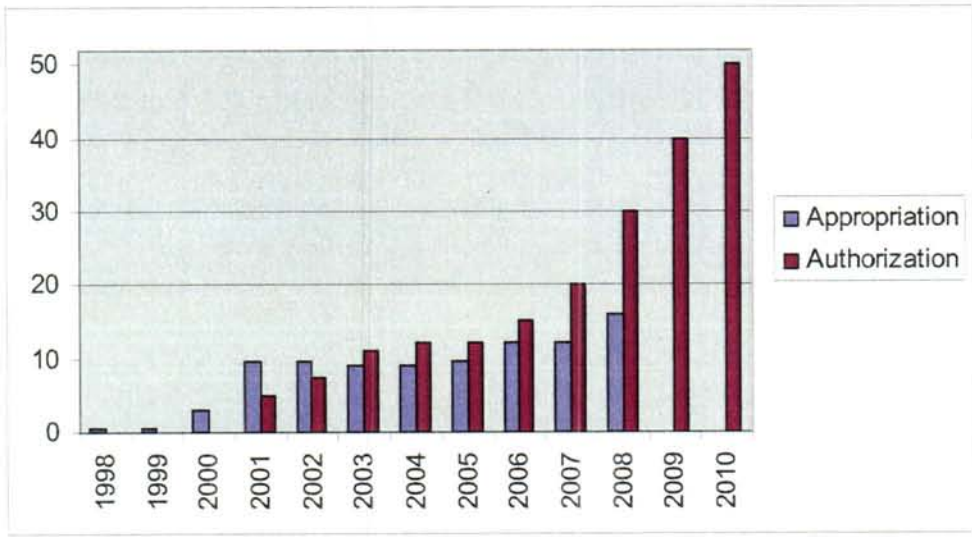
The program aims to develop the technology and knowledge to enable commercial production of methane from hydrate by 2015 for Arctic hydrate, and by 2025 for marine hydrate, while protecting the environment. This will provide US consumers a significant new, domestic supply of clean-burning natural gas and a low-carbon bridge to a renewable energy future. It could also provide a new energy source for many of the Nation's key allies that have little indigenous energy, and fundamentally improve the global energy supply. In addition, increased scientific knowledge of the occurrence and behavior of methane hydrate in nature will provide information for policy decisions related to climate change, and sensitive deep ocean and arctic environments.

While global estimates vary considerably, the energy content of methane occurring in hydrate form is immense, possibly exceeding the combined energy content of all other known fossil fuels. However, future production volumes are speculative because methane production from hydrate has not been documented beyond small-scale field experiments.

The U.S. R&D program is focused on the two major technical constraints to production: 1) the need to detect and quantify methane hydrate deposits prior to drilling, and 2) the demonstration of methane production from hydrate at commercial volumes. Recent and planned research and field trials will help answer these two issues. In addition, the program is working to resolve the linkages between methane hydrate and global carbon cycling/global climate to better inform future energy and environmental policies choices.

Status

Budget:
The President's FY 2009 budget did not request funding for the program. The program's budget history is:



People:

The program is overseen by headquarters staff in the Office of the Deputy Assistant Secretary for Oil and Natural Gas. Headquarters staff includes about n 1 ½ full time employees (FTEs). National Energy Technology Laboratory Federal staff manages the program implementation and conducts in-house research, with about 10 FTEs. About 18% of the budget is directed to research at other National labs and other government agencies. The remaining research is conducted through cooperative agreements with academia and industry. The program includes about 30 projects. The two largest projects at this time are ongoing collaborative field programs with industry, one in the arctic and one in the Gulf of Mexico.

Performance:

The methane hydrate program was assessed by OMB using its Program Assessment Rating Tool (PART) in 2004, when it was rated "Results not Determined", because OMB did not accept the DOE-approved Methane Hydrate Long-Term Goal.

Since 2004, methane hydrate R&D has been combined with the Natural Gas Program. The Natural Gas Program was green in the FY 2007 4th quarter Joule Status and had met its PART measure.

History

Methane hydrate has been known as a laboratory curiosity since 1810. Since the 1930s, hydrate that forms in natural gas pipelines (containing natural gas and water) have been recognized as a hazard. This led to research that continues with industry funding to identify the conditions under which hydrate forms and ways to prevent pipeline blockages.

DOE and the US Geological Survey (USGS) initiated research on the natural occurrence of methane hydrate in 1982, in response to the discovery of natural hydrate in subsea sediments and in Alaska North Slope oil wells. By 1992, DOE had completed an assessment of the methane

hydrate resource in a dozen basins worldwide. The program was stopped in 1992, as DOE chose to focus on shorter-term resources.

The program resumed in 1998 as part of a multi-agency effort that included USGS and the Office of Naval Research. It was recognized at that time that the technology for methane hydrate detection and characterization had made sufficient progress and that production seemed possible. The program was accelerated by the enactment of the Methane Hydrate Research and Development Act of 2000. In 2005, the program was re-authorized in EPAct. Since 2005, the program has conducted field experiments to validate detection and production technologies. These necessary activities are currently being constrained by budget limitations.

Through the program, the DOE has collaborated with a wide range of international hydrate R&D programs, and has recently signed formal bilateral agreements with the governments of Japan, Korea, and India. These activities accelerate the program by giving US scientists access to additional research and models as well as different methane hydrate deposits.

Critical Operating Procedures

The methane hydrate program uses a number of management techniques to assure that the program gets the greatest benefit from its limited budget. These include:

- Development of strategic and multi-year plans in 2006 and 2007, respectively. These plans were developed in consultation with the Interagency Coordination group (see below) and the Methane Hydrate Advisory Committee.
- External scientific review including: National Research Council assessments every five years; Federal Advisory Committee oversight and annual reports to the Secretary of Energy and periodically to Congress; annual peer reviews of active projects; and external expert review to competitively select projects.
- Interagency Coordination group (including Minerals Management Service (MMS), , Bureau of Land Management (BLM), National Oceanic and Atmospheric Administration (NOAA), Naval Research Lab (NRL), and National Science Foundation (NSF)) that meets several times a year to share results and coordinate research.
- Technology transfer, including publications, web-pages and DOE's internationally-recognized newsletter *Fire in the Ice.*
- International collaborative agreements to accelerate R&D and leverage Federal funding.

The Methane Hydrate Advisory Committee in its 2007 Report to Congress made these findings:

- The goals of the Methane Hydrate R&D Act are important to the Nation and should be pursued
- These goals will not be reached without vigorous support from the Federal government
- The Committee fully endorses and believes (given sufficient funds) the Program's strategic plan and time frames are feasible
- The program's planning and management functions have actively addressed the assessment concerns of the National Research Council described in its 2004 report

Recent Organizational Accomplishments and Strengths

The program has made significant progress in developing the knowledge and technology needed to: 1) detect and quantify hydrate deposits prior to drilling and 2) allow safe production of

methane from hydrate. The program is beginning to assess the role of methane hydrate in global climate change.

Detection and Quantification

The program has worked with Stanford University, the University of Texas, the USGS, and others to develop foundational rock-physics models that provide the basis for the direct detection and quantification of gas hydrate.

The DOE-BP Exploration (Alaska) Inc. 2007 Alaska well verified the first direct delineation and characterization of specific, drillable, gas hydrate "prospects" through remote sensing. Similar prospects have now been developed in the Gulf of Mexico. Both efforts adapted an industry-standard geological and geophysical prospecting approach that focuses on confirmation of all petroleum systems elements (reservoir, source, seal, and migration pathways) in conjunction with direct detection via geophysics.

Production

If methane hydrate is subjected to reduced pressure or increased temperature, outside the temperature stability field, hydrate will dissociate to gas and water. When methane hydrate is contained within the pores of sand-rich sediments, reduced pressures around a wellbore will cause methane hydrate dissociation and the released gas will flow through the porous media and up the wellbore to surface facilities.

The technology to produce methane from hydrate will probably involve straightforward modification of techniques used to produce conventional hydrocarbons. However, the volume and rate at which methane that can actually be produced from hydrate deposits is unknown. No one has demonstrated by long-term testing the productive capacity of a hydrate deposit and the size and geologic setting of most hydrate deposits remain poorly defined. However, small-scale flow tests at locations in Alaska and the Canadian Arctic and computer modeling of these well-defined deposits suggest that methane can be produced from hydrate using modified conventional natural gas production technology at costs only slightly greater than conventional natural gas.

The program also conducts basic studies and tool development that support the major goals.

Experimental Efforts

The program's work with the USGS and the DOE National Lab network has created several specialized sea-floor process simulation reactors that enable experimental study of the dynamics and nature of natural hydrate occurrences. These studies help define the physical and chemical properties of hydrate-bearing sediments and support the development of reservoir simulation capabilities.

Supporting Education and Training

Since 2000, the program provided financial support and research opportunities that have enabled more than 150 students at nearly 40 universities and research institutions to obtain advanced degrees in energy and ocean science and engineering disciplines.

The program has established a National Gas Hydrate R&D Program Fellowship through the National Academies of Science that provides competitive stipends and research support funds to attract the best young minds to the energy field.

Tool Development

The program has supported development of advanced field sampling and analysis tools, including advanced temperature-pressure probes, advanced on-site core imaging tools, pressure coring devices, and pressure core imaging and analysis equipment. These tools are now standard for gas hydrate field investigations around the globe.

The program has also led the development of numerical simulation tools and advanced techniques for the processing and interpretation of remote seismic data.

Leadership Challenges

The President's Budget Requests for FY 2006 through FY 2009 did not request funding for this program. However, Congress continues to fund the program. These differences create uncertainty among the program's industry, international and academic partners as to whether to participate in the program.

Program management faces the complexity of coordinating an interagency group (including the Minerals Management Service (MMS), USGS, Bureau of Land Management (BLM), National Oceanic and Atmospheric Administration (NOAA), Naval Research Lab (NRL), and National Science Foundation) due to the fact that each agency has a different mission with respect to methane hydrate research. Bringing a variety of viewpoints into a common vision of the priorities, scale, and sequence of R&D efforts has required significant time and effort, but has resulted in a stronger and more focused program.

Another leadership challenge is getting industry involved in this program, when oil and gas exploration and production companies view methane hydrate supply as not part of their core business. Industry participation is necessary to gain access to the data, expertise, and field sites that are needed to advance the program. One way the program garnered industry participation and gathered data relative to methane hydrate production, was by focusing offshore field tests on detecting and quantifying methane hydrate relative to safety of conventional oil and gas drilling rather than production. Now that oil prices are high and recent methane hydrate R&D efforts have been successful, industry interest in collaborating with the government has increased. However, industry is still not investing significant time or money in proprietary work aimed at methane hydrate production or environmental issues.

Key Strategies and Timing

Strategy: Conduct Parallel Arctic and Offshore Activities

Although methane hydrate occurs in both the arctic and offshore, the largest resources are in the offshore. However, the arctic provides a significantly cheaper and easier operating setting because of the existing exploration and production infrastructure. The program is designed to use arctic studies and field tests to prove up production technologies while using marine efforts to delineate the resource potential and develop detection and quantification technologies. The program is now facing a major hurdle – the need to significantly increase funding to allow field studies in the arctic and marine settings in parallel-track rather than sequentially. Currently field projects are spaced two years apart and alternate between Alaska and offshore due to current funding levels. The program needs to conduct field activities at a faster pace in both Alaska and offshore in order to meet its goals.

Strategy: Leverage Efforts of Many Government Agencies

The program works continuously with an interagency group (including MMS, USGS, BLM, NOAA, NRL, and NSF). Each program has funding for methane hydrate research related to its mission, which increases the total US research effort (these other agencies have a combined annual budget of about $5 million). In addition, these agencies bring specialized expertise to the research; for example, NOAA has expertise in environmental issues of methane hydrate and USGS is responsible for assessing the nation's energy resources.

Strategy: Leverage International Cooperation

Methane hydrate systems are complex and varied, and the program currently does not have the funding to study the variation in these systems without the cooperation of other countries, especially Japan, Canada, India, Korea and China. Multi-national expeditions to measure and sample offshore methane hydrate deposits in other countries have given US scientists access to important data and valuable experience in sampling techniques. In 2008, the DOE signed bilateral agreements for cooperation in methane hydrate R&D with India, Japan and Korea. These agreements are expected to increase access by US researchers to international data and expertise, and increase participation in US field studies.

Strategy: Leverage the Knowledge and Data of the Oil and Gas Industry

Industry involvement has been critical to the DOE program in providing access to seismic data in areas containing methane hydrate in proximity to conventional hydrocarbon prospects. Acquisition of new data by DOE would be prohibitively expensive. Industry involvement has also provided access to industry experience in conventional drilling technology, which can be modified for methane hydrate production.

Strategy: Integrate Student Development into the Program

Student research provides benefits to the program and helps develop the next generation of scientists that are necessary if the US is to maintain its competitive advantage. In addition, the methane hydrate fellowship program, which has funded three fellows since starting two years ago, has allowed the program to expand its important research into the environmental aspects of methane hydrate, including global climate change and greenhouse gas emissions.

Critical Events and Action Items

3-month events

April 2009: Methane Hydrate Advisory Committee annual meeting. The Deputy Assistant Secretary for Oil and Natural Gas is the Designated Federal Officer and will be responsible for overseeing this meeting.

12-month events

January through September 2009: the National Research Council is conducting a study of the progress made in methane hydrate R&D and will make recommendations for future methane hydrate R&D needs. The study is required by EPAct 2005.

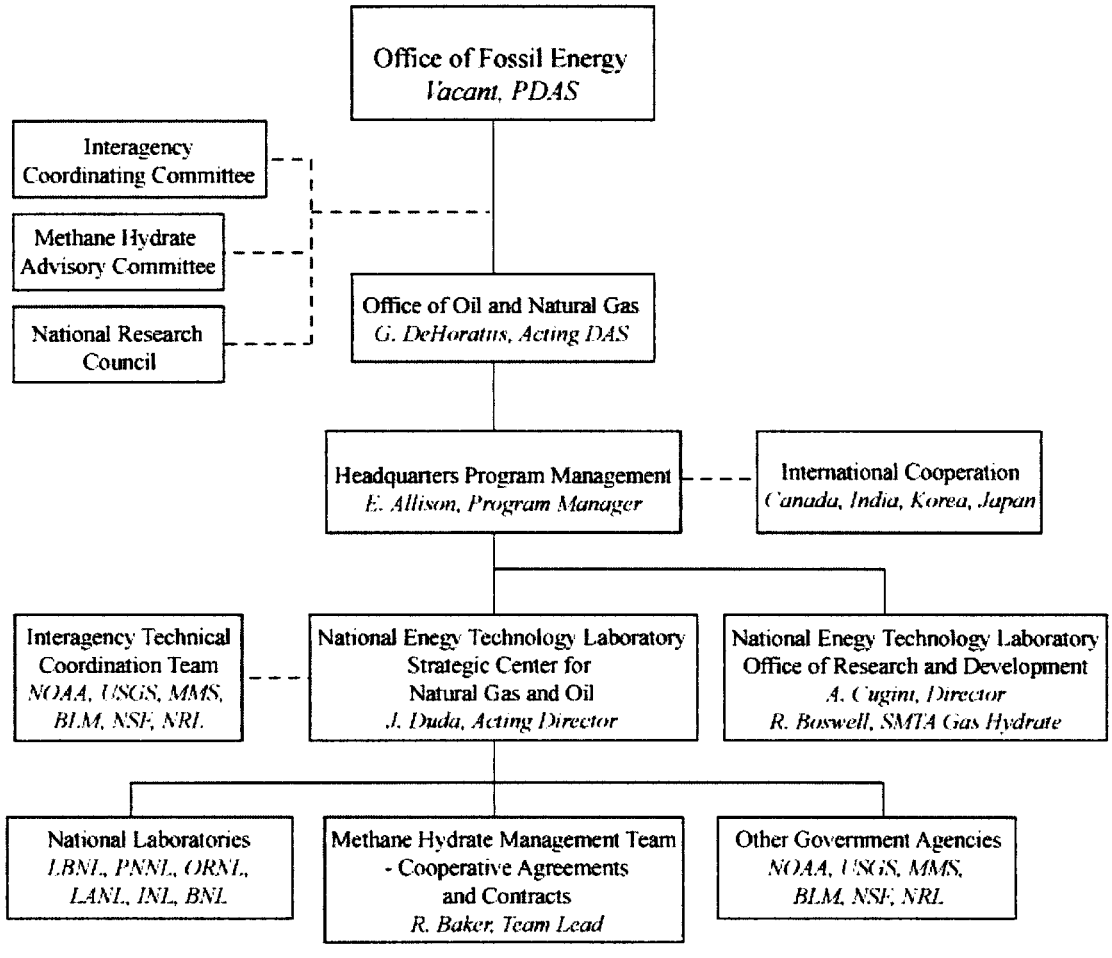
Ongoing: bilateral agreements with India, Japan and Korea for cooperation in methane hydrate R&D may occasionally promote participation by senior management in international meetings to discuss the progress of work under these agreements.

Hot Issues

Methane Hydrate budget growth: As the program moves to more extensive field trials, higher methane hydrate funding levels (commensurate with authorized funding levels) are needed starting in 2010 to meet scheduled goals and maintain an international leadership position. The program has made great progress in the first ten years and small field experiments have validated the feasibility and economics for commercial production; these must be validated by long-term tests and more extensive exploratory efforts before industry will be willing to risk investing in this novel technology.

This program has broad support in Congress, but can not expect funding levels to grow as needed without Presidential and Departmental support.

Current Organizational Chart



Ultra-Deepwater and Unconventional Onshore Oil & Gas Research Program

Organization Information

Organization Name:

Office of Fossil Energy, Office of Oil and Natural Gas

Address:

1000 Independence Avenue, SW, Washington, DC 20585

Organization Phone Number:

202-586-5600

Organization Website:

http://www.fe.doe.gov/programs/oilgas/ultra_and_unconventional/index.html

POC E-mail Address:

Elena.Melchert@hq.doe.gov

Supporting the DOE Mission

Title IX, Subtitle J of the Energy Policy Act of 2005 (EPAct) mandated a new oil and gas research and development (R&D) program called the Ultra-Deepwater and Unconventional Natural Gas and Other Petroleum Resources Program (the Program). The Program is intended to maximize the value of domestic natural gas and other petroleum resources by increasing the supply, reducing the cost, and increasing the efficiency of exploration and production efforts, while improving safety and minimizing environmental impacts. Key aspects of the Program include utilizing a non-profit consortium to manage the research, a complementary research program conducted by NETL, establishing two Federal advisory committees, and R&D funding of $50 million per year derived from royalties, rents, and bonuses from federal onshore and offshore oil and gas leases. In November 2005, the National Energy Technology Laboratory (NETL) within DOE's Office of Fossil Energy (FE) issued a solicitation for a consortium to administer three elements of the Program. The Research Partnership to Secure Energy for America (RPSEA) was awarded the contract in January 2007.

The Program supports the Department of Energy Strategic Theme - Energy Security, Promoting America's energy security-through reliable, clean, and affordable energy, and has two goals:

Strategic Goal 1.1 – Energy Diversity: The Program conducts R&D to increase the supply of domestic oil and natural gas.

Strategic Goal 1.2 Environmental Impacts of Energy: The Program's R&D will develop techniques that reduce or mitigate the environmental impacts of oil and natural gas exploration and production.

Mission Statement

Implement Title IX, Subtitle J of EPACT to maximize the value of natural gas and other petroleum resources of the United States by increasing resource supplies, reducing the cost, and enhancing the efficiency of exploration and production, improving safety, and minimizing environmental impacts.

Status

Budget:

Title IX, Subtitle J, Section 999H established annual funding for the Program for fiscal years 2007 through 2017 (however, Subtitle J has a sunset date of 2014) of $50 million from royalties collected by the Department of Interior (DOI) and derived from Federal onshore and offshore oil and gas production. An additional $100 million is authorized to be appropriated for fiscal years 2007 through 2016. For FY 2007 and 2008, the only budget for the Program has been the $50 million per year deposited into the Fund by DOI, as required by Section 999H. No funds have ever been requested for this Program in the President's budget. Section 999H also prescribes the percentage of the $50 million per year that is to be allocated among the four program elements listed below:

Consortium Portion:

Ultra-Deepwater Activities – 35%	($17.50 Million)
Unconventional Resources - 32.5%	($16.25 Million)
Small Producer - 7.5%	($3.75 Million)

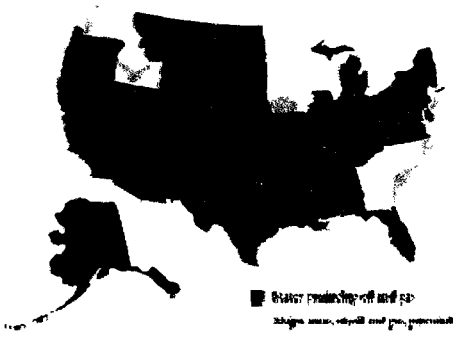
Complementary In-House Research Portion:

NETL Research Activities – 25%	($12.50 Million)

Performance:

The *2007 Annual Plan* was complete August 2007, and the funds were made available in that same month. Solicitations were issued and 43 projects were selected. The *2008 Annual Plan* was complete April 2008, and the funds were not made available until August 2008. Solicitations will be issued during October or November 2008 with selections expected early during CY 2009. The *2009 Annual Plan* will be complete November 2008, and it is planned that funds will be made available during December 2008.

History



Today, oil and natural gas are produced in over 30 states. The U.S. is the world's second largest producer of natural gas and the third largest producer of oil. Nearly every region of the country has oil and natural gas potential
SOURCE: USGS/ARI, created for DOE/FE, 2007

*The **Oil and Natural Gas** program includes the Ultra-Deepwater and Unconventional Oil & Gas Research Program plus research and analysis in the areas of:*

- *Oil and Gas Exploration & Production*
- *Methane Hydrate*
- *Environmental*
- *LNG Safety*
- *Arctic Research*

Program Consortium administers three elements of this EPAct Program:

- *Ultra-Deepwater Program*
- *Unconventional Natural Gas and Other Petroleum Resources Program*
- *Small Producer Program*

NETL conducts a program of complementary research & analysis:

- *Drilling Under Extreme Conditions*
- *Environmental Impacts of Oil and Natural Gas Development*
- *Enhanced and Unconventional Oil Recovery*
- *Resource Assessment*
- *Planning & Analysis Support*

The Program is comprised of four program elements.

The Ultra-Deepwater Program emphasis is on "Grand Challenges", on long-term, high-risk research, on applied science, and on key leveraging and cross-cutting technologies, rather than on short-term, incremental advancements, product development activities, and field specific needs.

Its mission is to identify and develop economically viable (full life cycle), acceptable risk technologies, architectures, and methods to explore, drill, and produce hydrocarbons from formations in the Outer Continental Shelf (OCS) in water deeper than 1500 meters.

The *Unconventional Natural Gas and Other Petroleum Resource Program* is divided into three theme areas that target gas shales, water management for both coalbed methane and gas shales, and tight sands, focusing on unconventional natural gas.

Its mission is to identify and develop economically viable technologies to locate, characterize and produce unconventional natural gas and other petroleum resources, in an environmentally acceptable manner.

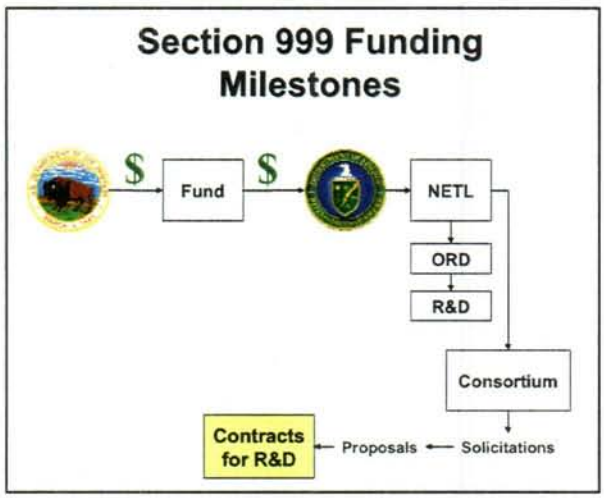
The *Small Producers Program* targets advancing technologies for mature fields, which primarily covers the technology challenges of managing water production, improving recovery, and reducing costs. Mature fields are the domain of small producers, and they face these three challenges on a daily basis.

The *NETL Complementary Program* includes four principal research areas, plus analytical support:

- Drilling Under Extreme Conditions
- Environmental Impacts of Oil and Natural Gas Development
- Enhanced and Unconventional Oil Recovery
- Resource Assessment.
- Planning and Analysis Support

Critical Operating Procedures

At the start of the fiscal year, the Department of the Interior collects royalties and rents from production on Federal leases, and then deposits $50 million into the "Ultra-Deepwater and Unconventional Natural Gas and Other Petroleum Research Fund". This funding is apportioned to DOE by OMB with restrictions.



Each year, DOE develops an annual plan that describes the ongoing and prospective activities by the program consortium. This plan is reviewed by two federal advisory committees and other outside experts. The final annual plan is then transmitted to Congress by the Secretary of Energy, and published in the Federal Register. No research funds are released to the program consortium until publication and transmittal.

Recent Organizational Accomplishments and Strengths

As part of the Complementary Research program, NETL completed installation and shakedown of its one-of-a-kind Ultra-deep single cutter Drilling Simulator (UDS). This facility is a critical part of NETL's research to allow oil and gas exploration and production at greater depths where extremely high pressure and temperatures are prevalent.

Another example is NETL's experimental High Interstitially Strengthened Steel (HISS) alloys identified as promising materials for high temperature high pressure oil and gas exploration and production applications. The austenitic stainless steel Fe-Cr-Mn-(N-C) is more economical than

commonly used Ni-base alloys and austenitic steels containing Ni (Fe-Cr-Ni). The HISS alloys will be tested in the UDS during FY2009.

NETL developed NFFLOW, a flow simulator for highly fractured reservoirs. It simulates fracture networks with more than 50,000 fractures and couples fracture flow with recharge from surrounding rock. The code is capable of modeling gas or liquid. It will be used to assess the Bakken Shale as a resource and the possibility of effective CO2 enhanced oil recovery.

Additionally, the program consortium has selected 43 projects for award during its first year in each of the areas it administers: ultra-deepwater, unconventional natural gas, and technologies for small producers.

Leadership Challenges

Fiscal year funds are sent to DOE from DOI during December of each year, however, restrictions on the funds after the annual plan has been completed cause delays that delay the benefits such as increased royalties and rents from Federal lands that were anticipated by Congress for this subtitle of the Energy Policy Act of 2005.

Critical Event and Action Items

3-month events

January 2009
NETL continues complementary research activities. Obligate FY09 funds to the program consortium for FY 09 solicitations to be issued.

February 2009
Program consortium prepares solicitations.

March 2009
Program consortium issues solicitations for investment of FY09 funds.

12-month events

July 2009
Consortium delivers recommendations in the form of a draft Annual Plan for 2010.

September 2009
Meeting of 2 Federal advisory committees and Subcommittees [statutory requirement]

October 2009
Two Federal advisory committees deliver final recommendations [statutory requirement]

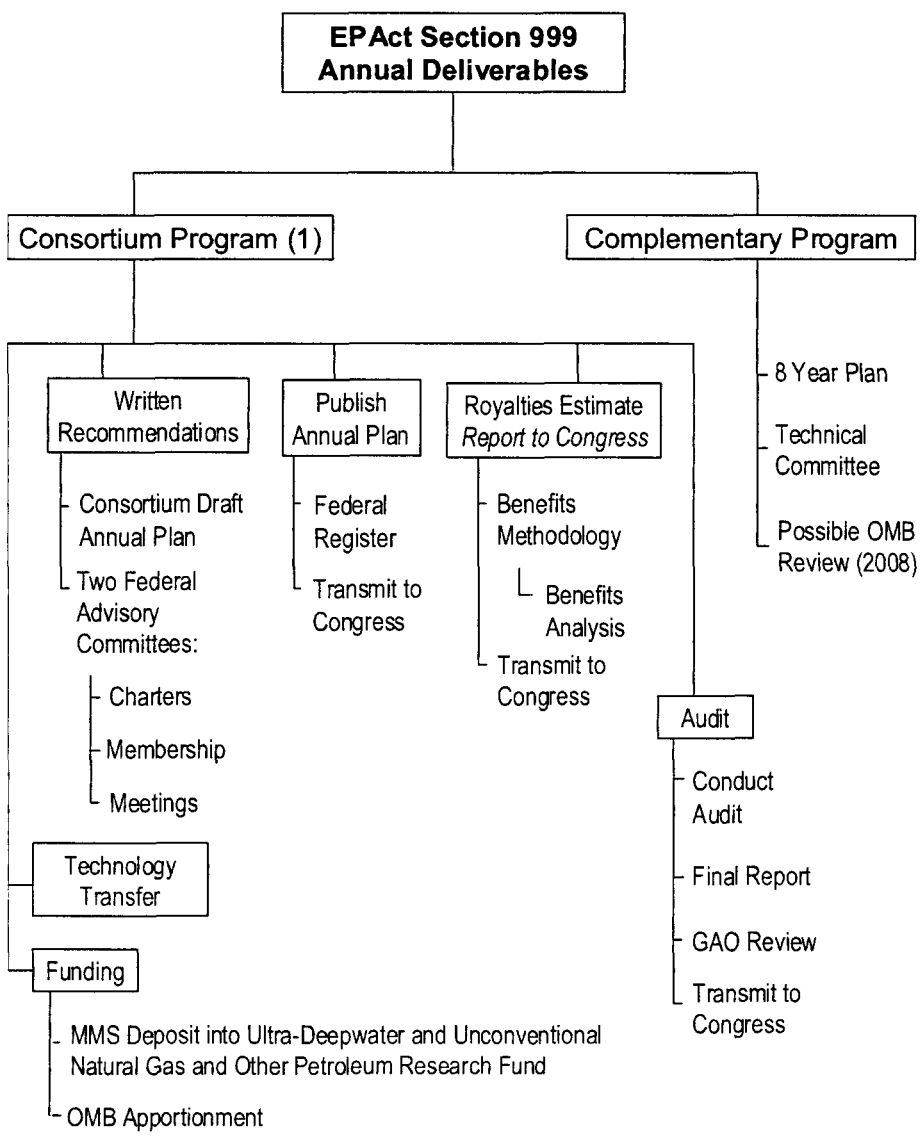
November 2009
2010 Annual Plan is published in the Federal Register and transmitted to Congress.

December 2009
FY10 funds are apportioned to DOE, and immediately made available. FY10 funds are obligated to the program consortium contract.

Hot Issue

Solicitation of projects funded by FY 2008 royalties and rents from DOI are pending in November 2008. Solicitations funded by FY 2009 funds are expected to be issued during early calendar year 2009 assuming that the FY 2009 funds are made available during November 2008 as planned.

Functional Organization Chart of Annual Deliverables



Office of Petroleum Reserves

Organization Information

Organization Name:

Office of Petroleum Reserves (FE-40)
[Strategic Petroleum Reserve (SPR); Northeast Home Heating Oil Reserve (NEHHOR); and Naval Petroleum and Oil Shale Reserve (NPOSR)]

Address:

1000 Independence Avenue, SW
Washington, D.C. 20585

Organization Phone Number:

(202) 586-4410

Organization Website:

http://www.fe.doe.gov/programs/reserves/index.html

POC E-mail Address:

david.johnson@hq.doe.gov

Supporting the DOE Mission

Strategic Theme 1- Energy Security

Strategic Goal 1.1 – Energy Diversity: Increase our energy options and reduce dependence on oil, thereby reducing vulnerability to disruption and increasing the flexibility of the market to meet U.S. needs.

DOE Strategy – Ensure adequate crude and regional home heating oil supplies during emergency shortages by maintaining the operational readiness of the SPR and NEHHOR.

GPRA Unit Program Goal 1.1.11.00 – Maintain operational readiness of the SPR to drawdown at a sustained rate of 4.4 million barrels per day for 90 days, within 15 days notice by the President. Maintain 2 million barrel reserve of home heating oil in the U.S. Northeast. Ensure adequate crude and regional home heating oil supplies during emergency shortages by maintaining the operational readiness of the SPR and NEHHOR.

Key Activities:
SPR: Maintain the operational readiness of the SPR to respond rapidly to a potential international or regional disruption in U.S. petroleum supplies; provide the degasification of SPR inventory to assure safe oil distribution; and implement the authorized expansion of the SPR storage capacity from 727 million barrels to 1.0 billion barrels to increase our nation's energy security.

NEHHOR: Maintain the operational readiness of the NEHHOR to respond rapidly to potential winter-related fuel shortages in the Northeast.

NPOSR: Execute clean closure of inactive remediation sites at former NPR-1, known as the Elk Hills Oil Field. Finalize equity determinations on hydrocarbon producing zones at the former NPR-1. Manage budget planning and execution for operations and maintenance of the Rocky Mountain Oilfield Testing Center (RMOTC) at NPR-3.

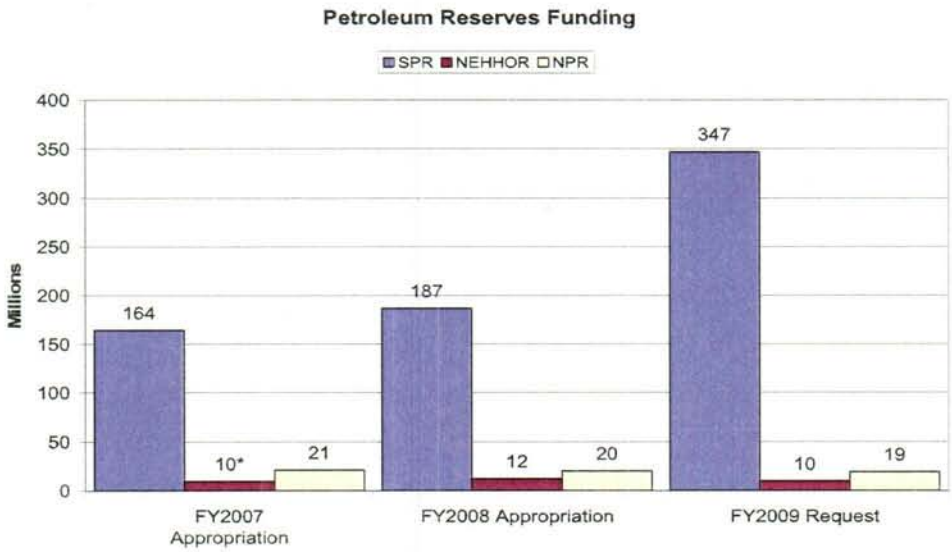
Mission Statement

SPR: The mission of the SPR is to provide an emergency stockpile of petroleum products to protect the United States from potential disruptions in petroleum supplies and to carry out obligations of the United States under the International Energy Program. (Energy Policy and Conservation Act (EPCA) (P.L. 94-163)).

NEHHOR: The NEHHOR mission is to provide an emergency stockpile of 2 million barrels of home heating oil to respond to potential winter-related supply shortages in the Northeast. (EPCA, as amended by the Energy Act of 2000 (P.L. 106-469)).

NPOSR: The NPOSR mission has evolved to completing environmental remediation activities and equity finalization at NPR-1, while simultaneously operating NPR-3; providing RMOTC as a field demonstration facility; and advocating/supporting industry efforts for the commercial development of U.S. oil shale resources.

Status:



*NEHHOR appropriations included prior year balances and receipts from sale of 35,000 barrels

Budget:

FY2009 Congressional Request:

SPR	$344,000,000 ($171,400,000 for expansion)
NEHHOR	$9,800,000
NPR	$19,099,000

People: (Office of Petroleum Reserves)

Estimated number of federal FTEs: 133

Estimated number of contractor FTEs: 800

Estimated number of headquarters FTEs: 38

Estimated number of field site FTEs: 95

Facilities:

SPR: The Office of Petroleum Reserves manages four Government-owned SPR oil storage facilities - two in Louisiana (Bayou Choctaw and West Hackberry) and two in Texas (Big Hill and Bryan Mound) which have a combined storage capacity for 727 million barrels of crude oil. Together the facilities and the crude oil represent an investment of more than $22 billion in energy security. SPR also has a Project Management Office (field office) located in leased office space, west of New Orleans, in Metairie, Louisiana, and a warehouse facility located at the NASA Stennis Facility in Mississippi.

NEHHOR: The Petroleum Reserves utilizes commercial storage terminals located in the Northeast – one in New York Harbor and two in Connecticut – to provide storage services and rotation (refreshment) of the 2 million barrels of Government heating oil stocks.

NPOSR: Since 1998, NPR has divested the three Naval Oil Shale Reserves and the NPR-1 and has transferred the NPR-2 property to the Bureau of Lands Management within the Department of the Interior (DOI). The remaining property, NPR-3, located near Casper, Wyoming, is an operating oilfield (known as Teapot Dome) and provides the Rocky Mountain Oilfield Testing Center (RMOTC) for industry, academia, and Government agencies to perform applied oilfield research. NPR-3/RMOTC is managed by the Fossil Energy (FE) Office of Oil and Natural Gas.

Performance:

SPR: (1) Enable ready distribution of SPR oil by achieving maximum sustained (90 day)
drawdown rate of 4.4 million barrels.
(2) Ensure drawdown readiness by achieving $\geq$ 95% of monthly maintenance and accessibility goals.
(3) Ensure cost efficiency of SPR operations by achieving operating cost per barrel of $0.204.

PART rating:

FY07 PART measure status: 3 met effective

FY07 4th quarter Joule status: Green Effective

NEHHOR: No Departmental measures, but internal Program measures are utilized.
NPOSR: No Departmental measures, but internal Program measures are utilized.

History

SPR: The Strategic Petroleum Reserve was created by Congress in the aftermath of the Arab oil embargo of 1973-74. The Energy Policy and Conservation Act (EPCA) (42 U.S.C. 6201 *et seq.*), enacted on December 22, 1975, authorized the establishment of the SPR up to one billion barrels to reduce the impact of a severe energy supply interruption and to carry out the obligations of the United States under the International Energy Program.

The development of the SPR was established on the fundamental framework of:

- U.S. Government ownership (storage facilities and petroleum)
- Centralized U.S. Gulf Coast reserve
- Underground salt dome storage technology
- Crude oil storage only

The development of the SPR was initiated in 1976 with the acquisition of three salt dome storage sites in Texas and Louisiana with existing brine caverns that could be converted to oil storage. Additional sites were added and new storage caverns were developed during the 1980s. Currently, the SPR has four storage sites with a combined storage capacity of 727 million barrels, and a drawdown capability of 4.4 million barrels per day.

Crude oil for the SPR was acquired using appropriated funds through 1994. Without any new appropriations of funds for SPR fill for 5 years, the Administration restarted the fill of the SPR in 1999 using the federal royalty-in-kind (RIK) program. Under this program, the royalty payments from Federal offshore production leases were received in oil in lieu of cash, and then transferred from DOI to DOE for subsequent exchange and delivery to the SPR sites. To date, the SPR has acquired 554 million barrels of crude oil through direct purchase from 1977 through 1994 using appropriated funds; 153.4 million barrels through the RIK transfer program from 1999 through 2008; and 10.6 million barrels from premiums on oil deferrals and exchanges. The average cost of the oil in the SPR is $28.46/barrel (including the book value of the RIK oil).

On May 19, 2008, Congress passed the Strategic Petroleum Reserve Fill Suspension and Consumer Protection Act of 2008 (P.L. 110-232) which suspended further SPR oil fill activities until 2009. As a result the SPR fill was halted at 707 million barrels and scheduled oil deliveries of 2.2 million barrels were deferred until 2009. On September 3, 2008, the Secretary of Energy authorized the emergency use of the SPR to address supply shortages created by Hurricane Gustav and Ike. This resulted in a release of 5.4 million barrels through emergency exchanges, reducing the SPR inventory to it current level of 702 million barrels. The oil released through emergency exchanges will be returned to the SPR, along with additional premium barrels, during 2009.

NEHHOR: The NEHHOR program was created in 2000 with a separate appropriation under the SPR office. It is authorized as a two million barrel home heating oil emergency reserve. The size is considered large enough to allow commercial companies to compensate for interruptions in supply during severe winter weather, but not so large as to dissuade suppliers from responding to increasing prices as a sign that more supply is needed. Two million barrels would give Northeast consumers adequate supplemental supplies for approximately 10 days, the time required for replenishment supplies to arrive.

The current inventory of the NEHHOR is 1,984,250, slightly less than its authorized two million barrel size due to the sale of a small portion in 2007 to provide additional funding required to renew storage contracts.

NPOSR: The Naval Petroleum and Oil Shale Reserves (NPOSR) have a history going back to 1910. A series of executive orders establish the Naval Petroleum Reserves (NPR) 1, 2, 3, and 4 and the Naval Oil Shale Reserves (NOSR) 1, 2, and 3. The NPR sites were held as Federal reserves until after the 1973-74 Arab oil embargo. On April 5, 1976, the Naval Petroleum Reserves Production Act of 1976 (P.L. 94-258) was enacted and the reserves were opened up to production. The oil, natural gas, and other gas liquids were offered for sale under sealed bid. NPR-4 was transferred for administration to the Department of the Interior and renamed the National Petroleum Reserve in Alaska.

NPR Divestment. The Defense Authorization Act for Fiscal Year 1996 (P.L. 104-106) directed divestment of NPR assets. NPR-1 (Elk Hills) was sold in 1998 by competitive sale for $3.65 billion. The NOSR-2 land in Utah was transferred to the Ute Indian Tribe and NOSR-1, NOSR-3, and NPR-2 were transferred to the Department of the Interior for leasing.

NPR-3 and RMOTC. NPR-3 continues as a Government operated oil field under DOE management within the FE Office of Oil and Natural Gas. It is a mature field nearing the end of its economic life. Co-located at NPR-3 is RMOTC, a program initiated by DOE in 1994 that offers NPR-3 as a testing and demonstration facility for oil producers, service companies, and other components of the energy industry, including academia, to perform hands-on applied research.

NPR-1 Equity Closeout. NPOSR currently supports closeout actions related to the divestment of NPR-1 in the areas of final equity determination for joint owners DOE and Chevron, USA, and for the environmental cleanup of certain parcels. Additional remaining properties in NPR-2 in Ford City are being disposed of through the General Services Administration.

Unconventional Fuels. The Energy Policy Act of 2005 (EPAct 2005) (P.L. 109-58) directed DOE to establish a Task Force to develop a program to accelerate commercial development of strategic unconventional fuels, including oil shale. Because of its past experience with oil shale demonstration and testing, NPOSR has served as the Secretary's representative to the Strategic Unconventional Fuels Task Force and currently provides management and coordination of the DOE's initiatives to facilitate the commercial development of an oil shale and unconventional fuels industry in the U.S.

Critical Operating Procedures

SPR: The critical operations of the SPR program are focused on:

- Operational readiness of the SPR – maintaining the preparedness and capability of the SPR facilities, inventory and people to respond to a potential disruption in U.S. petroleum supplies.
- Implementation of the oil fill activities of the SPR
- Implementation of the expansion of the SPR to one billion barrels, and
- Implementation of a strong safety program and an effective security posture.

The governing requirements for the drawdown of the SPR are set forth in Section 161 of the EPCA. The EPCA gives the President the exclusive authority for the drawdown of the SPR; and requires that the President make a finding that a drawdown and sale of the SPR are required by a "severe energy supply interruption" or by obligations of the United States under the International Energy Program. Section 161 also provides authority to the Secretary of Energy to perform test sales and exchanges of up to five million barrels to evaluate internal and external processes and to demonstrate the capabilities of the SPR.

The governing requirements for the oil acquisition and fill of the SPR are set forth in Sections 159 and 160 of EPCA and the *Procedures for the Acquisition of Petroleum for the Strategic Petroleum Reserve* (10 CFR 626). EPCA section 159, gives the Secretary of Energy the authority to acquire oil for the SPR "by purchase, exchange or otherwise", and 10 CFR 626 provides rules and procedures for the acquisition of SPR crude oil through (a) direct purchase, (b) RIK oil transfers from DOI, and (c) acquisition of premium barrels resulting from deferrals of scheduled deliveries. DOE has used the "acquisition by exchange" authority on several occasions to quickly address small, regional disruptions in petroleum supplies.

NEHHOR: The critical operations of the NEHHOR program focus on:

- Monitoring the status of heating oil supplies in the Northeast, and
- Maintaining the preparedness and capability of the NEHHOR to respond to potential winter fuel shortages.

The governing requirements for the drawdown of the NEHHOR are set forth in Section 183 of the EPCA. The Secretary may release the stocks from the NEHHOR only upon a finding by the President that there is a "severe energy supply interruption." Such a finding may be made only if it is determined that (1) a dislocation in the heating oil market has resulted from the interruption, or (2) a circumstance exists that constitutes a regional supply shortage of significant scope and duration that the release would significantly reduce the adverse impact of such shortage.

NPOSR: The NPR-3 and RMOTC facilities are operated by FE's Office of Oil and Natural Gas. The operations of the NPOSR office focuses on managing and coordinating the efforts associated with NPR-1 equity finalization, NPR-1 environmental cleanup and advancing the commercial development of oil shale and other unconventional fuels.

Recent Organizational Accomplishments and Strengths

SPR: The organizational accomplishments and strengths of the SPR are exemplified through our emergency response actions to address U.S. supply shortages.

SPR Emergency Drawdowns: The President has authorized the emergency drawdown of the SPR twice, both in coordination with IEA releases. The first drawdown was conducted in concert with the Desert Storm Invasion in January 1991. The SPR awarded contracts for 17.3 million barrels. The second drawdown was conducted in response to Hurricane Katrina in 2005. The SPR awarded contracts for 11 million barrels. This release was preceded by a release of 9.8 million barrels through exchanges.

SPR Releases through Exchange: The SPR has used its "acquisition by exchange" authority, i.e., loans, on a number of occasions to respond quickly to both large-scale and small, localized disruptions. Examples of large scale disruptions are hurricanes Ivan in 2004 (5.4 million barrels loaned) and Katrina in 2005 (9.8 million barrels). Examples of smaller exchanges are temporary ship channel closings or pipeline problems that prevent scheduled deliveries to a refinery. Exchange authority was also used on a large scale in 2000 when a competitive exchange of 30 million barrels was held to address concerns over low heating oil stocks.

Another significant accomplishment has been the acquisition of free additional oil for the SPR through the use of "deferred deliveries" in backwardated oil markets. SPR's oil acquisition procedures permit the deferral of contractually scheduled deliveries if the contractor provides additional premium barrels to DOE as consideration for the delay. Through the exchanges and deferrals of deliveries, the SPR has acquired more than 10 million additional barrels of oil valued at nearly $300 million.

NEHHOR: Although not yet used, DOE has implemented an on-line sales platform for the NEHHOR that will allow completion of a competitive sale and award of contracts within two days. DOE exercises the system with industry every winter to assure industry's familiarity with the sales system and to receive feedback for continual improvement.

NPOSR: The NPOSR has developed the DOE positions for NPR-1 equity finalization and received decisions on several zones. The environmental cleanup activities of NPR-1 are being transferred to the U.S. Army Corps of Engineers and the cleanup and divestiture of the NPR-2 properties is nearing completion. The NPOSR office has provided all technical support to the Strategic Unconventional Fuels Task Force and was instrumental in the research and development of two reports published by the Task Force that identified major Federal actions needed to accelerate industry development.

NPR-3 production of crude oil in FY 2007 generated sales revenues totaling $6.1 million. Profits totaled over $0.6 million for a return on costs of 12 percent. RMOTC supports testing and

demonstration projects on a cost share basis. The average partner cost share for FY 2007 was nea 90 percent.

Leadership Challenges

SPR: Leadership challenges for the SPR are: (a) acquiring crude oil in current high price market; (b) securing Congressional funding and support for the SPR expansion as required by EPAct 2005 to 1.0 billion barrels ; (c) addressing the issue of SPR crude compatibility; and (d) retention of critical technical skills.

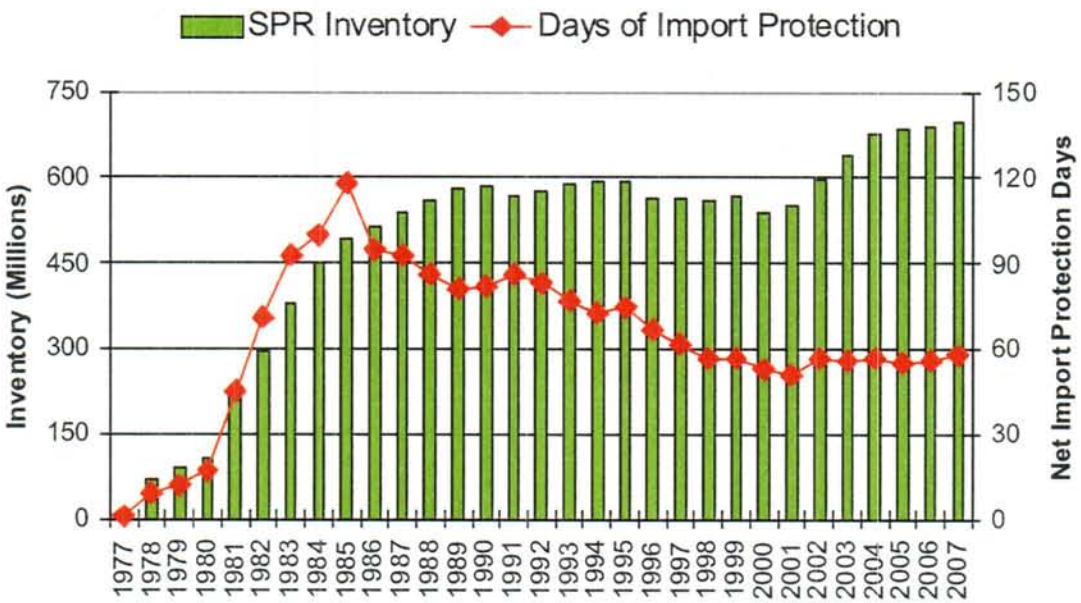
NEHHOR: Leadership challenges are (a) securing commercial storage in high demand locations for optimal response capability; and (b) acquiring heating oil in current high price market.

NPOSR: Leadership challenges are (a) accelerating closeout activities of NPR-1 equity finalization and the environmental cleanup associated with the 1998 divestment of Elk Hills; (b) securing funding for oil shale development studies; and (c) retention of critical expertise.

Key Strategies and Timing

SPR: As originally enacted in 1975, EPCA called for the SPR to achieve within 7 years of enactment a storage volume of crude oil equivalent to about three months of petroleum imports, based on 1975 import levels (approximately 500 million barrels). The SPR was developed at an aggressive pace and achieved the equivalent of 90 days of imports in 1983, and peaked at 118 days of petroleum imports in 1985. Since 1985, the SPR import protection level has declined due to increasing United States consumption and rising petroleum imports. Today, the SPR has an inventory of 702 million barrels of crude oil. However, this inventory currently provides less than 60 days of import protection (See chart below). Both Congressional and Presidential initiatives have been introduced to increase the size and import protection of the SPR.

SPR Import Protection
1977 - 2007



On August 8, 2005, Congress passed the EPAct 2005, directing the Secretary of Energy to (a) acquire petroleum to fill the SPR to its authorized 1.0 billion barrel capacity and to (b) complete proceedings for selection of sites necessary to expand the storage capacity of the SPR to 1.0 billion barrels. Since 2005, DOE has completed the National Environmental Policy Act review, published a Final Environmental Impact Statement, and issued a Record of Decision selecting sites for the expansion. DOE submitted an SPR Plan to Congress outlining the expansion of the SPR to 1.0 billion barrels in June 2007. The current target for the completion of the SPR expansion and fill to 1.0 billion is 2019.

On January 23, 2007, President Bush in the State of the Union Address called on Congress to double the current size of the SPR to 1.5 billion barrels. An SPR size of 1.5 billion was deemed necessary to achieve 90 days of import protection. The current target for the completion of the SPR expansion and fill to 1.5 billion is 2029.

NEHHOR: The NEHHOR is required by EPCA to maintain an emergency stockpile of 2.0 million barrels of home heating oil to respond to potential winter-related supply shortages in the Northeast. An additional 15,750 barrels is required to achieve the 2.0 million barrels.

NPOSR: Congressional and Presidential initiatives have been introduced to accelerate the commercial development of oil shale resources. EPAct 2005 directed DOE to establish a Task Force to develop a program to accelerate commercial development of strategic unconventional fuels, including oil shale. In June 2008, the President addressed the Nation regarding the current state of high energy prices and the critical need for expansion of America's domestic oil production including the development of the vast oil shale resources this Nation holds. Government actions are required to remove barriers for the commercial development of oil shale resources.

NPOSR has initiated an integrated, basin-wide study (Western Energy Basins Initiative) in conjunction with the national labs, to address the outstanding questions related to the impact of a commercial oil shale industry on carbon emissions and water resources.

Critical Events and Action Items

3-Month Events

SPR: January 2009
Decisions regarding SPR oil fill activities (Hot Topic)
Decisions regarding SPR Expansion Program (Hot Topic)

NEHHOR: April 2009
A survey of current storage costs will be conducted to determine the advisability of exercising current NEHHOR contract option years or whether to re-solicit to improve costs and locations, including better coverage of the New England region.

NPOSR: January 2009

Complete transfer & disposition of the remaining drill site properties in Ford City (California), formerly part of NPR-2.

12-Month Events

SPR:
Complete SPR oil fill to 727 million barrels.
Complete the Supplemental EIS for the development of Richton, MS site.
Commence engineering design of sites for SPR expansion to 1.0 billion barrels.

NEHHOR:
Re-solicit & award of new NEHHOR contracts to improve costs and locations.

NPOSR:
Results of the integrated, basin-wide study (Western Energy Basins Initiative).
Funding and implementation of additional recommendations contained in the Strategic Unconventional Fuels Task Force Report of February 2007.

Hot Issues

SPR: Strategic Petroleum Reserve Fill
Strategic Petroleum Reserve Expansion
SPR Crude Compatibility

NPOSR: Oil Shale Development
NPR-1 Equity Finalization

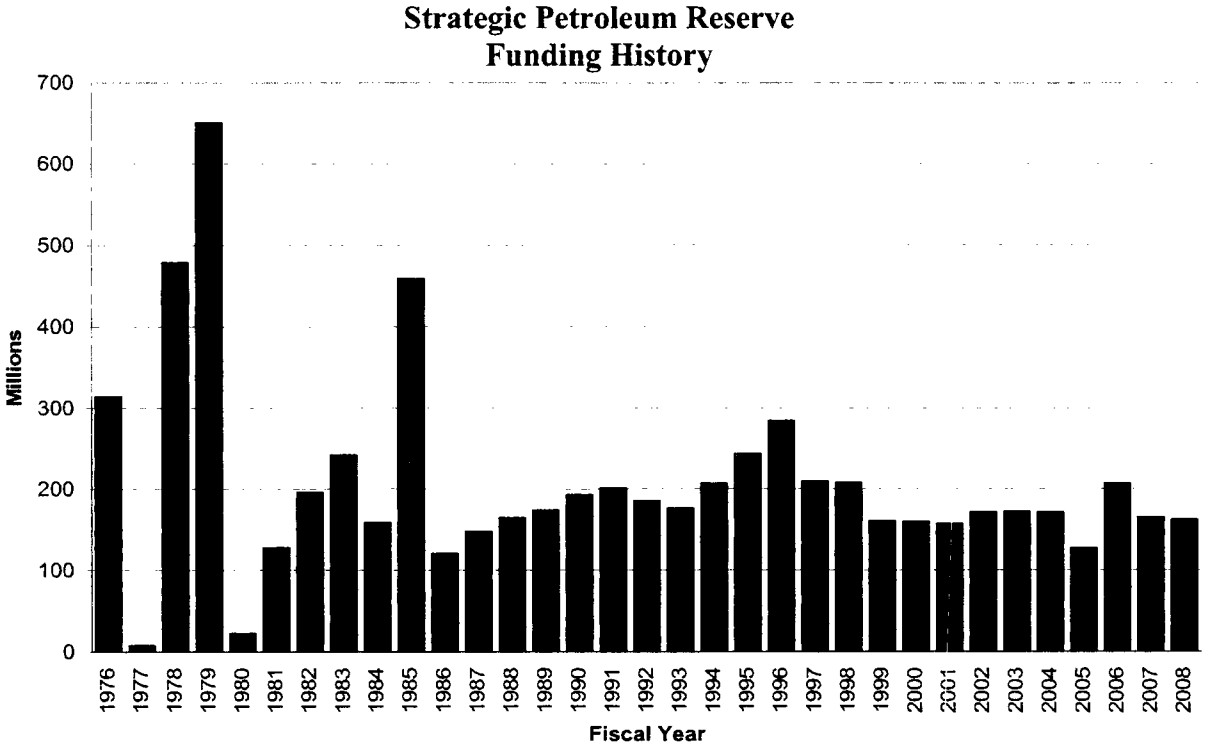
The SPR, NEHHOR and NPOSR programs have in the past, and will continue to, receive Congressional scrutiny and public visibility. These programs have all been the subject of recent Congressional hearings and legislative actions. In light of the current high crude oil prices,

Congress enacted legislation to suspend the SPR oil fill activities for the remainder of 2008 and has introduced bills to release oil from the SPR.

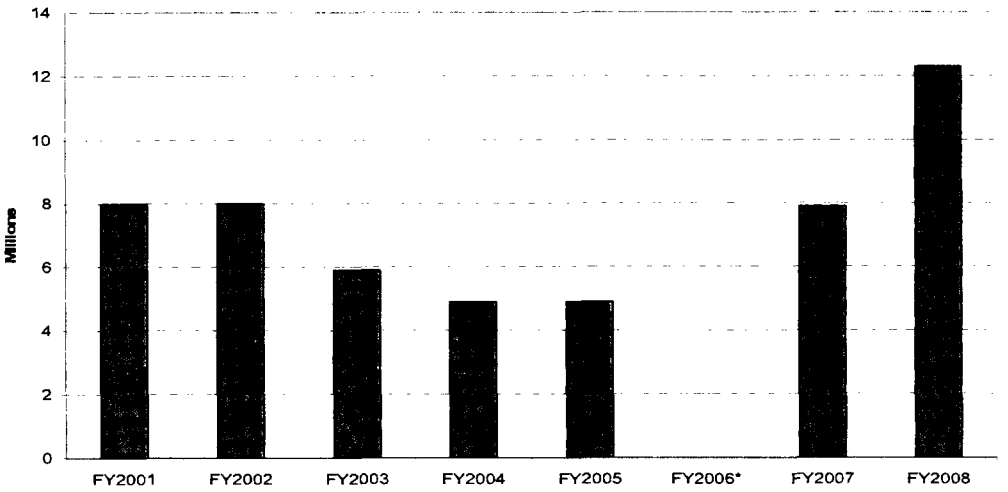
Funding Profile

Funding profile (dollars in thousands)

Petroleum Reserves	FY2008 Current Appropriation	FY2009 Congressional Request
SPR Facilities	161,984	175,523
SPR Expansion	24,773	171,400
Sub Total	186,757	346,923
NEHHOR	12,335	9,800
NPR (HQ)	8,826	7,487
NPR (NPR-3)	11,446	11,612
Sub Total	20,272	19,099

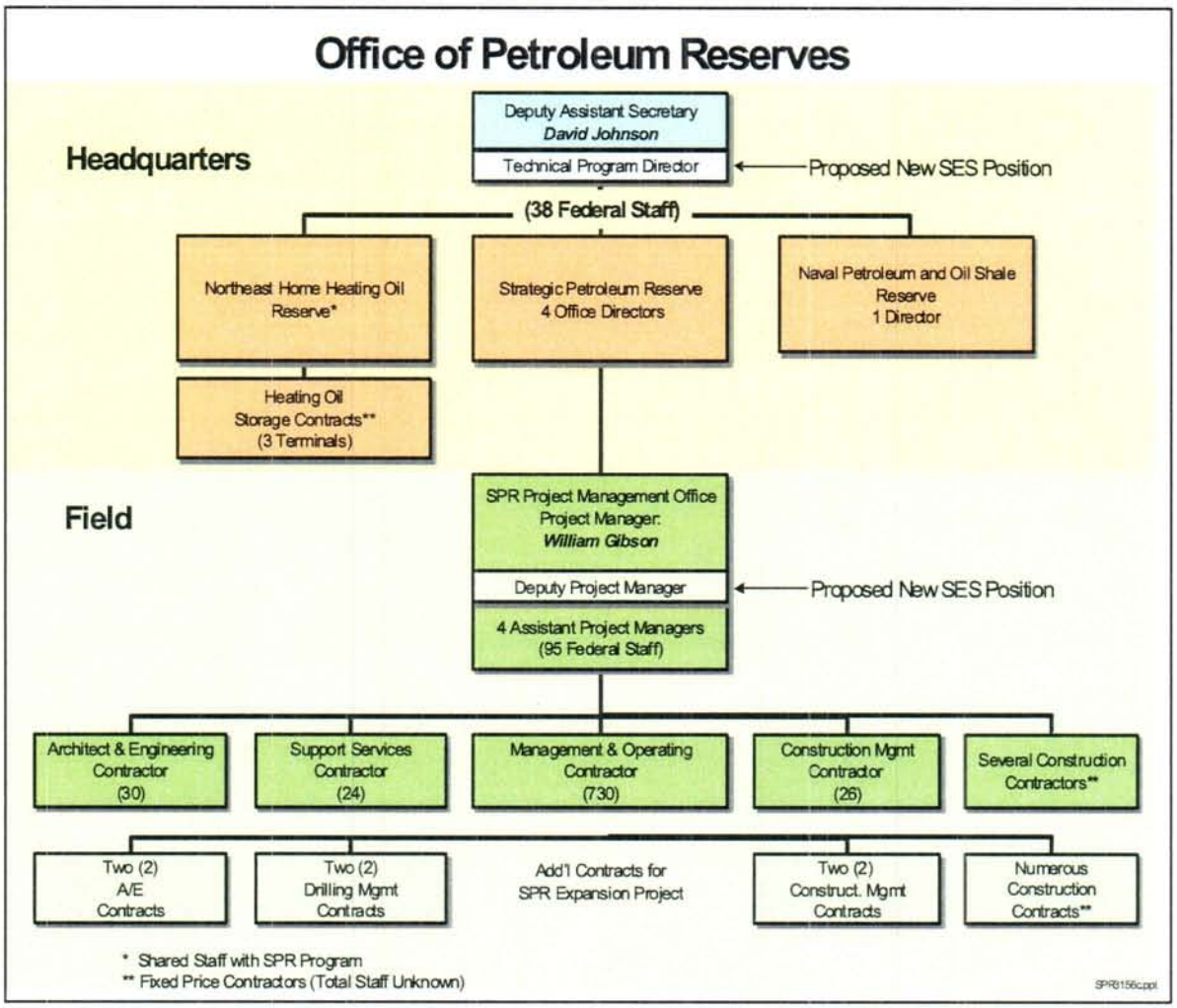


Northeast Home Heating Oil Reserve Funding History



FY 2006 was funded with prior year balances.

Current Organizational Chart



NATIONAL ENERGY TECHNOLOGY LABORATORY

Mission Statement

Implement research, development, and demonstration programs to resolve the environmental, supply, and reliability constraints of producing and using fossil resources.

NETL is part of the Department of Energy's Office of Fossil Energy (FE) and supports DOE's mission of "discovering the solutions to power and secure America's future," by conducting onsite research, implementing and managing extramural Research, Development, and Demonstration (RD&D) for assigned programs, and by supporting energy policy development. NETL collaborates with industry, academia, federal and state agencies, research organizations, and specialized research groups in implementing and managing more than 1,800 DOE-funded extramural RD&D activities in the U.S., and more than 40 foreign countries, involving carbon management, water availability, near-zero emissions for fossil power plants, and the affordability of new, highly efficient energy systems.

NETL conducts cutting-edge R&D through its Office of Research and Development with state-of-the-art capabilities and facilities in Morgantown, Pittsburgh, and Albany. NETL's onsite research helps industrial and academic partners solve problems that would otherwise become barriers to commercializing power systems, fuels, and environmental and waste management technologies. NETL uses a variety of partnership mechanisms to conduct R&D with academic and private-sector organizations on work of mutual interest. In support of energy policy development, NETL also performs studies of complex large systems, such as industrial or ecological processes and the interactions among those systems, including social, economic, regulatory, technological, design, and management institutions. Published results of the studies provide strategic information and analysis as an "unbiased technology assessor" to policy makers.

History

Over the past century, fossil energy research and technology development has been advanced by NETL and its predecessor facilities as the energy needs of the Nation have grown and evolved. NETL's history in fossil fuels and energy research dates back to 1910. With the creation of the U.S. Department of Energy in 1977, Energy Technology Centers were established in Morgantown, WV, Pittsburgh, PA, and Bartlesville, OK. In 1996, the Federal Energy Technology Center was launched that consolidated the Energy Technology Centers in Morgantown and

NETL-at-a-Glance

Location: Morgantown, West Virginia; Pittsburgh, Pennsylvania; Albany, Oregon; Tulsa, Oklahoma; Fairbanks, Alaska

Type: Multi-Program Laboratory

Operator: Government-Owned, Government-Operated

Responsible Site Office: National Energy Technology Laboratory

Website: http://www.netl.doe.gov/

Physical Assets:

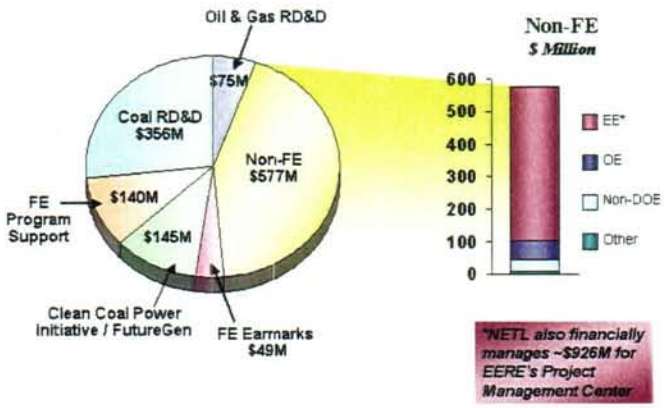
- 242 acres of land and 119 buildings
- 1,035,000 gross square feet in active operational buildings
- 18,400 gross square feet in non-operational buildings
- Replacement plant value: $499 million
- Deferred maintenance: $6.7 million
- Asset Condition Index is "excellent" for all three sites

Human Capital:

- 1,226 NETL full-time employees (Federal and contractor)
- 1,445 facility users (includes visiting scientists and students)

FY 2008 Total NETL Funding: $1.34 billion

FY 2008 Funding by Source: Based upon FY 2008 Enacted



FY 2008 Total Non-Fossil Energy Funding:

$474 million – Energy Efficiency and Renewable Energy
$58 million – Electricity Delivery and Energy Reliability
$10 million – Engineering and Construction Management

FY 2008 Non-DOE Major Funding Organizations:

$35 million – DHS, DoD, EPA

the Energy Technology Centers in Morgantown and Pittsburgh – Bartlesville was closed in 1998 and DOE opened the National Petroleum Technology Office (NPTO) in Tulsa, OK. In 1999, the National Energy Technology Laboratory was formed, designating the newest national laboratory. Since that time, NETL has continued to expand its technical and scientific capabilities. In 2000, NPTO was assimilated into NETL, adding unique oil and natural gas expertise and knowledge. NETL then opened the Arctic Energy Office, located in Fairbanks, AK, in 2001, and a satellite office in Anchorage, AK, in 2005. In 2003, NETL teamed with the Office of Energy Efficiency and Renewable Energy's Golden Field Office to create the Project Management Center – a dedicated federal field project management implementation arm. The addition of the Albany Research Center located in Albany, OR, in 2005, expanded NETL's materials science and processing research capabilities in metals, ceramics, and other materials required to design and construct higher efficiency energy systems.

Multi-Program Laboratory

- DOE programs: NETL provides program, project, and financial management for the Offices of Fossil Energy and Energy Efficiency and Renewable Energy. The following Fossil Energy RD&D programs are managed by NETL: (1) Clean Coal Power Initiative and FutureGen; (2) Advanced Research, Advanced Turbine, Carbon Sequestration, Fuel Cells, Gasification, Hydrogen and Clean Fuels, and Innovations for Existing Plants; and (3) Natural Gas (Methane Hydrates, Effective Environmental Production); and (4) Oil Technology (Unconventional and Enhanced Oil Recovery, Stripper Well Consortium) In addition to supporting FE, NETL also supports energy programs of other DOE Offices, such as the Office of Energy Efficiency and Renewable Energy, and the Office of Electricity Delivery and Energy Reliability. NETL also conducts research, provides technical analyses, and/or technical assessments to aid other DOE offices including; DOE's Offices of Electricity Delivery and Energy Reliability, Engineering and Construction Management, Environmental Management; and DOE's National Nuclear Security Administration.

- Other Government Programs: Non-DOE organizations sponsoring work conducted at NETL include the U.S. Department of Defense, Defense Advanced Research Projects Agency; U.S. Environmental Protection Agency; and U.S. Department of Homeland Security.

Core Competencies

As the only national laboratory owned and operated by DOE, NETL is unique in how it conducts business and in the relationships it forms with industry, academia, research organizations, and other national laboratories. NETL has both program and technology development and deployment expertise based upon experience and technical knowledge in energy conversion systems. This knowledge developed over the past century allows for effective strategic planning, implementation, and management of DOE Programs and the technical ability to perform state-of-the-art research in energy conversion systems.

NETL's core technical, program, and administrative expertise allows for effective **strategic planning, implementation, and management of DOE Programs.** NETL's demonstrated competencies are:

- Project management capabilities that allow performance tracking and effective oversight and accountability for both internal and external R&D projects over a range of scales and types of projects.
- Proven capability to work effectively with the private sector, academia, and other national laboratories to structure and implement cost-shared energy and environmental RD&D programs, which lead to the commercialization of new or improved technologies for carbon-based energy production and use.
- Energy systems analysis capabilities to support policy development on national plans and programs, resource use, environmental and energy security policies, technology options for R&D programs, and paths to deployment of energy technology. The focus of analysis efforts is on the future state of technology, markets, and public benefits.

NATIONAL ENERGY TECHNOLOGY LABORATORY

NETL's **technical development and deployment expertise** is in the following research arenas:

- NETL is developing energy efficient and cost-effective strategies to manage CO_2 emissions from fossil fuel energy production. NETL's Center for Carbon Capture is developing and evaluating breakthrough approaches that will significantly reduce the complexity and energy intensity of CO_2 capture.
- Expertise in science and engineering of technologies used for environmentally acceptable production and utilization of carbon-based fuels for both chemical and energy production, including strategies for mitigating net carbon emissions.
- In-depth knowledge of the chemistry and physics of solid, liquid, and gaseous carbon-fuel sources and their efficient transformations to fuels, chemicals, and energy.
- Expertise in computational science encompassing molecular, device, and plant scale models and integration of models at multiple scales for fossil energy applications.
- Materials expertise that addresses the performance of structural and functional materials, including the fundamental understanding of how the composition, structure, and processing of materials relate to their performance.

Major Lab Facilities

- **Advanced Materials Development Facilities** for new materials development and optimization that result in advances in energy plant generation efficiency and reliability. These facilities incorporate state-of-the-art characterization, evaluation, and fabrication capabilities.
- **Catalysis and Surface Science Facilities** that house synthetic labs and state-of-the-art analytical instrumentation for probing the composition, structure, and reactivity of catalysts used for syngas conversion, CO_2 management, and fuel cell systems. These facilities are unique in allowing researchers to engage in catalytic science starting with the conception of a novel system, synthesis of the catalyst, and complete characterization of its chemical reactivity.
- **Computational Facilities that span system simulations to computational chemistry analysis.** System simulation includes supercomputing capability for the simulation of next generation coal-based electric power generation plants – simulation capability reduces time and cost to build plants and reduces operating and maintenance costs. Computational chemistry analysis include the ability to guide the design of new materials with tailored properties; computational fluid dynamics analysis to help the design of energy-conversion reactors and devices; and advanced process simulation for the analysis, design, and control of novel energy processes. Computational facilities also enable performing CO_2 risk assessment and sequestration site geology modeling.
- **Sequestration Facilities** are focused on providing a bridge between basic research, and the development and deployment of carbon capture technology and sequestration of CO_2.
  - **Capture Facilities** for development and testing of advanced separation technologies for flue gas carbon capture, membrane separation, and the use of solid sorbents.
  - **Geologic Sequestration Facilities** with capability to simulate CO_2 flow and investigate the physical and geochemical characteristics of rock-core samples and modified cements.
  - **Monitoring, Mitigation, and Verification Facilities** to develop instrumentation for sub-surface characterization.
  - **Water Management Facilities** that simulate deep brine conditions for carbon sequestration research and for developing instrumentation to characterize flow of contaminated ground water.

Science and Technology Challenges

NETL is focusing on key activities over the next five years to ensure that options exist to allow the use of abundant domestic resources that are affordable and have minimal environmental impact to meet both the Nation's energy security and supply needs.

Carbon Management: The two greatest challenges facing technology development for clean power production integrated with carbon capture and storage are reducing the cost of carbon capture and proving the safety and efficiency of long-term geologic storage of CO_2. DOE supports a robust RD&D program specifically designed to address these challenges. The 2012 goal of the Coal Technology Program is to show that we can develop advanced technology to

capture and store at least 90% of the potential CO_2 emissions from coal-fired power plants, with less than a 10% increase in the cost of electricity. NETL's R&D program is aimed at providing the scientific and technological foundation for carbon capture and storage for both new and existing coal-fueled power plants.

- **Liquid Fuels from Domestic Resources:** NETL's scientific expertise in carbon based conversion systems allows it to address the challenge of producing near-zero emission liquid fuels from domestic carbon-based sources at a significant scale to help meet demand, ensure environmental quality, and address carbon management constraints.
- **Infrastructure:** The ability to implement large-scale solutions to both carbon management and alternative energy generation requires that an adequate and appropriate infrastructure exist. NETL is examining options to ensure energy infrastructure is capable of moving both energy sources and energy products produced from those sources to locations where it is needed when it is needed; CO_2 pipelines, gas pipelines, and a smart grid.
- **Energy Storage:** Development of breakthrough energy storage technologies can greatly enhance grid performance and are essential to advanced electric vehicle propulsion systems. NETL is examining large-scale storage systems that can restore system surge capacity while reducing generation demand. Storage is essential to maximizing the value from investments in intermittent renewable sources.
- **Unconventional Gas Resources:** The U.S. is endowed with significant natural gas resources but these resources are unconventional (tight sands, shales, and coalbed methane) and frontier-type (ultra-deep gas and gas hydrates). The key to developing these energy resources is inextricably tied to fundamental scientific and technological breakthroughs being pursued by NETL. The gas hydrates program requires a strong element of international collaboration.
- **Transportation Systems:** Develop alternatives to petroleum-based light-duty and heavy-duty vehicles that enable use of alternate fuels, significantly increase vehicle fuel efficiency, and minimize the impact of imported fuel supplies.

Leadership Challenges

- **Recruitment and retention of new qualified employees** as well as development of the next generation of federal managers are critical management challenges. Staffing analyses indicate that 40% of the NETL workforce is either eligible or will be eligible to retire within the next 4 years.
- **Revitalize NETL facilities** to provide state-of-the-art facilities that are scalable, flexible, and sustainable represent both scheduling and funding challenges. The infrastructure must meet the growing and diverse needs for facilities and equipment to attract and retain top-notch researchers, to conduct excellent research, and to provide cost-effective onsite research facilities while meeting Executive Order 13423.

Recent Accomplishments

Technology

- 2006: Four patents were awarded to NETL researchers for inventions including a hybrid engine system, a process for saving energy at power plants, a method for capturing mercury from power plant flue gases, and a device to detect instability in combustion systems.
- 2007: "Cast-steel armor" technology developed by NETL's Albany, OR, site in 1987 was transferred to the U.S. Army's Rock Island Arsenal to manufacture improved armor for vehicles used in the global war on terrorism.
- 2007: GranuFlow™ process, which was developed and patented by NETL scientists, proved its ability to recover and clean a significant portion of coal fines (0.1 mm in diameter or less) to produce a future source of energy.
- 2007: Licensing agreement between DOE and Johnson Matthey, an international specialty-chemicals company, will demonstrate a process patented by two NETL researchers as a "Method for High-Temperature Mercury Capture from Gas Streams." The process removes mercury from high-temperature gases by using metal sorbents to capture the mercury, as well as the trace elements arsenic and selenium.
- 2005-2008: NETL patented a refractory composition that extends coal gasifier refractory liner service life to a projected three years. Harbison and Walker Refractories Co. of Pittsburgh has licensed the refractory invented by NETL for gasification applications, and is producing and marketing the refractory under the product name of Aurex® 95P.

Analyses and Reports

- 2007: 500-page NETL report, "Cost and Performance Baseline of Fossil Energy Plants," contains the most comprehensive set of publicly available data, to date, for comparing the types of technology that are available for future power plants and for estimating the cost and performance of pulverized coal, natural gas combined cycle, and integrated gasification combined cycle power plants, both with and without carbon capture and sequestration. This study has been highlighted at several international conferences and published in *Gas Turbine World.*
- 2008: NETL conducted an analysis that showed coal-to-liquids facilities could provide an option for solving economic and national security concerns related to U.S. dependence on imported liquid fuels. The economics of commercial-scale and small-scale processes would provide a reasonable return on investment and payback period of about five and seven years, respectively, at full plant capacity.
- 2008: NETL performed an analysis to evaluate the technical and economic merit of using coal-derived synthesis gas and substitute natural gas (SNG) to refuel U.S. industries that have been challenged by the volatility of and increase in domestic natural gas prices. The study included an investigation of the energy-demand profile of potential U.S. industrial customers that could benefit from coal gasification, identifying more than 300 industrial facilities with energy needs that have the potential to be satisfied by industrial-sized gasification. Technical analysis indicates that the gasification technology considered, the BGL 1000, could be viable for 33-66% of those facilities under specific economic scenarios.

Teaming

- 2005-2008: NETL led the development of a seven-agency Roadmap for gas hydrate R&D, collaborated on major field programs in India, China, and Korea, and conducted the successful drilling and analysis of the first gas hydrate evaluation wells in the U.S. in the Gulf of Mexico (2005) and on the North Slope of Alaska (2007).
- NETL is leading a network of seven Regional Carbon Sequestration Partnerships to help develop the technology, infrastructure, and regulations to implement large-scale CO_2 sequestration in different regions and geologic formations within the nation. This ten-year initiative, launched in 2003, forms the centerpiece of national efforts that includes more than 350 state agencies, universities, and private companies within 41 states (including WV and PA), two Indian nations, and four Canadian provinces. In June 2008, a panel of scientific experts from the International Energy Agency validated that the Regional Carbon Sequestration Partnerships and their large-scale CO_2 tests are the world's most ambitious and will significantly advance carbon capture and storage in the United States, Canada, and internationally.
- Teaming with the U.S. Air Force, NETL released a study that examines the feasibility of producing 100,000 barrels per day of jet fuel from a feedstock of approximately 4,500 tons of high-sulfur bituminous coal and nearly 630 tons of corn stover. The base-case configuration would produce nearly 7,500 barrels per day of diesel or aviation jet fuel, more than 3,500 barrels per day of liquid naphtha products, and 11.1 megawatts of electricity that can be exported to the grid. An environmentally friendly energy producer, the conceptual plant is based on best available control technology guidelines for sulfur, NO_x, particulate matter, and mercury. In addition, CO_2 will be captured and compressed for injection into a pipeline terminating at a sequestration site.
- 2007: NETL's Energy Infrastructure Team (EIT) provided key support to DOE during natural and human-caused emergencies that threatened the nation's energy infrastructure:
  - o As wildfires swept through California, EIT supplied products to allow first responders to monitor wildfire migration toward existing energy assets, such as power and gas lines. Contextual maps were also compiled to assist with timely evacuations.
  - o Throughout the 6-month hurricane season, the team responded to several tropical systems that made landfall and caused disruptions to the U.S. coastal infrastructure. EIT also responded to hurricanes in Central America.
  - o When ice storms paralyzed large areas of the Midwest last winter, EIT supplied critical analysis in response to extended power outages in multiple states.

Awards

- 2005: 2005: The novel Combustion Control and Diagnostics Sensor (CCADS), a patented gas turbine combustion control technology, received the 2005 **Technology Transfer Award** from the Federal Laboratory Consortium (FLC). CCADS monitors several key combustion parameters and improves combustion control to reduce NOx emissions, increase reliability, and lower electricity costs. NETL has licensed CCADS to Woodward Industrial Controls for commercial development.
- 2006: Officials of the Energy Solutions Center presented the organization's **2006 Partnership Award** to representatives of NETL, Blue Mountain Energy, Inc., Oak Ridge National Laboratory, and Southwest Gas Corporation for combined support and development of gas-engine-driven air conditioner (GEDAC) technology.
- 2007-2008: NETL researchers won five **R&D 100 Awards**.
- 2007: Two NETL-sponsored technological advances that could help increase U.S. recoverable reserves of oil and natural gas won **Hart's E&P Magazine Special Meritorious Awards** for Engineering Innovation.
- Authors from NETL and the University of Pittsburgh, who worked together to evaluate various preparation techniques for the oxygen carrier of chemical-looping combustion processes, received the **American Chemical Society's prestigious Glenn Award** for the quality, innovation, and presentation of their research.
- NETL merited four awards from the **Federal Laboratory Consortium** in 2007 and 2008 for **Laboratory Director of the Year**, which recognized leadership excellence in both the direction and achievement of a facility's technology transfer program; and **three Excellence in Technology Transfer** awards for: innovative effort in transferring the Advanced Process Engineering Co-Simulator to the private sector; developing a novel sorbent technology to remove mercury in gasification-based electric power generation systems, and transferring the technology to Johnson Matthey Corporation for commercialization; and transferring the Coal Chemistry Module software as a means to incorporate coal chemical reactions into physics-based models of multiphase reactors to solve scale-up problems for advanced power plants using coal gasification.
- NETL received a Chairman's **Stewardship Award from the Interstate Oil and Gas Compact Commission** (IOGCC) for work completed in partnership with Kansas Corporation Commission and ALL Consulting in the remediation of "salt scars"—soil contaminated by saltwater during historic oil and natural gas production. The team designed the online Site Specific Remediation Planner to give oil and gas operators and landowners economic recommendations for repairing salt scars through soil manipulation, chemical amendments, and revegetation. The award is the highest IOGCC honor conferred for exemplary achievement in environmental stewardship.

Office of Nuclear Energy

Office of Nuclear Energy

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Supporting the DOE Mission

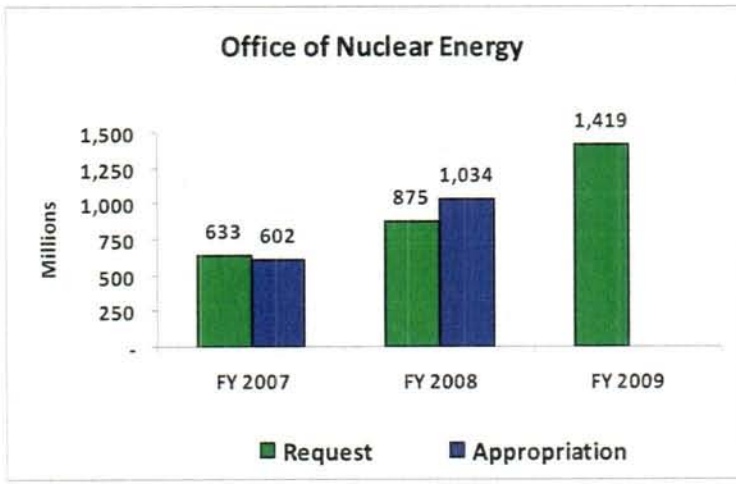
Strategic Theme I-Energy Security

Strategic Theme II-Nuclear Security

The Office of Nuclear Energy supports two of the 16 Strategic Goals of the Department. In Strategic Theme 1, Goal 1.2 is to improve the quality of the environment by reducing greenhouse gas emissions and environmental impacts to land, water, and air from energy production and use. NE partners with industry, academia, state and local governments, and other countries to promote nuclear facilities that rely upon advanced fuel technologies that will help to develop new generation capacity while making improvements in environmental quality. In Strategic Theme 2, Goal 2.2 is to prevent the acquisition of nuclear and radiological materials for use in weapons of mass destruction and in other acts of terrorism. The MOX Fuel Fabrication Facility will help to eliminate surplus fissile materials.

Status

Budget



* Includes $278M in FY 2008 Appropriation and $487M in FY 2009 Request for the MOX Fuel Fabrication Facility.

People

Headquarters FTEs – 189
Field FTEs – 230

Mission Statement and Organizational Strengths

The Office of Nuclear Energy (NE) is responsible for leading the Federal government's investment in nuclear energy science and technology in a manner supporting the diversity and security of the U.S. energy supply and advanced energy competitiveness. As well as managing the emerging world-class Idaho National Laboratory (INL), NE works with the private sector, overseas partners, and other agencies to assure that the benefits of nuclear technology continue contributing to the security and quality of life for Americans—and other citizens of the world—now and into the future. By focusing on advanced nuclear technologies, NE supports the Department's goal of developing new generation capacity while making improvements in environmental quality. NE leads the development of fuel cycle technologies to improve nuclear energy generation and meet non-proliferation and climate change goals. Maintaining and enhancing the national nuclear infrastructure allows the INL to research and develop new technologies that maximize all aspects of the nuclear fuel cycle and build on activities started over the last three years to deploy new nuclear plants in the United States by early in the next decade and to develop advanced, next-generation nuclear technology.

Under the Assistant Secretary for Nuclear Energy, the organization oversees the NE functional areas of: Nuclear Power Deployment, Corporate Business Operations, Corporate Communications and External Affairs, Fuel Cycle Management, Corporate and Global Partnership Development, along with the Idaho Operations Office.

Nuclear Power Deployment

The Office of Nuclear Power Deployment leads programs that manage the technical and regulatory development of light-water and gas-cooled nuclear reactor technologies and non-traditional nuclear power applications; manages collaborative R&D activities with universities; support the National Aeronautics and Space Administration and national security needs for radioisotope power systems; and serves as the operational interface in support of NE's Lead Program Secretarial Officer responsibilities at the Idaho National Laboratory (INL). The Office is responsible for NE's Nuclear Power 2010 (NP 2010) program, the Generation IV Nuclear Energy Systems Initiative (GenIV), the Nuclear Hydrogen Initiative (NHI), the Idaho Facilities Management (IFM) program, the Idaho Sitewide Safeguards and Security program, and the Radiological Facilities Management program.

Corporate Business Operations

The Office of Corporate Business Operations provides support to NE operations, policy implementation, strategic planning, budget and administrative management, human resources, information technology, program performance measurement and evaluation, quality management programs, safety and security programs, internal and external communication, and intergovernmental activities. The following are a few of the specific programs or activities either within the Office or Corporate Business Operations or that the Office oversees: National Environmental Policy Act (NEPA) compliance activities, the Continuity of Operations Plan (COOP), Project Management Career Development Program (PMCDP), and the Nuclear Criticality Safety Program (NCSP). This office is also responsible for reviewing legislation and tracking the development of Congressionally-mandated reports.

Fuel Cycle Management

The Office of Fuel Cycle Management is responsible for providing technical leadership and expertise in advanced fuel cycle R&D and the planning, design, operations, and project management of nuclear fuel cycle facilities. The Office of Fuel Cycle Management also assures relationships are maintained with members of the nuclear industry, universities, national laboratories, and multi-national partners in order to foster collaborative technology advancements. The Advanced Fuel Cycle Initiative (AFCI) is the program element directly related to Fuel Cycle Management.

Corporate and Global Partnership Development

The Office of Corporate and Global Partnership Development has lead responsibility for NE's international activities, including coordinating U.S. participation in the international frameworks of the Generation IV International Forum and the Global Nuclear Energy Partnership, formulation of U.S. international nuclear energy policy in conjunction with other Federal agencies, and oversight of technical and business activities related to the export of U.S. nuclear

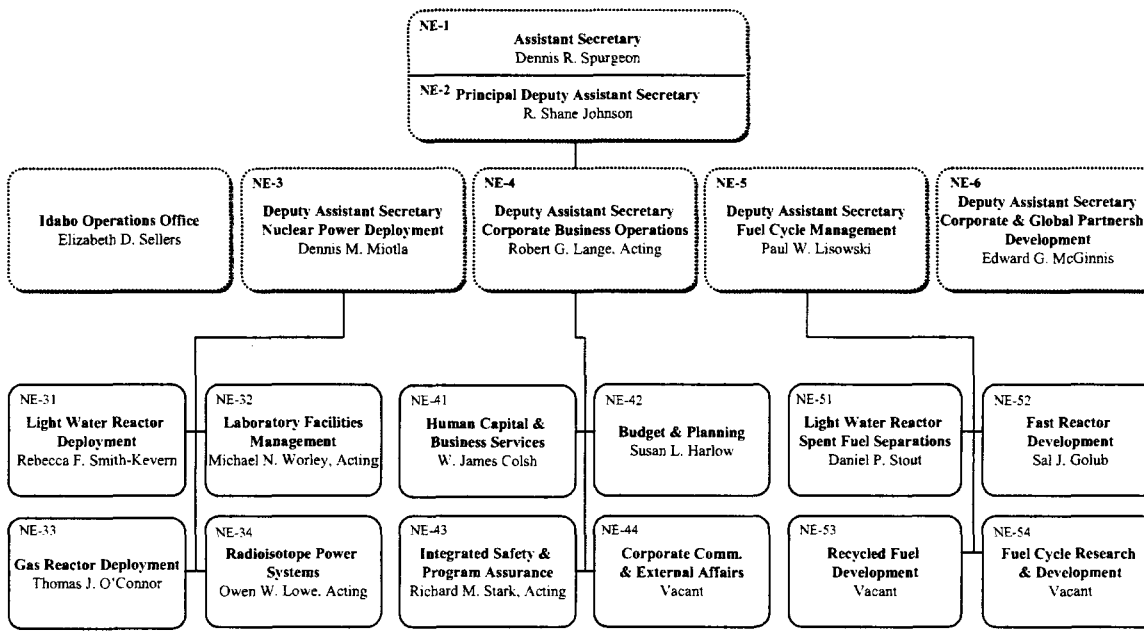
goods and services (i.e., bilateral and multilateral cooperative efforts). Also, this office is responsible for activities related to managing the Department's excess uranium inventory.

Idaho Operations Office

Managing the emerging world class nuclear energy and national security R&D laboratory of INL; completing environmental cleanup in a safe, cost-effective manner; and ensuring the safe, reliable, and efficient completion of DOE activities falls under the prevue of the Idaho Operations Office (ID). This Office is vital to serving as the communication center between the Department and the INL. Additional responsibilities include: procurement, contract, cooperative agreement, and grant support for NE's nuclear R&D activities.

It should be noted that while INL is NE's premier and primary laboratory, program activities are conducted at many other national laboratories, universities, and private-sector partners involved in nuclear energy R&D, isotope production, and manufacture of radioisotope power systems.

Current Organizational Chart



Nuclear Power 2010

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Supporting the DOE Mission

Strategic Theme 1 – Energy Security

Strategic Goal 1.2 – Environmental Impacts of Energy

Program Goal 1.2.14 – Develop New Nuclear Generation Technologies.

The Nuclear Power 2010 (NP 2010) program supports the development of new advanced light water reactor (LWR) nuclear technologies by sponsoring 50-50 cost-shared arrangements with industry to:

- Demonstrate untested Nuclear Regulatory Commission (NRC) regulatory processes;
- Identify sites for new nuclear power plants;
- Develop and bring to market advanced, standardized nuclear plant technologies; and
- Evaluate the business case for building new nuclear power plants.

These technical and regulatory demonstration activities, coupled with the implementation of the financial incentives of the Energy Policy Act (EPAct) of 2005, will lead to industry decisions in 2010 to build and operate new advanced LWR nuclear plants in the United States.

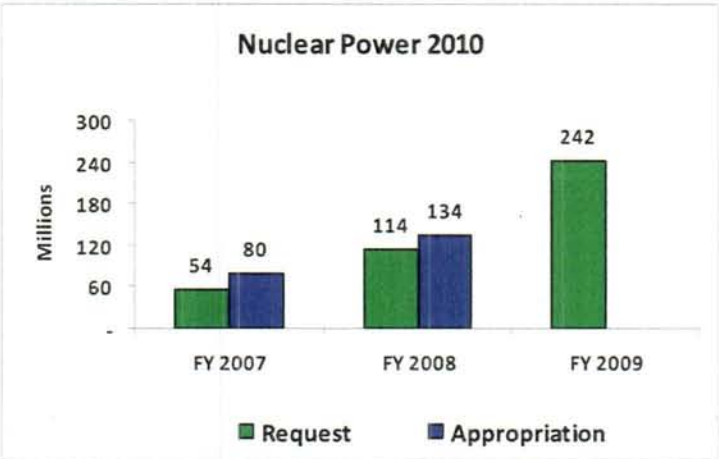
Mission Statement

The NP 2010 program supports near-term technology development and regulatory demonstration activities that advance the goal of long-term energy independence through the expanded contribution of nuclear power to the Nation's energy portfolio. The NP 2010 program achieves

this mission through cost-shared activities with industry partners to reduce the technical, regulatory, and institutional barriers to near-term deployment of new nuclear power plants, and by providing technical support to implement loan guarantee and risk delay insurance financial incentives authorized by EPAct of 2005.

Status

Budget:



FY 2009 Congressional Request: $241,600,000

FY 2009 House Mark: $157,300,000

FY 2009 Senate Mark: $241,600,000

People:

Number of Federal FTEs: 12

Performance:

FY 2007 Budget Measure Status: 1 Green, 0 Yellow, 0 Red

History

To help meet the anticipated growth in electricity demand in the United States in the 21st century while ensuring diversity in generating technologies, the Office of Nuclear Energy, under the auspices of its federal advisory committee, formed the Near-Term Deployment Group, comprising nuclear utilities, reactor vendors, national laboratories, non-profit organizations, and academia representatives, to examine prospects for the near-term deployment of new nuclear plants in the United States (U.S.), identify obstacles to deployment, and recommend actions for resolution. In November 2001, the Department of Energy (DOE) published *A Roadmap to Deploy New Nuclear Power Plants in the United States by 2010 (Roadmap)*[1]. This *Roadmap* assessed the domestic regulatory, technical, and economic challenges to building new nuclear

[1] *A Roadmap to Deploy New Nuclear Power Plants in the United States by 2010*, U. S. Department of Energy, November 2001

power plants in the 2010 timeframe and provided recommendations for addressing these challenges, including cost-sharing strategies with industry.

Based on the *Roadmap* recommendation, DOE entered into the first phase of cost-shared cooperative projects with industry in 2002. The first series of projects focused on demonstrating the NRC's Early Site Permit (ESP) process with power generating companies. The ESP application addresses site safety and environmental issues at a selected site, independent of a specific nuclear plant design. Three cooperative agreements established for Dominion Energy's North Anna site in Virginia, Entergy's Grand Gulf site in Mississippi, and Exelon's Clinton site in Illinois. Three ESP applications were submitted to NRC for review in 2003 and were approved by NRC in 2007.

In 2003, the Department began its next phase of cost-shared cooperative agreements, and issued a solicitation to demonstrate the NRC's combined Construction and Operating licensing (COL) process to build and operate new nuclear power plants and to certify first-of-a-kind designs for advanced LWR (Generation III+) technologies. The COL process is a one-step licensing process by which NRC authorizes the applicant to both construct and operate (after completing required inspections, tests, and analyses) a new nuclear plant through issuance of the license approval prior to the initiation of construction. In 2005, the Department negotiated 50-50 cost-shared cooperative agreements with two industry consortia (NuStart Energy Development, LLC, and Dominion Nuclear North Anna, LLC) to demonstrate the COL process, complete design certification for two Generation III+ LWR technologies (the Westinghouse AP 1000 reactor and General Electric Economic Simplified Boiling Water Reactor (ESBWR)), and complete the first-of-a-kind engineering needed for the final designs of these plants.

In addition to the cost-shared activities sponsored by NP2010, the EPAct 2005 authorized three financial incentives for the first few industry sponsors interested in building advanced new nuclear power plants. These incentives include Standby Support (also known as delay risk insurance), production tax credit, and loan guarantees for new nuclear power plants. NP 2010 is responsible for implementing the Standby Support provision, which authorized the Secretary to pay certain covered costs for the first six utilities, if full power operation of these advanced nuclear facilities is delayed by certain regulatory or litigation occurrences.

The EPAct 2005 also provided incentives for production tax credits and loan guarantees. NP 2010 supported the Department of Treasury in developing the process for approval and allocation for the production tax credit provision. EPAct 2005 also authorized the Secretary of Energy to provide loan guarantees to support advanced nuclear energy projects. NP 2010 is supporting the Department's Loan Guarantee Program Office on activities related to nuclear projects.

Critical Operating Procedures

Currently, the NP 2010 program manages four cooperative agreements with industry. The NP 2010 program staff work closely with its industry partners to ensure progress is being made with NRC's review of Construction and Operating License (COL) and design certifications. Oversight of the industry cooperative agreements is coordinated by program staff with assistance

by the Idaho Operations Office. To determine program effectiveness, the Program utilizes independent expert groups to conduct periodic assessments.

On a bi-monthly basis, NE senior management convenes project management meetings with industry and reactor vendor senior executives to discuss project status and progress for each program participant. Funding, key activities, milestones, and general issues of concern are among the many topics covered. The meetings have resolved a significant number of program issues and been integral in maintaining executive involvement in key program demonstration activities.

Due to the specific nature of the NP 2010 program, the staff interfaces with the NRC on the implementation of the licensing demonstration projects. NP 2010 management meets periodically with management of the NRC's Office of New Reactors, and more specifically the Division of New Reactor Licensing, to discuss NP 2010 project activities, current industry activities and licensing plans for new nuclear plants, and common issues.

Management and staff also interface with the staff and power company members of the Nuclear Energy Institute (NEI) and the Electric Power Research Institute (EPRI) and serve as members of task forces or working groups involved with new nuclear plant deployment. Several examples include the New Plant Deployment, combined Construction and Operating License (COL), and Early Site Permit (ESP) Task Forces.

Recent Organizational Accomplishments and Strengths

NP 2010 has a long track record of success. Based on the experience gained through the NP 2010 demonstration projects, the following actions have occurred or are planned to occur:

- Early Site Permits (ESP) applications: Three NP2010 sponsored applications were approved by NRC in 2007. One additional independent application was submitted to NRC in 2006, and three additional applications are expected by NRC in the 2010-2012 timeframe.
- Combined COL applications: Nine COL applications were submitted to NRC, of which eight were formally accepted for review, including the 2 applications sponsored by NP 2010. Seven of the nine applications undergoing NRC review are based on NP 2010-sponsored reactor designs. Fourteen additional applications are expected by 2010, of which five applications are expected to be based on NP 2010-sponsored reactor designs.
- Design Certification: Four designs are undergoing NRC certification of which 2 are sponsored by NP 2010.
- Standby Support: To date, three advance notices of intent to request conditional agreements have been received by DOE.

To share information on ESP development, submittal and approval as well as general recommendations for utilities planning to submit an ESP, NP 2010 published the *Report on Lessons Learned from the NP 2010 ESP Program* in March 2008. Additionally, the NRC issued

application preparation guidance for COL applications that was developed to resolve generic regulatory issues and ultimately enable NRC approval.

Leadership Challenges

Whether new nuclear plant technology is deployed depends on economic and environmental factors beyond the scope of the NP 2010 program.

Key Strategies and Timing

The technology focus of the NP 2010 program is on Generation III+ advanced light water reactor designs, which offer advancements in safety and economics over the Generation III designs certified by NRC in the 1990's. To enable the deployment of new Generation III+ nuclear power plants in the United States, it is essential to complete the first-of-a-kind engineering and demonstrate the untested Federal regulatory and licensing processes for the construction and operation of new nuclear plants. The program seeks an industry decision by 2010 to build a new nuclear plant.

Critical Events and Action Items

3-month events

Final Safety Evaluation Report (SER) and design approval for the General Electric-Hitachi ESBWR issued by NRC (estimated February 2009)

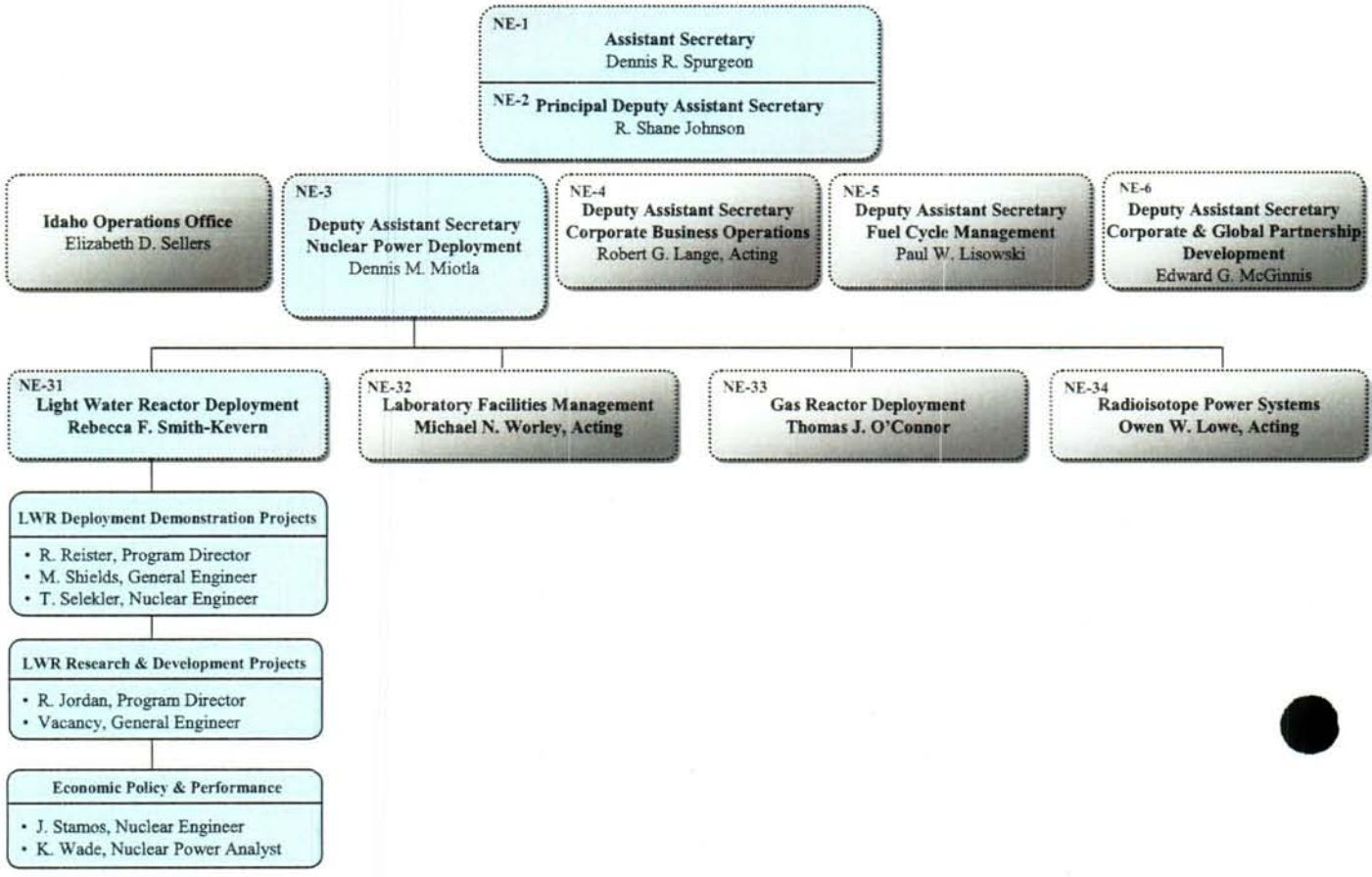
12-month events

Final SER for the AP1000 issued by NRC (estimated October 2009)
Final Environment Impact Statement (EIS) for the Dominion COL application issued by NRC (estimated December 2009)

Hot Issues

None

Current Organizational Chart



Idaho Nuclear Infrastructure Program

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Supporting the DOE Mission

Strategic Theme 1 – Energy Security

Strategic Goal 1.2 – Environmental Impacts of Energy

Program Goal 1.2.15 – Maintain and Enhance National Nuclear Infrastructure

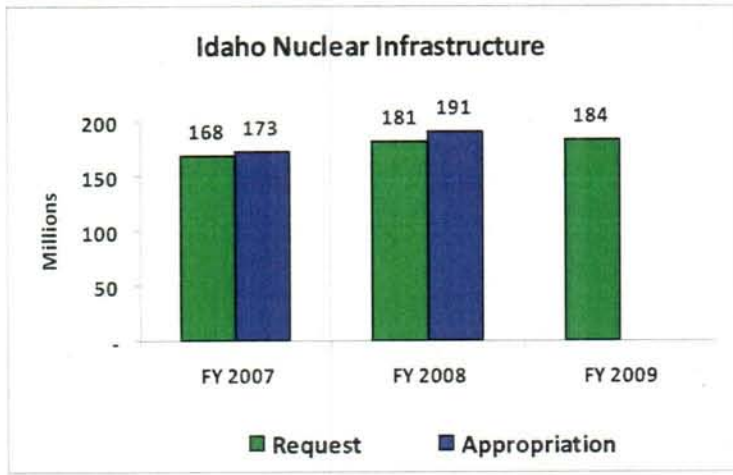
The Idaho Nuclear Infrastructure program contributes to this goal by ensuring that the Idaho National Laboratory's (INL) unique facilities, required for advanced nuclear energy technology research and development (R&D), are maintained, operated, and available to support national priorities. Key activities conducted under this program include ensuring that NE facilities are maintained operational to support user needs and meet essential safety and environmental requirements. Additionally, the program supports activities required to protect the Idaho complex assets from theft, diversion, sabotage, espionage, unauthorized access, compromise, and other hostile acts which may cause unacceptable adverse impacts on national security, program continuity, the health and safety of employees, the public, or the environment.

Mission Statement

The mission of the Idaho Nuclear Infrastructure program is to maintain critical national infrastructure required to support research and development that helps meet strategic needs in energy and national security, and to protect against theft, diversion, sabotage, espionage, unauthorized access, compromise, and other hostile acts.

Status

Budget:



[Figure 1]

Fiscal Year (FY) 2009 Congressional Request: . . . $183,511,000
Idaho Facilities Management (IFM): $104,700,000
Idaho Safeguards and Security (S&S): . . . $78,811,000
FY 2009 House Mark: $228,811,000
Idaho Facilities Management (IFM): $150,000,000
Idaho Safeguards and Security (S&S): . . . $78,811,000
FY 2009 Senate Mark: $198,511,000
Idaho Facilities Management (IFM): $119,700,000
Idaho Safeguards and Security (S&S): . . . $78,811,000

People:

Number of Federal Headquarters FTEs: 14

Number of Federal field site FTEs: 33 (20 IFM and 13 S&S)

Number of contractor FTEs: 396

Facilities:

To support its missions, NE manages and operates three main engineering and research complexes at the Idaho National Laboratory (INL). The Advanced Test Reactor Complex is the site of the Advanced Test Reactor (ATR), a 250-megawatt test reactor used to provide irradiation services for a range of users. The ATR is the largest and most versatile test reactor in the world. Its mission is to provide irradiation and testing services to the Office of Naval Reactors (NR); NE's Generation IV Nuclear Energy Systems Initiative (Gen IV) and Advanced Fuel Cycle Initiative (AFCI); and the recently established ATR National Scientific User Facility (NSUF). The ATR also provides irradiation and testing

services to other national and international nuclear energy research groups and medical and industrial isotope producers on a cost reimbursable basis.

The 11 nuclear facilities at the Materials and Fuels Complex (MFC) support advanced nuclear energy technology research and development, including post-irradiation examination and testing. The facilities, personnel, and infrastructure at the MFC support several important DOE nuclear energy, defense, and environmental management programs.

Located in Idaho Falls, Idaho, the Research and Education Complex (REC) includes more than 30 DOE-owned and leased buildings that include extensive laboratory facilities, the Center for Advanced Energy Studies (CAES), and office space for laboratory researchers and support staff. CAES serves to advance energy security for our Nation by expanding the educational opportunities at the Idaho universities in energy-related areas, creating new capabilities within its member institutions and delivering technological innovations leading to economic development for the intermountain region.

Performance:

FY 2007 Budget Measure Status: 3 Green, 0 Yellow, 0 Red

History

In FY 2005, the Department created the INL to serve as the center for its nuclear energy R&D efforts. INL combines the expertise of government, industry, and academia in a single laboratory dedicated to the development of advanced fuel cycle and reactor technologies. Under the scope of Idaho Nuclear Infrastructure program are two NE programs: Idaho Facilities Management (IFM) and Idaho Site-Wide Safeguards and Security (Idaho S&S). The IFM program is responsible for maintaining facilities at INL in a safe, reliable and environmentally compliant condition to support national nuclear programs. The Idaho S&S program supports activities required to protect the assets of the Idaho complex from theft, diversion, sabotage, espionage, unauthorized access, compromise, and other hostile acts.

Critical Operating Procedures

The IFM and Idaho S&S programs ensure that mission essential systems, resources, and services are identified, maintained, operated, and secured in compliance with DOE, Federal, and State requirements in an efficient and cost-effective manner. In support of the IFM program, the Department-approved INL Ten Year Site Plan (TYSP) establishes the path forward for achieving IFM program goals and is updated semi-annually to ensure consistency with program objectives and budget realities. In support of the Idaho S&S program, the INL 2005 Design Basis Threat (DBT) Implementation Plan was recharacterized as the Graded Security Protection (GSP) policy in 2008, to ensure a path forward with regard to continued effective security for high value material assets.

Federal program officials actively engage with INL management and staff, senior DOE safety management officials, the Nuclear Regulatory Commission, the National Nuclear Security

Administration, and United States (U.S.) nuclear engineering universities to discuss program requirements and to review performance results.

Recent Organizational Accomplishments and Strengths

Idaho Facilities Management - In April 2007, DOE took a significant step forward toward establishing INL as a world-class nuclear energy laboratory by designating the ATR as a National Scientific User Facility (NSUF), and establishing the ATR as the cornerstone of nuclear energy R&D in the U.S. The extensive capabilities of the ATR are being enhanced to allow highly advanced irradiation testing to be conducted simultaneously by universities, the commercial power industry, international organizations, and other national laboratories, while continuing to execute its critical mission support to the Naval Nuclear Propulsion Program. The ATR NSUF, combined with CAES, will increase user accessibility to the ATR and is an important element in building strong ties between the INL, the nuclear industry, and the Nation's universities.

In support of this expanding INL mission, significant improvement in nuclear facility operations has been achieved. In FY 2007, the ATR achieved its highest operational level in the past several years by providing more than 200 days of irradiation for customer experiments. ATR is on track to exceed this noteworthy achievement in FY 2008.

Idaho Sitewide Safeguards and Security - DOE continuously assesses and updates its safeguards and security requirements to ensure appropriate actions are taken and safeguards are in place to protect against postulated threats. As part of this ongoing effort, INL has completed a number of physical upgrades (e.g., installation of vehicle screening stations with explosive detection systems and short range radars for adversary detection) and has reduced the number of high security facilities.

Leadership Challenges

Increased nuclear energy R&D initiatives at INL will directly impact the Idaho Nuclear Infrastructure program as well as overall infrastructure costs and long-term liabilities. For the IFM, the R&D requirements resulting from new mission initiatives will require recapitalization and revitalization of INL facilities and assets. In addition, leadership challenges will include meeting all safety and security requirements. For Idaho S&S, DOE annually reviews the GSP policy and requirements to ensure continued effective security for high value material assets based on updated intelligence information and threat assessments.

Key Strategies and Timing

The INL core missions include:

- Develop advanced, next-generation fuel cycle and reactor technologies;
- Provide an irradiation test facility for the Naval Nuclear Propulsion Program and other users;
- Promote nuclear technology education; and

- Apply its technical skills to enhancing the Nation's security.

To support these core missions, the IFM program must ensure the Department's unique facilities at the Idaho Site remain available to support national R&D priorities. World class nuclear R&D requires well maintained facilities, and a key strategy to achieve this result is an increase in funding for maintenance and repair of existing facilities.

Inspections have determined that existing INL facilities require a significant number of maintenance and repair actions that would cost approximately $150,000,000 to complete. This volume of uncompleted maintenance is referred to as the "deferred maintenance backlog." As maintenance activities are completed, the backlog is reduced and the overall condition of the INL facilities improves. DOE assesses the overall condition of facilities at a site and establishes an "asset condition index (ACI)," which increases as deferred maintenance is completed.

Reducing the current INL deferred maintenance backlog is essential to the success of the INL infrastructure program mission. As deferred maintenance backlog is reduced, the ACI increases over time. Under a scenario of deferred maintenance backlog reduction, INL will achieve a "good" rating by 2014. Conversely, if the level of IFM funding continues at its historic level, the deferred maintenance backlog will continue to increase and the ACI will continue to decrease.

Operating experience has shown that maintaining S&S information technology systems is as essential to the INL mission as facility and physical system maintenance. Accordingly, in FY 2009, the Idaho S&S program will continue to protect personnel, assets and information to assure their availability for nuclear energy R&D missions. This includes maintaining physical security safeguards and making necessary improvements to cyber security infrastructure to help ensure that laboratory systems are fully operational and secure to support mission critical activities. Also, subject to funding availability, additional physical security upgrades will be completed (e.g., install screening station x-ray and aerial deterrent capabilities, procure armored vehicles) as required by the obsolete DBT. GSP policy mentioned previously replaced the DBT and is under evaluation by NE and INL. This evaluation will assess the full impact of the updated requirements on INL.

Critical Events and Action Items

3-month events

Idaho Facilities Management:

Update the INL TYSP to document FY 2008 accomplishments, plan the execution of the IFM mission in FY 2009 and 2010, and identify resources needed from the FY 2011 budget

Complete irradiation of initial NSUF experiments, initiate post-irradiation examination, and complete planning for NSUF user and student education programs to be conducted in FY 2009

Idaho Sitewide Safeguards and Security:

Assess the impacts on INL operations caused by anticipated revisions to the DOE requirements (Graded Safeguards Table) that establish control and accountability limits for nuclear materials. These revisions would likely result in significant increases in INL security requirements, resource needs and associated costs. Also, accessibility to ATR NSUF facilities and activities could be severely limited at critical locations, adversely impacting INL operations and mission objectives.

12-month events

Idaho Facilities Management:

To ensure continued safe nuclear operations, complete by September 2009 the highest priority Documented Safety Analyses (DSAs) for nuclear facilities at MFC. These documents define the conditions necessary to ensure safe operations of nuclear facilities, and upgrades are required to make them fully compliant with 10 CFR 830, Nuclear Safety Rule. These DSAs address 90% of the risk associated with MFC nuclear activities

Complete all FY 2008 ATR NSUF university experiments, insert all FY 2009 university experiments in ATR, and complete planning for experiments scheduled for ATR insertion by the end of FY 2010

Complete construction and start operation of the ATR NSUF Test Train Assembly Facility (4300 sf) for fabricating experiments at INL prior to insertion into ATR.

Complete relocation of personnel and equipment from the Materials Test Reactor area to new/refurbished facilities within the ATR Complex, the Central Facilities Area (CFA), and MFC.

Idaho Sitewide Safeguards and Security

Revise the INL strategy for complying with modifications to DOE GSP (formerly DBT) requirements and nuclear materials control and accountability limits (graded safeguards table), if issued as anticipated

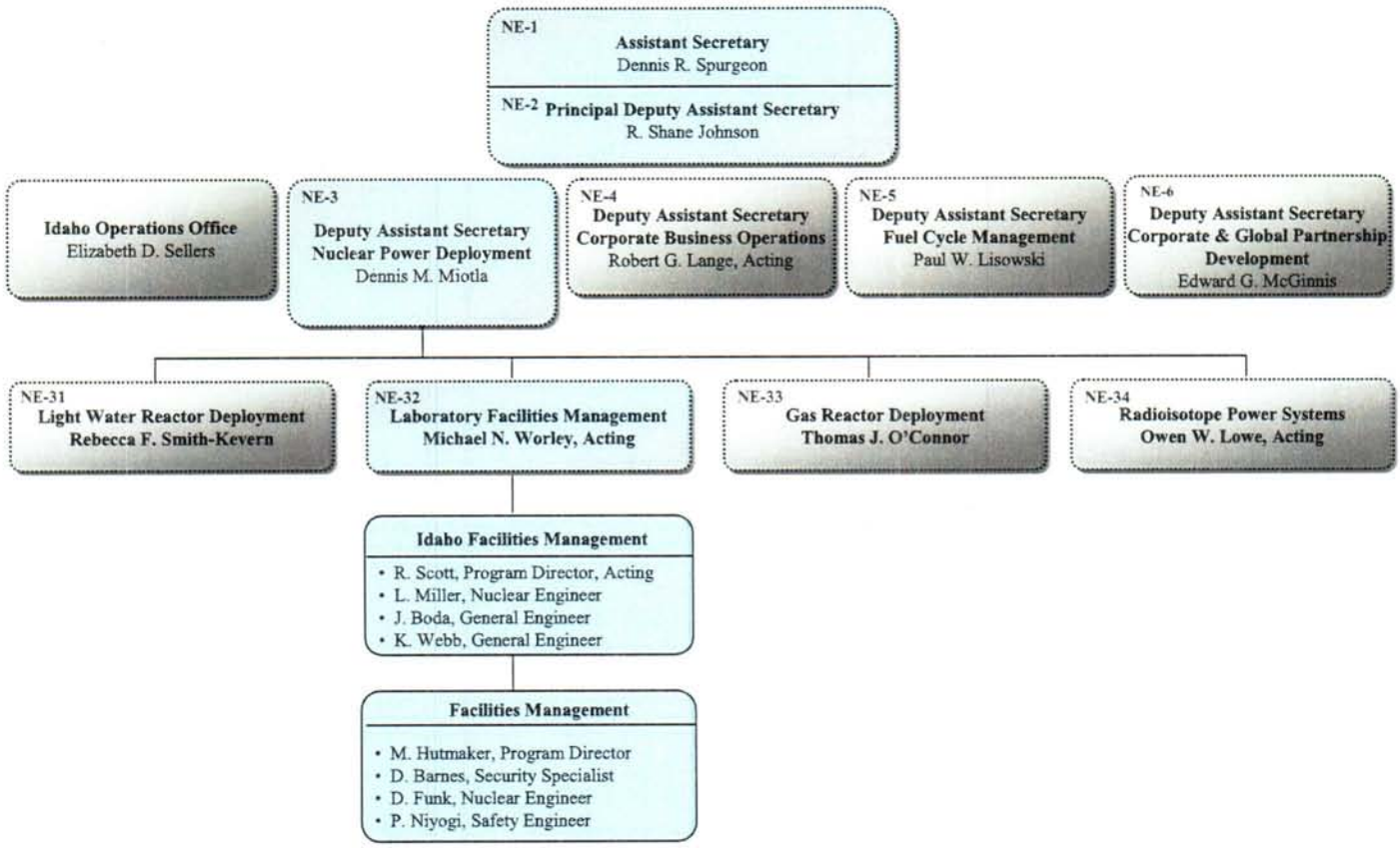
Hot Issues

Federal and contractor staff are conducting an on-going evaluation of impacts and options for storing, treating, and disposing of sodium contaminated spent nuclear fuel. As a related item, options are being developed to configure space within the Zero Power Physics Reactor (ZPPR) footprint to support treatment, and near-term options are being developed, to support the long-term de-inventorying of ZPPR nuclear material vault.

In August of 2008, the DBT was recharacterized as the GSP. The GSP policy revises the postulated adversary threat and may require revisions to INL plans. In addition, anticipated

revisions to control and accountability requirements that define the attractiveness level of nuclear materials may mandate increased protection capabilities at INL facilities and may create an adverse impact on the accessibility of R&D facilities to outside researchers. A full assessment is currently underway.

Current Organizational Chart



Generation IV Nuclear Energy Systems

Organization Information

Organization Name:
Office of Nuclear Energy

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Organization Phone Number:
(202) 586-6630

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Supporting the DOE Mission

Strategic Theme 1 – Energy Security

Strategic Goal 1.2 – Environmental Impacts of Energy

Program Goal 1.2.14 – Develop New Nuclear Generation Technologies.

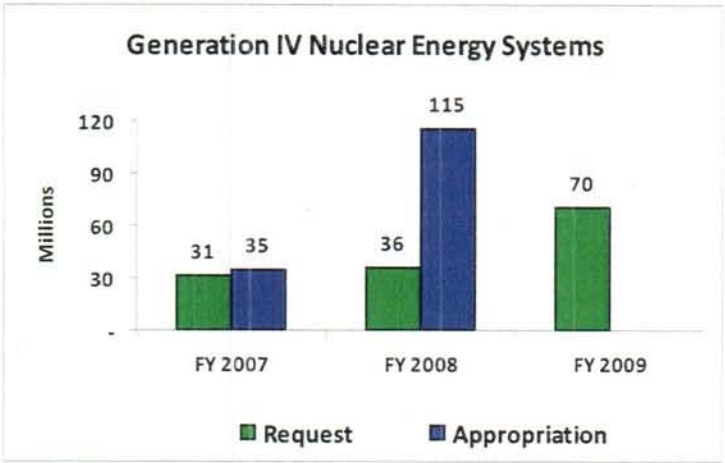
The Generation IV Nuclear Energy Systems Initiative ("Gen IV program") supports this program goal through the development of innovative, next-generation reactor and fuel cycle technologies. The Gen IV program supports R&D that helps achieve the desired goals of sustainability, economics, and proliferation resistance for new nuclear energy technologies.

Mission Statement

To develop and demonstrate advanced nuclear energy systems that are capable of serving the broad energy markets for electricity and process heat while improving performance in safety, economics, sustainability, proliferation resistance, and security.

Status

Budget:



FY 2009 Congressional Request: $70,000,000

FY 2009 House Mark: $200,000,000

FY 2009 Senate Mark: $70,000,000

People:

Number of federal FTEs: 3 at HQ, 3 at ID

Performance:

FY 2007 Budget Measure Status: 1 Green, 0 Yellow, 0 Red

History

Initiated by the Department of Energy, an international team of over 100 scientists and engineers from eight different countries collaborated on a strategic plan for developing the next generation of nuclear energy systems. This plan, *A Technology Roadmap for Generation IV Nuclear Energy Systems*, was published in 2002. The Roadmap identified the six most promising advanced next-generation nuclear reactor technology concepts and associated crosscutting areas of research and development. The international partners that contributed to the Roadmap formalized their relationship to collaborate on next-generation nuclear technology R&D as the Generation IV International Forum (GIF). The U.S. Gen IV program was created to manage the domestic investment in next-generation R&D and provide a focus for working with the GIF.

The U.S. implementation of the Gen IV Roadmap is focused on the near term demonstration of gas cooled reactor technology. The Energy Policy Act of 2005 authorized the Department to design and build a demonstration Next Generation Nuclear Plant (NGNP) at the Idaho National Laboratory as part of the Gen IV program. The NGNP, as presently envisioned, will be a gas cooled reactor with 750°C outlet temperature, high enough to meet the needs of 85% of all

industrial heat users. The Energy Policy Act established a schedule for initial operation of the NGNP by 2021.

Critical Operating Procedures

Gen IV is receiving broad international cooperation and support, consistent with the objectives of the program. The GIF, now composed of representatives from twelve governments and the European Union, provides the formal agreement and implementing arrangements for conducting the collaborative R&D of these next-generation nuclear energy systems. Finally, the Department and the Nuclear Regulatory Commission (NRC) are coordinating program planning to assure that R&D activities are complimentary, cost effective, and not duplicative.

Recent Organizational Accomplishments and Strengths

In FY 2007, Gen IV program conducted research and development activities, focusing on fuels and materials testing and plant system optimization in order to inform the functional and operational design requirements of a next generation of nuclear power plant. This included the issuance of a Pre-Conceptual Design Report that establishes preliminary functional and operational design requirements for the Next Generation Nuclear Plant (NGNP). Successful experimental activities included operational testing of the Graphite Creep Test capsule and fuels irradiations that began in December 2006. These activities significantly contribute to the program's definition of functional and operational design requirements of the NGNP. As a result of its FY 2007 accomplishments, the program was able to award conceptual design work to several nuclear vendors in FY 2008. Experimental activities in FY 2008 include continuation of fuels and materials irradiation testing and expansion of testing to environmental effects on high temperature materials. The major deliverable for FY 2008 is the NGNP Licensing Strategy Report to Congress, prepared jointly with the Nuclear Regulatory Commission and delivered to Congress in August 2008.

Leadership Challenges

All nuclear energy research programs rely heavily on data produced through collaborations with foreign nations. Should vital data from foreign partners be unavailable, an increase in U.S. funding would be required in order to achieve the required technology development.

Key Strategies and Timing

The Gen IV program has two R&D elements: Gen IV R&D and NGNP R&D. Gen IV R&D is aimed at readying technologies that will further improve the economic and safety performance of existing LWR and advanced Gen IV reactor concepts. In FY 2009, the Gen IV R&D is specifically focused on component and material aging and degradation resulting from long-term operation in the harsh nuclear environment (temperature, chemistry, and radiation). Results of this research will directly benefit existing nuclear plants by enabling the extension of their current operating licensing period. It will also enable the design of advanced reactor concept plants with a longer operating life. NGNP R&D is a very-high temperature reactor (VHTR)

research, design, and demonstration program that seeks to establish the commercial potential of gas reactors as a provider of process heat for industrial applications. The Nuclear Hydrogen Initiative is working closely with NGNP R&D to develop technologies that will apply high temperature process heat and/or electricity from next generation nuclear energy systems to produce hydrogen at a cost competitive with other alternative transportation fuels.

In FY 2009, the program will continue critical gas-cooled reactor R&D that will help achieve desired goals of sustainability, economics, and proliferation resistance to ready the technology for commercial deployment in the 2030 timeframe. In FY 2009, Gen IV R&D focuses specifically on component and material aging and degradation where results will directly benefit existing nuclear plants by extending their current operating licensing period and designing advanced reactor concept plants with a longer operating life. Continued investigation of technical and economical challenges and risks are needed to support NGNP design and licensing basis development. In FY 2009, NGNP development will focus on design development and generic licensing issue resolution consistent with the NGNP Licensing Strategy Report to Congress. NGNP R&D will maintain its focus on fuel development and high temperature metals and graphite qualification, but will also include broader activities conducted in support of extended temperature operation that may optimize the potential for economic hydrogen production. Successful completion of these activities will reduce the project risk as the Department moves forward in concert with private industry towards a demonstration plant by 2021. Key to the strategy for conducting R&D under the Gen IV Nuclear Energy Systems Initiative is the multiplication effect on investment derived from international collaboration. By coordinating U.S. efforts with those of the GIF partner nations, program funding is leveraged by a factor of two to ten, depending on the reactor concept involved.

Critical Events and Action Items

3-month events

Provide a Critical Decision-1 package to the DOE Acquisition Executive (Deputy Secretary) for approval of Alternative Selection and Cost Range, which would include an acquisition strategy for establishing an industrial partnership on the NGNP project.

12-month events

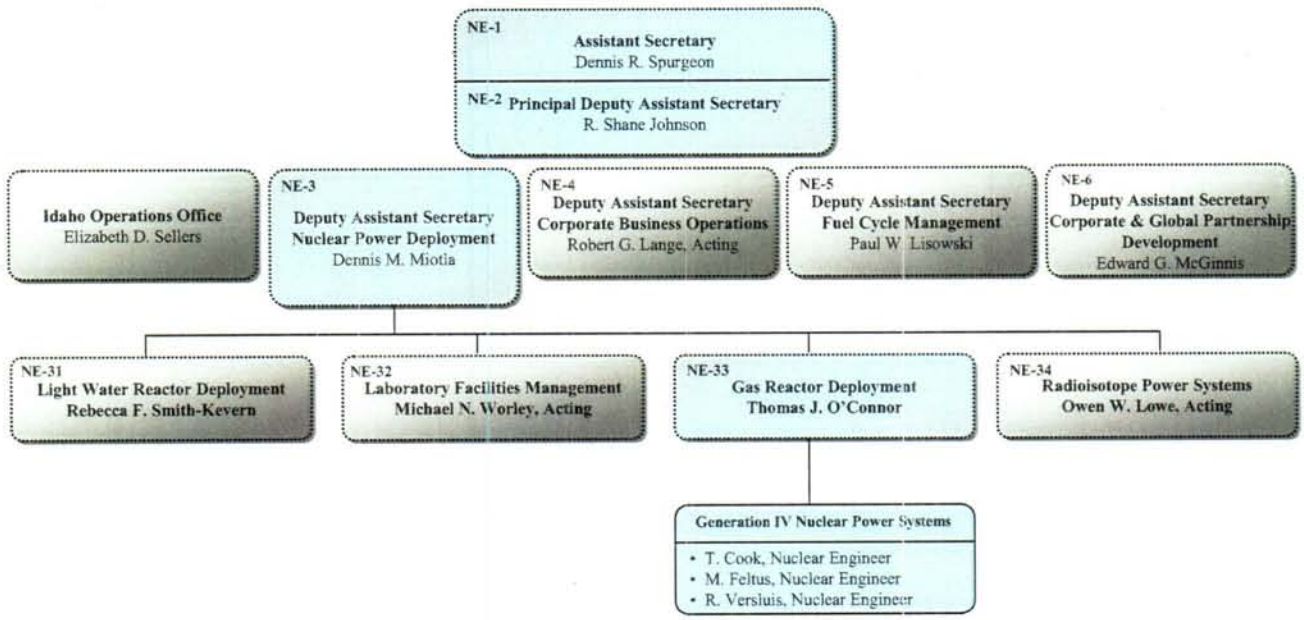
Complete the Nuclear Regulatory Commission review and acceptance of the DOE sponsored NGNP research and development plans.

Complete the initial NGNP fuel qualification shakedown tests and evaluations.

Hot Issues

None

Current Organizational Chart



Nuclear Hydrogen Initiative

Organization Information

Organization Name:

Office of Nuclear Energy

Address:

1000 Independence Ave, SW

Washington, DC 20585

Organization Phone Number:

(202) 586-6630

Organization Website:

http://www.nuclear.energy.gov

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Supporting the DOE Mission

Strategic Theme 1 – Energy Security

Strategic Goal 1.2 – Environmental Impacts of Energy

Program Goal 1.2.14 – Develop New Nuclear Generation Technologies.

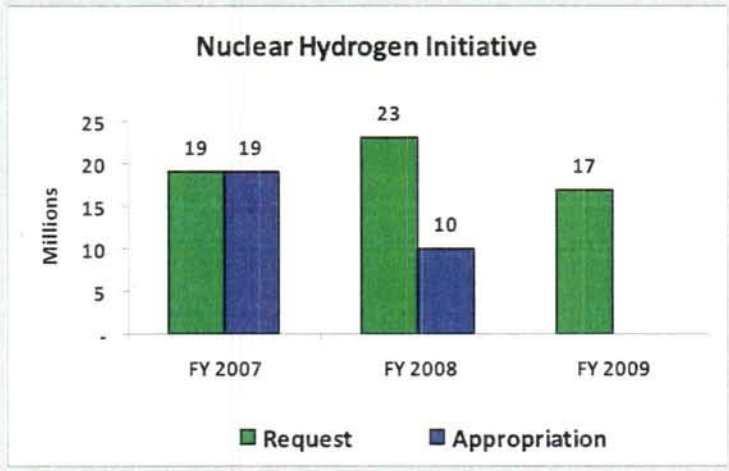
The Nuclear Hydrogen Initiative (NHI) contributes to this program goal by developing a secondary system for nuclear reactors that utilizes heat from the core to split water into hydrogen and oxygen. NHI is developing hydrogen production technologies compatible with nuclear energy systems through scaled experiments.

Mission Statement

To demonstrate the economic, commercial-scale production of hydrogen and oxygen using nuclear energy, leading to a large-scale, emission-free, domestic hydrogen production capability in support of production of chemical feedstocks and liquid petroleum products and a future transition to a hydrogen production economy.

Status

Budget:



FY 2009 Congressional Request: $16,600,000

FY 2009 House Mark: $16,600,000

FY 2009 Senate Mark: $10,000,000

People:

Number of federal FTEs: 3

Performance:

FY 2007 Budget Measure Status: 1 Green, 0 Yellow, 0 Red

History

Created in 2003, NHI develops new technologies to generate hydrogen (and oxygen as a byproduct) on a commercial scale in an economic and environmentally safe manner. Hydrogen is used in bio-fuel production to boost the energy value of existing fossil fuels, making them burn much cleaner. It is also used in the production of liquid fuels from our vast domestic resources of coal, tar oil sands and oil shale. The primary challenge to the increased use of hydrogen as part of the Nation's overall energy infrastructure is the cost associated with its production, storage, and delivery. While hydrogen can be produced from readily available sources such as natural gas and water, existing hydrogen production methods are either inefficient or produce greenhouse gases, defeating a primary advantage of using hydrogen—its environmental benefits.

Nuclear energy could play a significant role in hydrogen production as it has the potential to efficiently produce large quantities of hydrogen without emitting greenhouse gases. The goal of NHI is to demonstrate the economic, commercial-scale production of hydrogen using nuclear energy. If successful, this research could lead to a large-scale, emissions-free, domestic hydrogen production capability to fuel a future hydrogen economy.

Critical Operating Procedures

NHI works closely with the Department's Offices of Energy Efficiency and Renewable Energy, Fossil Energy, and Science in a coordinated effort to provide the technological underpinnings of a comprehensive Hydrogen Fuel Initiative. Cooperation amongst these offices eliminates redundancy while ensuring that the R&D conducted is complementary. This program includes participation of the national laboratories, industry, and university research communities as well as international research partners.

Recent Organizational Accomplishments and Strengths

In FY 2007, NHI met its annual performance measure through the construction and completion of shakedown testing of integrated laboratory-scale (ILS) experiments for the Sulfur-Iodine thermochemical cycle and High Temperature Electrolysis technologies. Early in FY 2008, NHI also completed activities associated with the examination of alternative thermochemical cycles which led to a down-select decision to the Copper-Chloride cycle for further development. The selected technology may also be employed on a demonstration scale with the Generation IV Nuclear Energy Systems Initiative's Next Generation Nuclear Plant. Successful achievement of FY 2007 performance measures has allowed NHI researchers to begin collection of performance data on two of the three baseline hydrogen production processes to confirm technical viability for future use in commercial systems. The third baseline technology, the Hybrid Sulfur thermochemical cycle, is scheduled to operate on a laboratory scale in FY 2010. The results from these integrated tests and other research on membranes, catalyst and materials performed in FY 2008 through 2010 are anticipated to be used to inform the 2011 selection of a hydrogen technology demonstrated in a pilot scale project, scheduled for 2013.

Leadership Challenges

NHI supports the near term goal of accelerating penetration of hydrogen-fueled vehicles into the U.S. economy. Although the use of hydrogen directly to replace petroleum products for transportation fuel is still an ultimate goal, an even more pressing objective is the replacement of the nine million tons of hydrogen produced annually by replacing natural gas with hydrogen produced by nuclear energy. The reforming process releases 10 tons of carbon dioxide for each ton of hydrogen produced. Thus, developing an economic nuclear hydrogen production capability not only has the potential to reduce current greenhouse gas emissions but also to provide a clean source of hydrogen which can be utilized in both the coal-to-liquids process and biofuels manufacturing. NHI closely coordinates its activities with the Offices of Fossil Energy and Energy Efficiency and Renewable Energy as part of the overall DOE Hydrogen Program. However, more explicit top-level recognition of the potential linkages between these energy technology areas is needed, particularly highlighting near-term uses for hydrogen produced from emissions-free nuclear energy.

All nuclear energy research programs rely heavily on data produced through collaborations with foreign nations. Should vital data from foreign partners prove unavailable; an increase in U.S. funding will be required in order to achieve the required technology development.

Key Strategies and Timing

NHI supports the future production of hydrogen for commercial applications by conducting research and development (R&D) of enabling technologies, demonstrating nuclear-based hydrogen production technologies, and studying potential hydrogen production strategies. The objective of the NHI is to develop technologies that will apply heat and/or electricity from next generation nuclear energy systems to produce hydrogen at a cost competitive with other alternative transportation fuels. The Next Generation Nuclear Plant (NGNP), a High-Temperature Gas Reactor concept being developed as part of the Generation IV Nuclear Energy Systems Initiative (Generation IV), is being coordinated and optimized to work with the hydrogen generation technologies developed under NHI.

NHI addresses the need for greater utilization of our energy resources by developing energy conversion systems to economically produce hydrogen for use in our national transportation system. Past and future program milestones include:

- FY 2007: Complete construction of integrated laboratory-scale thermochemical and high-temperature electrolysis hydrogen production systems and begin testing.
- FY 2011: Select technologies to be demonstrated in the pilot-scale hydrogen production experiment.
- FY 2013: Begin operation of a pilot-scale hydrogen production system experiment.
- FY 2016: Complete the final design of a commercial-scale nuclear hydrogen production system.
- FY 2019: Complete construction and checkout of the nuclear hydrogen demonstration facility and initiate demonstration of commercial-scale hydrogen production.

The FY 2009 budget request continues integrated laboratory-scale (ILS) experiments started in FY 2008 on two baseline production technologies. It also completes the design of a third ILS experiment using the Hybrid Sulfur thermochemical cycle. These experiments are being conducted in order to provide the necessary information needed to make a recommendation of the hydrogen production technology to be coupled with the NGNP as required by the Energy Policy Act of 2005 (EPAct 2005). Additional NHI activities planned in FY 2009 will improve the efficiency and economics of advanced, high temperature hydrogen production technologies. Successful completion of these activities will represent tangible progress toward demonstrating nuclear hydrogen production at a cost competitive with other hydrogen production technologies.

Critical Events and Action Items

3-month events

Finalization and rollout of FY 2010 Congressional Budget Request. Funding of NHI in FY 2010 and outyears is critical to recovering and maintaining scheduled progress to meet the program's long-term milestones.

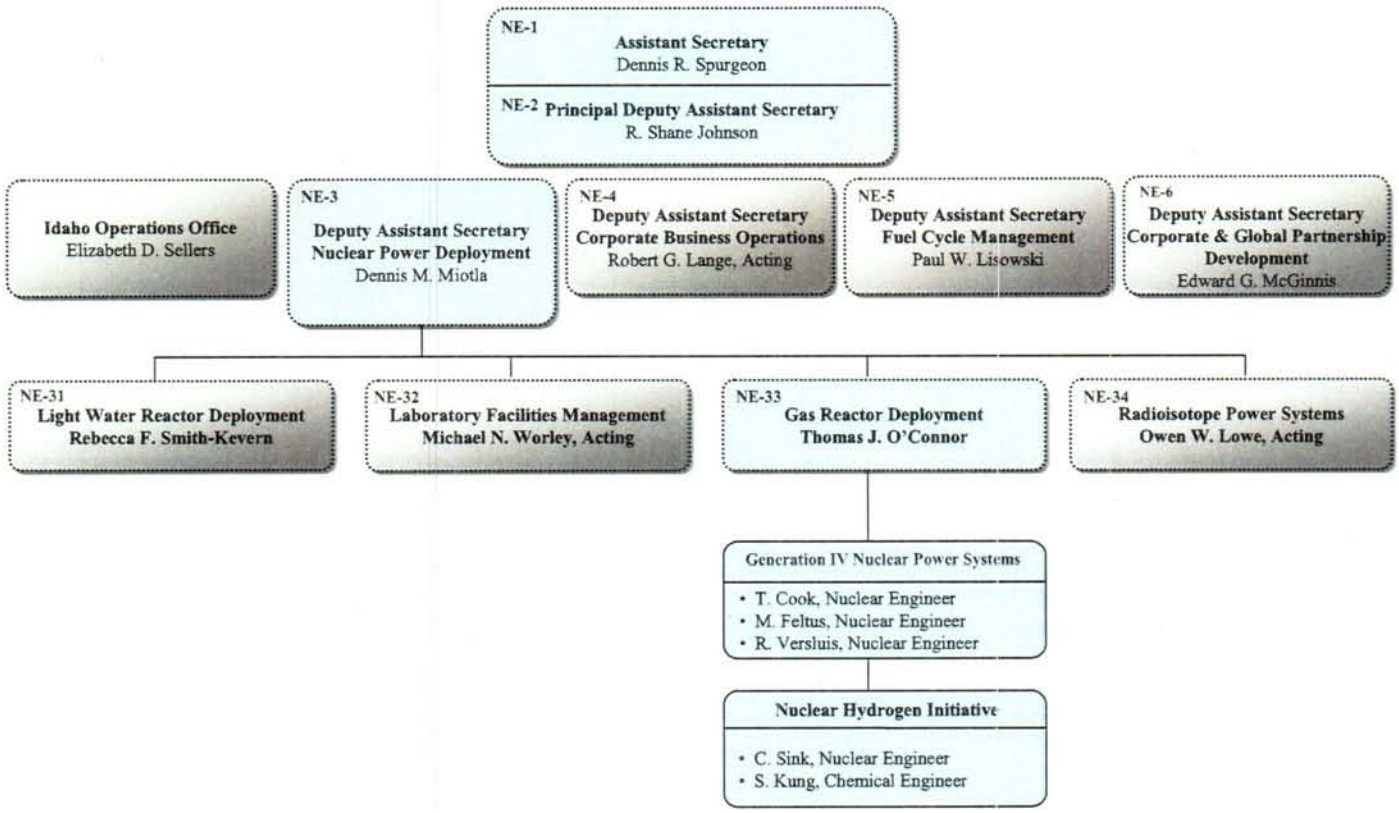
12-month events

None

Hot Issues

None

Current Organizational Chart



Radioisotope Power Systems

Organization Information

Organization Name:

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Supporting the DOE Mission

Strategic Theme 1 – Energy Security

Strategic Goal 1.2 – Environmental Impacts of Energy

Program Goal 1.2.15 – Maintain and Enhance National Nuclear Infrastructure

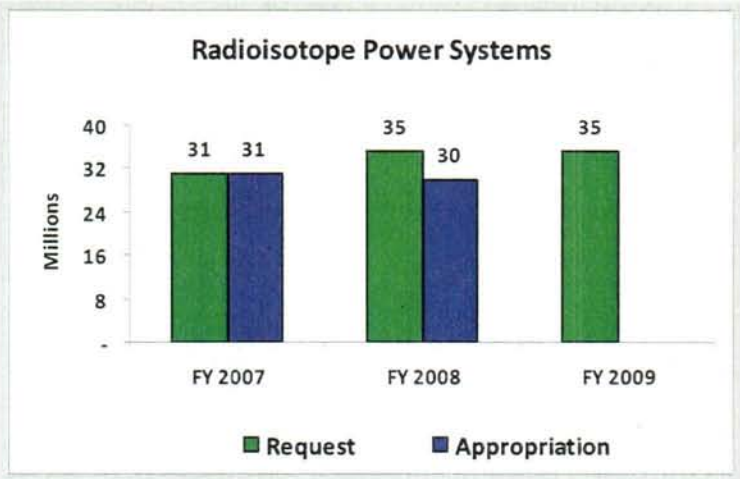
The Radioisotope Power Systems program contributes to this goal by ensuring that the Department's unique facilities, required for advanced nuclear energy technology research and development, are maintained and operated such that they are available to support national priorities, including NASA and national security missions. Key activities conducted under this program include ensuring that all Office of Nuclear Energy (NE) facilities meet essential safety and environmental requirements and are maintained at user-ready levels. Other key activities include managing all special nuclear materials contained in these facilities and the disposition of DOE materials under NE ownership. The Radioisotope Power Systems program provides nuclear power systems for special national security and National Aeronautics and Space Administration (NASA) missions where other power sources are impractical. Without the nuclear power systems supplied by DOE, the U.S. could not conduct these national security and space missions. DOE has unique facilities, such as research reactors, isotope processing, hot cells, and assembly facilities not available elsewhere. DOE is the only source for these enabling systems for national security and NASA applications.

Mission Statement

Develop, produce, and delivery of radioisotope and fission power systems for unique national security and space applications.

Status

Budget:



FY 2009 Congressional Request: $35,000,000

FY 2009 House Mark: $40,000,000

FY 2009 Senate Mark: $35,000,000

People:

Number of federal FTEs: 12

Performance:

FY 2007 Budget Measure Status: 1 Green, 0 Yellow, 0 Red

History

The U.S. Department of Energy (DOE) and its predecessor organizations have provided Radioisotope Power Systems (RPS) for space and terrestrial applications since 1961. These generators provide electrical power for spacecraft by conversion of the heat generated by the decay of plutonium-238 (Pu-238) to electrical energy. RPS are capable of producing either heat or electricity for decades under the harsh conditions encountered in deep space. DOE has also been the lead agency for the development of space fission power systems. Only one such system has been launched by the U.S.

The first use of RPS technology was on the United States Navy "Transit" program, a system of orbital satellites that would provide ships and planes a means of navigation during all weather conditions. The system and the technology involved spawned advances in an array of scientific fields; including the modern Global Positioning System (GPS), and developments in health

including a rechargeable cardiac pacemaker, a programmable implantable medication system, and an automatic implantable defibrillator. Similar examples can be found as a result from all RPS enabled missions.

The first use of RPS on a National Aeronautics and Space Administration (NASA) spacecraft was with the launch of power systems on the NASA Nimbus B-1 meteorological satellite in 1968. RPS were used on six missions to the Moon, Apollo 12 through 17, to power the science stations on the lunar surface (1969 to 1972). The Department's involvement with NASA continued as NASA moved out into the solar system with the Pioneer, Voyager, Galileo, and Ulysses missions (six missions beginning in 1972). These solar system exploration missions have continued far beyond their design life of about 5 years each, in large part because they are powered by RPS.

DOE has also played a key role in the support of exploration of Mars. The Viking landers, launched in 1975, were both electrically powered by RPS. The Mars Pathfinder spacecraft and rover landed on Mars in July 1997. The Rover had three Pu-238 oxide heater units that provided heat (not electricity) to the Rover electronics. The Mars Exploration Rovers, Spirit and Opportunity, are still functioning on Mars and have heater units as well. The heater units keep instrumentation and computer systems warm and functional adding to their operating life and reliability.

In all, DOE has provided a total of 45 radioisotope power systems and more than 240 radioisotope heater units for 26 missions since 1961. Without the power systems supplied by the DOE, missions could not have proceeded. DOE continues to maintain the capability to provide RPS to NASA for future missions.

Critical Operating Procedures

The program office supports various projects from national security agencies and NASA in developing nuclear power systems for missions. The projects are enabled by Memorandums of Understanding and supplemental agreements between the parties that define roles and responsibilities, budget, schedule, and high-level requirements. In general it is the responsibility of NE to design, develop, and build the nuclear power system to meet the needs of the partner agency. NE also plays a critical role in the launch approval process for any NASA space mission that includes a RPS or heater unit. NE is responsible for the preparation of the safety analysis that is required for the approval to launch. The approval to launch spacecraft utilizing nuclear power systems is given by the Office of the President.

NE manages all aspects of the nuclear power system procurement including the solicitation and selection of a system integrating contractor, supply of the DOE heat source, system assembly, and system delivery. Systems are designed and reviewed prior to engineering development, and then developed and tested to the functional requirements prior to going into flight production. After a stringent review from a DOE-led team and the necessary stakeholders, all operations performed on flight hardware are controlled through written procedures requiring approval from NE. NE also employs an independent QA system to routinely audit and verify that production procedures are followed and specifications and requirements are met.

Recent Organizational Accomplishments and Strengths

The program has supplied several RPS to NASA and national security customers over the past decade. The very successful Cassini mission entered the orbit of Saturn in July 2004 after being launched in October 1997. The Cassini spacecraft uses three DOE-supplied RPS and is the largest spacecraft ever launched to explore the outer planets. The New Horizons mission to Pluto, launched in January 2006, has already returned images and scientific data from Jupiter. The spacecraft is continuing its journey to study Pluto and its moon Charon in 2015. DOE supplied the RPS that provides electrical power and heat to the spacecraft and its science instruments. In 2008, after nearly a decade of development, DOE also delivered additional RPS to a national security user.

In June and July 2003, NASA launched the Mars Exploration Rovers, Spirit and Opportunity, to explore evidence of water on Mars. Each rover has eight radioisotope heater units to keep the rover instruments warm. The rovers landed at separate sites on Mars in January 2004 on a planned 90-day mission and are still operational more than three years later. NASA has also identified several new missions potentially requiring radioisotope heater units.

Two new RPS are under development. The Multi-Mission Radioisotope Thermoelectric Generator (MMRTG) is being developed for operation in planetary atmospheres as well as in the vacuum of space. The first use of an MMRTG will be for the Mars Science Laboratory planned for launch in 2009. The Mars Science Laboratory mission will collect Martian soil samples and rock cores, and analyze them for organic compounds and environmental conditions that could have supported microbial life now or in the past. In addition, the Advanced Stirling Radioisotope Generator (ASRG) is being developed as a high-efficiency RPS technology to support future space missions on the Martian surface or the vacuum of space. This system uses a Stirling converter, which has moving parts, to dynamically convert heat to electricity. This power conversion system could reduce the amount of Pu-238 needed per mission, the weight and potentially the cost of each RPS unit.

Leadership Challenges

Since the era of radioisotope power had its beginnings over forty years ago, NE and it predecessors have been the preeminent authority on space nuclear power. This includes space fission power systems as well as radioisotope power systems. The challenges facing the future of this program are extensive. Over the past decade the Radioisotope Power System program (formerly the Space and Defense Power System program) has had a decline of capability and credibility. Several issues related to the decline of capability and credibility include but are not limited to: the need to update the safety data base, current missions are deviating from the experience base and physical testing is needed to verify the analytical models; and the need to reinstate an R&D program that would develop critical safety related materials that are either rare or no longer available.

The Department's limited ability to supply power systems for NASA and national security missions will end in 2015 without a new source of Pu-238. The United States does not currently have the ability to produce Pu-238. Current supplies purchased from Russia or recycled from past national security missions will support projected NASA missions through 2015. Given the lead time for new construction and startup using proven technology, if construction of new

production capability were started in 2010, then sufficient Pu-238 could be produced to meet NASA's needs in 2015 and beyond. Delay in construction start beyond 2010 will result in postponement of NASA missions.

In addition, cost increases for the use of NNSA and DOE national laboratory facilities presents significant programmatic challenges. In 2004 DOE began consideration of consolidation of operations to consolidate special nuclear material and reduce its interstate transport, reduce security cost, and improve program flexibility. However, substantial estimated capital costs and lack of funding to pursue consolidation have caused this effort to be placed on hold.

Key Strategies and Timing

DOE maintains the infrastructure to develop, manufacture, test, and deliver RPS for space exploration and national security missions. In addition to providing RPS to Federal users for specific missions, DOE also develops advanced RPS, and conducts space fission technology development.

Funds directly appropriated to the program are used only to maintain the basic facilities and associated personnel necessary for the manufacture of RPS; mission specific development or hardware fabrication costs are provided by the user agencies (e.g., NASA). This arrangement is essential in order to preserve the basic capability regardless of periodic fluctuations in the demand of the end product users.

In FY 2009, the program will complete activities associated with the assembly and testing of generators for national security applications and for the NASA Mars Science Laboratory mission, and deliver the unit to NASA for launch. The program will also continue to maintain the unique facilities and capabilities at Idaho National Laboratory (INL), Oak Ridge National Laboratory (ORNL), Los Alamos National Laboratory (LANL) and Sandia National Laboratories that enable the Department to provide the radioisotope power systems for space exploration and national security applications.

Critical Events and Action Items

3-month events

Secretarial approval of the Safety Analysis for the launch of an RPS on the Mars Science Laboratory Mission
Pu-238 production decision in support of the 2010 budget request

12-month events

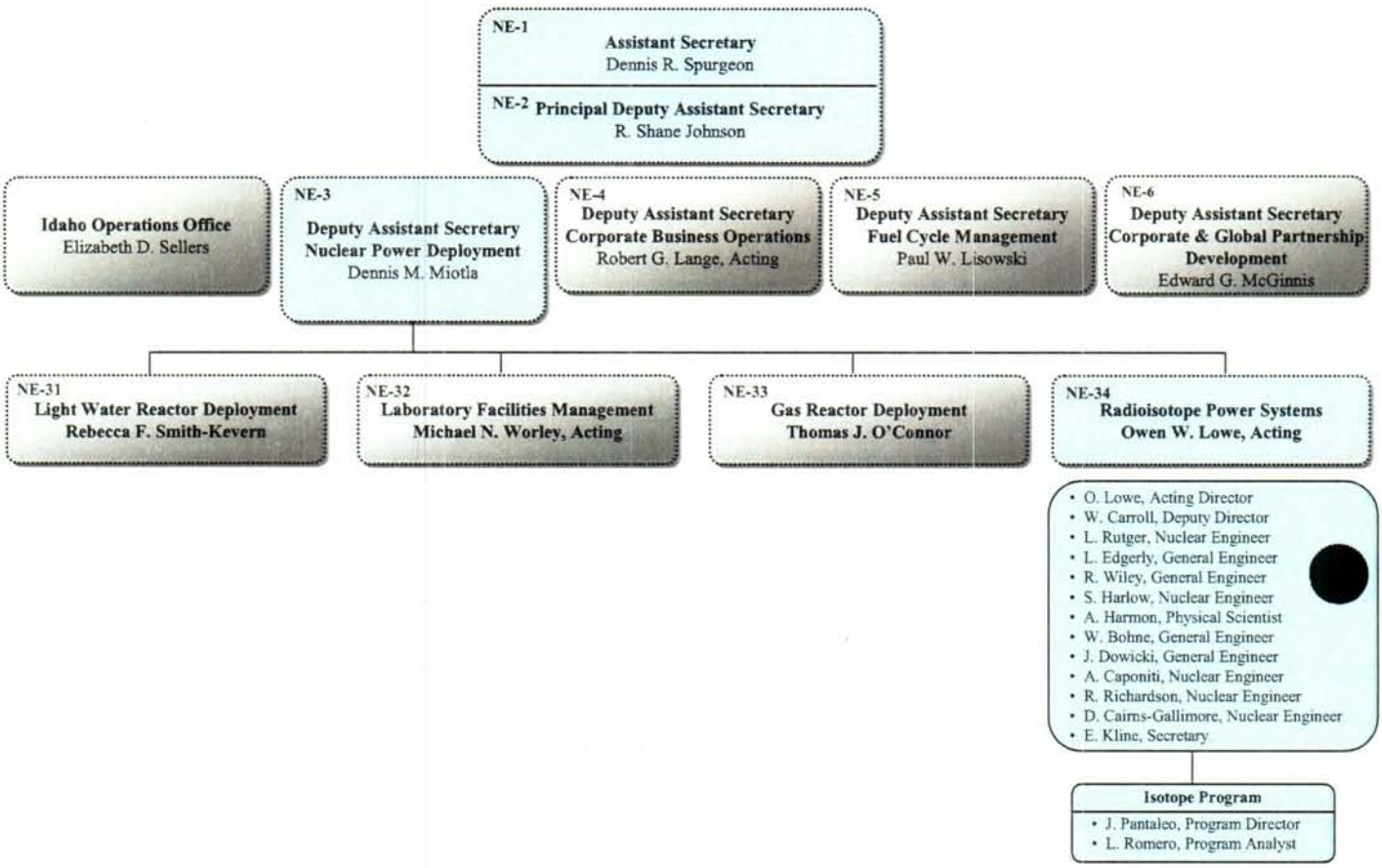
September 2009 launch of the RPS-powered Mars Science Laboratory Mission

Hot Issues

Fund additional facility floor space charges at LANL. A change in the cost accounting structure at Los Alamos National Laboratory will result in an increase of approximately $12M in required annual funding for the Space and Defense Infrastructure. Currently NNSA has chosen to cover the additional charges in FY 2008. The situation is unresolved for FY 2009.

Begin to update safety knowledge base. Current RPS technology is a derivative of previous generations and new research. The operating temperatures of these systems are different from previous generations. Testing needs to be conducted to verify current analytical models.

Current Organizational Chart



Advanced Fuel Cycle Initiative

Organization Information

Organization Name:

Office of Nuclear Energy

Address:

1000 Independence Ave, SW

Washington, DC 20585

Organization Phone Number:

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Organization Website:

http://www.nuclear.energy.gov

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Supporting the DOE Mission

Strategic Theme 1 – Energy Security

Strategic Goal 1.2 – Environmental Impacts of Energy

Program Goal 1.2.14 – Develop New Nuclear Generation Technologies.

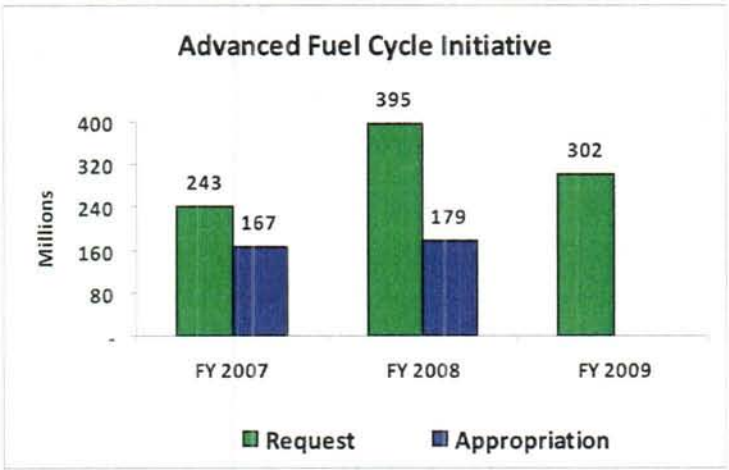
The Advanced Fuel Cycle Initiative (AFCI) supports near-term technology development and demonstration activities that advance the goals of the Energy Policy Act of 2005 by developing the enabling technologies needed to reduce the environmental consequences associated with spent fuel management; reduce the proliferation risk associated with the nuclear fuel cycle; and extend uranium resources.

Mission Statement

Enable the safe, secure, economic, and sustainable expansion of nuclear energy by conducting research, development, and demonstration focused on nuclear fuel recycling and waste management to meet U.S. needs.

Status

Budget:



FY 2009 Congressional Request: $301,500,000

FY 2009 House Mark: $90,000,000

FY 2009 Senate Mark: $229,700,000

People:

Number of federal FTEs: 32

Performance:

FY 2007 Budget Measure Status: 1 Green, 0 Yellow, 0 Red

History

The Advanced Fuel Cycle Initiative (AFCI), established in 2003, is the nuclear fuel technology development component of the U.S. nuclear energy program and focuses on developing technology options for changing the U.S. nuclear fuel cycle to reduce high level waste (HLW) radiotoxicity, volume or thermal (heat) load associated with used nuclear fuel. These activities not only support our domestic interests, but advance international non-proliferation policy objectives as well. New technologies developed by AFCI are intended to support the operation of current nuclear power plants (Generation II and III), new Generation III+ light water nuclear power plants currently under consideration by industry, and future advanced Generation IV nuclear power plants by developing better management options for used fuel while providing new sources of reactor fuel.

Critical Operating Procedures

AFCI research and technology development is performed at national laboratories and universities with input from key industry partners and cooperation with international counterparts.

The national laboratories provide the core of the AFCI research and development effort. Drawing upon the nuclear scientific facilities built at the laboratories over the last sixty years, leading experts conduct experiments and perform analyses in all phases of the nuclear fuel cycle and advanced reactor development. Federal staff members oversee this work carried out by ten laboratories and facilitated by a Technical Integration Office located at the Idaho National Laboratory.

Twenty percent of AFCI funding in FY 2009 will be dedicated to university programs which allow the program access to expertise and unique facilities resident at many of the most prestigious technical universities in the country. Beginning in FY 2009, research grants for universities will be administered through the Center for Advanced Energy Studies at the Idaho National Laboratory.

Four industry consortia receive funding through cooperative agreements to inform the Department's understanding of research and development requirements and business plan considerations for closing the nuclear fuel cycle. This industry perspective provides the program with views and information concerning the potential commercial deployment of AFCI technologies as well as information about what research could be conducted to enable private technologies to meet program goals. All industry materials and findings are submitted to the Department under these agreements and are reviewed by federal and laboratory personnel.

The AFCI program also participates with France, Japan, Russia, China, South Korea, Brazil, Australia and the European Union on cooperative nuclear fuel cycle research under bilateral research and development agreements. Experts at the national laboratories collaborate with foreign counterparts by sharing results from investigations and visiting research facilities. These collaborations allow U.S. experts to develop a clear understanding of the research being conducted in foreign laboratories and the opportunity to help shape future research directions.

Recent Organizational Accomplishments and Strengths

The AFCI program entered into a memorandum of understanding with the French and Japanese nuclear agencies to jointly develop the framework for a shared prototype sodium fast reactor. This effort has identified current and future research and testing infrastructure needed to develop the prototype design.

In 2008, the program completed key advanced fuel cycle research and development activities in the areas of used fuel separations and fast reactor fuel fabrication. Specifically, scientists at the Oak Ridge National Laboratory successfully completed a small-scale demonstration of one of the advanced separations technologies developed under AFCI. This effort required reconstituting capabilities that had previously been closed down at Argonne National Laboratory.

In parallel with these international and laboratory activities, the program has evaluated the recommendations of industry on the research and development needed to commercially deploy recycling technologies in the U.S. These insights helped to shape the AFCI Technical Roadmap which will serve as a basis for program research and development planning.

Leadership Challenges

The AFCI program interacts with stakeholders in the Department, other agencies within the Executive Branch, and with external organizations as well. These relationships can create opportunities and challenges as we look to the development and deployment of recycling technologies.

Key Strategies and Timing

AFCI seeks to develop the technologies that could be deployed to effectively recycle all of the material in used fuel that would otherwise require storage for thousands of years. This vision will require the development and demonstration of new advanced reactor technologies that can generate energy from fuels that recycle these elements. For this system to work, new approaches to used fuel separation and reactor fuel fabrication will be demonstrated. The broad use of these technologies will require them to be economically attractive in the marketplace. AFCI is using high-performance computing to create design tools that improve safety while reducing construction costs.

Critical Events and Action Items

3-month events

The Department has prepared a Programmatic Environmental Impact Statement (PEIS) on closing the fuel cycle in the United States. The PEIS was issued fall 2008. Following consideration of comments received on the draft PEIS, the Department is scheduled to prepare a final PEIS and thereafter may issue a Record of Decision on the U.S. strategy for closing the nuclear fuel cycle. The Record of Decision is currently scheduled to be made in the spring of 2009.

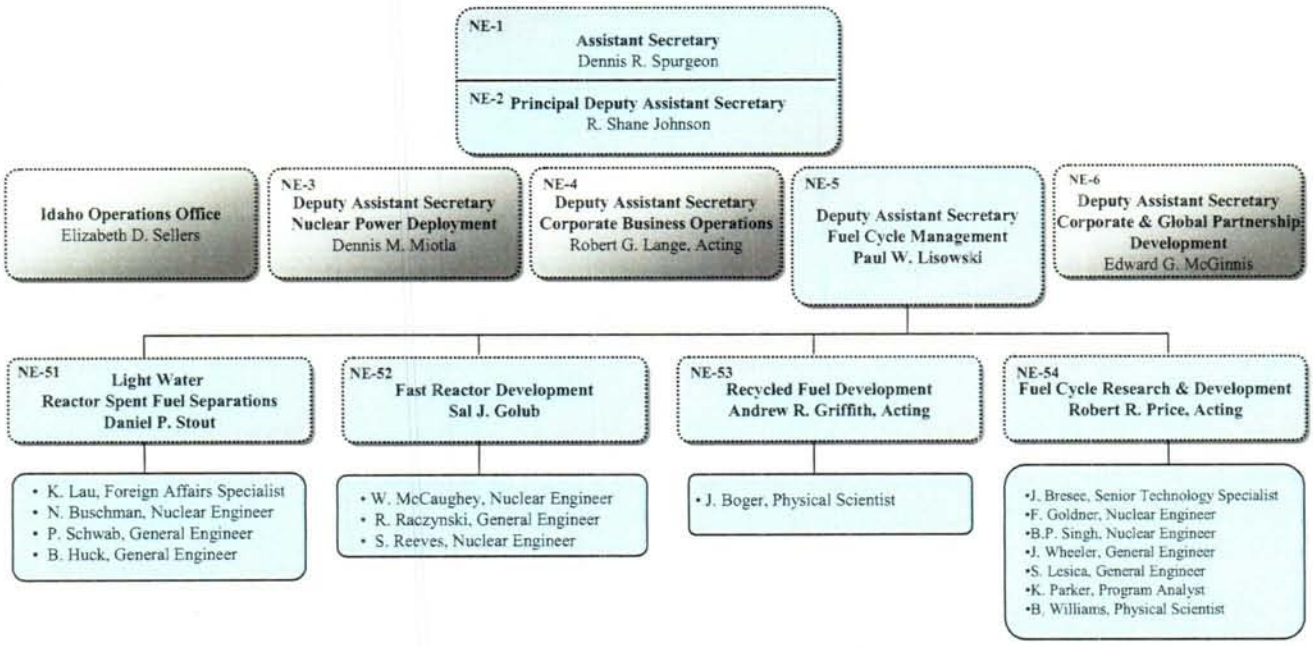
12-month events

Advanced demonstration fuel that was fabricated at the Idaho National Laboratory will complete irradiation testing in the French Phenix reactor and be returned to the laboratory to test its performance.

Hot Issues

None

Current Organizational Chart



International Nuclear Energy Policy and Cooperation

Organization Information

Organization Name:

Office of Nuclear Energy

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Supporting the DOE Mission

Strategic Theme 1 – Energy Security

Strategic Goal 1.2 – Environmental Impacts of Energy

Program Goal 1.2.14 – Develop New Nuclear Generation Technologies.

The Office of Nuclear Energy (NE) facilitates cooperative relationships to support R&D activities through multiple international engagement mechanisms, industry, and national laboratories on nuclear technology development.

Mission Statement

To promote the global and domestic expansion of nuclear energy in a safe, reliable, environmentally sustainable, and more proliferation resistant manner with international cooperation and collaboration.

Status

Budget:

Nuclear energy policy and cooperating activities are supported principally through the efforts of federal staff with support, as needed, by the national laboratories. These activities are funded through the NE Program Direction account (federal staff) and, as appropriate, through NE's nuclear R&D programs: the Advanced Fuel Cycle Initiative, the Generation IV Nuclear Energy Initiative, and the Nuclear Hydrogen Initiative.

People:

Number of federal FTEs: 17

History

NE has a long history of international cooperation in its development and deployment of advanced nuclear energy technologies. International cooperation has been executed through active participation in various intergovernmental organizations (such as the International Atomic Energy Agency (IAEA), the Organization for Economic Co-operation and Development (OECD) Nuclear Energy Agency (OECD-NEA), and Generation IV International Forum (GIF), bi-lateral and multilateral agreements, and ad hoc technical forums.

Bilateral

NE has pursued bilateral international cooperation programs via the International Nuclear Energy Research Initiative (I-NERI); Action Plans and Memoranda of Understanding (MOUs).

International Nuclear Energy Research Initiative

I-NERI was established by DOE in FY 2001 to conduct research and development (R&D) with international partners in advanced nuclear energy systems development. I-NERI was created in response to recommendations made by the President's Committee of Advisors on Science and Technology in a report entitled Powerful Partnerships: The Federal Role in International Cooperation on Energy Innovation. I-NERI supports scientific and engineering R&D linked to the principal NE research programs: the Generation IV Nuclear Energy Systems Initiative, the Advanced Fuel Cycle Initiative, and the Nuclear Hydrogen Initiative. Currently, DOE has active I-NERI agreements in place with Brazil, Canada, the European Union, France, Japan, the Republic of Korea, and the OECD Nuclear Energy Agency.

Action Plans

An important method of defining specific bilateral activities between the U.S. and key, advanced nuclear power nations with broad fuel cycle capability is an agreed Action Plan. Action Plans allow both countries to pursue and collaborate on R&D in agreed areas by utilizing unique indigenous facilities and technologies. To date five Action Plans have been negotiated.

The U.S.-Russia Bilateral Action Plan, signed in December, 2006, was the result of a series of meetings by the U.S.-Russia Civil Nuclear Energy Working Group. The Working Group met in March 2007 and in June 2007, and agreed on Joint Technical Action Plans outlining areas for technical collaboration, including recycling, fuel fabrication, fast reactors, exportable reactors suitable for developing countries, safeguards, and international fuel services. The most recent Working Group meeting was held in September 2008.

The U.S.-Japan Joint Nuclear Energy Action Plan (JNEAP), signed in April 2007, fulfilled the commitment made by the Secretary of Energy and the Japanese Ministry of Economy, Trade and Industry (METI) Minister in January 2007, to develop a plan to increase bilateral nuclear energy cooperation. In June 2007, the first steering committee meeting of the U.S.-Japan JNEAP was held. The next plenary working group and steering group meetings will be held in early to mid 2009 in the United States.

The U.S.-China Bilateral Civil Nuclear Energy Cooperative Action Plan was signed in September 2007. The first Steering Committee meeting was held in November 2007 and the first Technical Working Group meeting was held in April 2008. The U.S. and Chinese delegations formed three working groups—Advanced Fuel Cycle Technology, Fast Reactor Technology, and Safeguards and Physical Protection Technology—and laid out a scope of research and development for each.

The U.S.-Australia Bilateral Action Plan was signed in August 2007. However, due to recent changes in the Australian government, further cooperation under this action plan is uncertain.

Additionally, NE has set up a bilateral MOU with Jordan on nuclear energy infrastructure discussions and a trilateral MOU with Japan and France on cooperation on sodium-cooled fast reactor (SFR) prototypes. The Executive Committee for the trilateral MOU on SFRs met in April 2008 to review progress made toward near-term goals, discuss a potential future trilateral agreement that would replace the limited-term MOU, and meet with the chairmen of the U.S., French, and Japanese regulatory agencies to discuss developing regulations of SFR prototypes.

Multilateral

NE participates in GIF, the Global Nuclear Energy Partnership (GNEP), and IAEA activities such as the International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO), an open international forum for studying nuclear energy options, associated requirements and its potential deployment in IAEA Member States. GIF and GNEP activities are discussed in greater detail below.

Generation IV International Forum

In 2000, NE proposed the term Generation IV to capture the idea of a next generation of nuclear energy systems; systems that could be licensed, constructed and operated to provide competitively priced and reliable energy products, representing significant improvements in sustainability, economics, safety, proliferation-resistance and physical protection. Early in 2000, the Department invited nations leading nuclear energy development to Washington, DC, to confer on a vision, which later came to be termed the Generation IV International Forum (GIF) and the R&D needed to make the vision a reality.

GIF was chartered in 2001 to collaboratively develop next generation nuclear energy systems to meet the world's future energy needs. The GIF Charter was signed in 2001 by Argentina, Brazil, Canada, France, Japan, the Republic of Korea, the Republic of South Africa, the United Kingdom, and the United States. Subsequently, Switzerland in 2002, Euratom in 2003, and most recently the People's Republic of China and the Russian Federation, both in 2006. Signing the Charter signifies interest in cooperation on Generation IV systems but does not commit the twelve signatories to take part in the cooperative development of these systems.

Among the signatories to the Charter, eight members (Canada, Euratom, France, Japan, the People's Republic of China, the Republic of Korea, Switzerland, and the U.S.) have signed or acceded to a Framework Agreement which is a legally-binding intergovernmental agreement aimed at research and development of advanced nuclear energy systems. Argentina, Brazil, and the Republic of South Africa have signed the GIF Charter but not the Framework Agreement, and the UK has withdrawn from the FA; within the GIF they are designated accordingly as "inactive Members." The Russian Federation is currently working on the necessary approvals for its accession to the FA and the Republic of South Africa, while currently an inactive Member, has indicated that it is working on the necessary Parliamentary approvals for its accession to the FA.

The GIF Charter provides a general framework for GIF activities and outlines its organizational structure. As detailed in its Charter and subsequent GIF Policy Statements, the GIF is led by a Policy Group which is responsible for the overall framework and policy formation and for interactions with third parties. The Policy Group is currently chaired by France with two vice chairs from the U.S. and Japan. An Experts Group advises the Policy Group on R&D strategy, priorities and methodology, and on evaluating research plans for each Generation IV reactor system. The GIF Policy Group meets two to three times a year to review activities, provide guidance to the Experts Group and subordinate committees, and determine future program direction.

Global Nuclear Energy Partnership (GNEP)

GNEP, a U.S. initiated effort, is a joint partnership of countries that share the common vision of the safe and secure development of nuclear energy for peaceful purposes worldwide. The goal of GNEP is to offer a comprehensive approach to the safe and secure development of nuclear energy in a manner that specifically addresses seven major areas described as "Principles," including the support for reliable global nuclear fuel services as a viable alternative to the development of enrichment and reprocessing facilities indigenously. The Statement of Principles, the policy framework for the Partnership, was signed by 16 nations at the GNEP Executive Committee meeting in September 2007. Today the partnership consists of 21 partner countries, three permanent international nongovernment observers, and 17 participating observer countries[1]. GNEP has two working groups: infrastructure development and reliable nuclear fuel services. A third has been proposed by the United Kingdom to address radioactive waste

[1] These partners are: Australia, Bulgaria, Canada, China, France, Ghana, Hungary, Italy, Japan, Jordan, Kazakhstan, Republic of Korea, Lithuania, Poland, Romania, the Russian Federation, Senegal, Slovenia, Ukraine, United Kingdom and the United States. The three permanent international nongovernment observers are: the International Atomic Energy Agency, the Generation IV International Forum, and Euratom.

management. NE takes an active role in developing the strategy, agenda, background papers and other support for major GNEP events such as Ministerial and Working Group meetings.

Critical Operating Procedures

NE works with a variety of organizations to pursue expanded use of both global and domestic nuclear energy power generation. Within DOE, NE works closely with the National Nuclear Security Administration (NNSA), the Office of Policy and International Affairs (PI), the Office of the General Counsel (GC), and the national laboratories on international policy and cooperation activities. Additionally, NE works closely with the State Department, the Commerce Department, the Nuclear Regulatory Commission, and the National Security Council as appropriate to support U.S. energy policy development.

Recent Organizational Accomplishments and Strengths

Under I-NERI program nineteen projects that began in 2004 and 2005 were completed in FY 2007. The following represent the collection of collaborators and the respective number of projects that were completed: Canada (3), Euratom (5), France (5), Japan (1), Republic of Korea (5). I-NERI continues to initiate new collaborative research projects. In FY 2007 two additional projects began with Canada and seven additional projects began with the Republic of Korea.

Through GIF the U.S. worked closely with France and Japan in the Global Actinide Cycle International Demonstration (GACID) Project Arrangement. Joint activities focused on the evaluation of minor-actinide-bearing fuel material properties and analysis and evaluation of irradiated-fuel data.

In a partnership with the State Department and USAID, NE successfully introduced modern safety practices and technology into Ukraine's operating reactors, supported shutdown of the BN-350 fast reactor in Kazakhstan, upgraded safety at Armenia's existing Soviet-era reactor and at Bulgaria's reactor. In addition, NE supported the testing necessary for Westinghouse to provide nuclear fuel for Ukrainian VVER 1000 reactors.

NE has also supported a number of new international agreements and bilateral action plans while maintaining existing long-term technology cooperation agreements with countries such as the Republic of Korea. Great progress has been made with the trilateral MOU on SFRs, the U.S.-Japan JNEAP, and the U.S.-China Action Plan and has rapidly created plans for advanced R&D in these areas. Multilaterally, NE led the expansion of GNEP, beginning with the signing of the Statement of Principles in September 2007. As of 2008, GNEP has grown into a 21 country partnership and includes two working groups.

GNEP activities supported by NE in the last year include a Ministerial-level meeting attended by the Secretary of Energy. Twenty five additional countries were invited to join the 21 countries already in the Partnership. The main objective was to foster expansion of nuclear power in a safe; secure; and responsible manner cooperatively, and in a way that would minimize the risk of proliferation.

Leadership Challenges

Recent Congressional Action on the Department's FY 2009 budget request has called into question the Department's future participation in GNEP. A prohibition on U.S. participation in GNEP will negatively affect our ability to influence the global nuclear energy enterprise and advance U.S. nuclear nonproliferation objectives. Also, as NE international engagement activities expand to areas determined to be appropriate by the administration and Congress, maintaining federal staff with expertise in both foreign affairs and nuclear technology basics will be critically important.

Key Strategies and Timing

Through various agreements (e.g. government to government; laboratory to laboratory; or industrial partnerships), NE promotes cooperation, communication and U.S. nonproliferation objectives in the global effort to improve all aspects of the nuclear fuel cycle and nuclear power generation.

The Department plans to initiate new cooperative projects under existing agreements; conduct annual project review/bilateral meetings with France, Korea, Euratom, and Canada; and continue pursuing new cooperative agreements with South Africa and other prospective partner countries in the coming months.

Ensuring continued effort to effectively support the expansion of nuclear power while enforcing strict standards to prevent proliferation and ensure the development of quality infrastructure to support nuclear power development is paramount to meeting U.S. nuclear energy objectives. NE's international engagement efforts that integrate industry; IAEA milestones; advanced nuclear generation and fuel cycle technologies; and the infrastructure necessary for nuclear power expansion will continue to play an integral role in achieving our main objective of generating clean, reliable electricity.

Critical Events and Action Items

3-month events:

The next GIF meeting will be held in San Diego, CA, April 2009.
The next GNEP Steering Group meeting is tentatively scheduled for April 2009, in China but no specific location has yet been chosen.

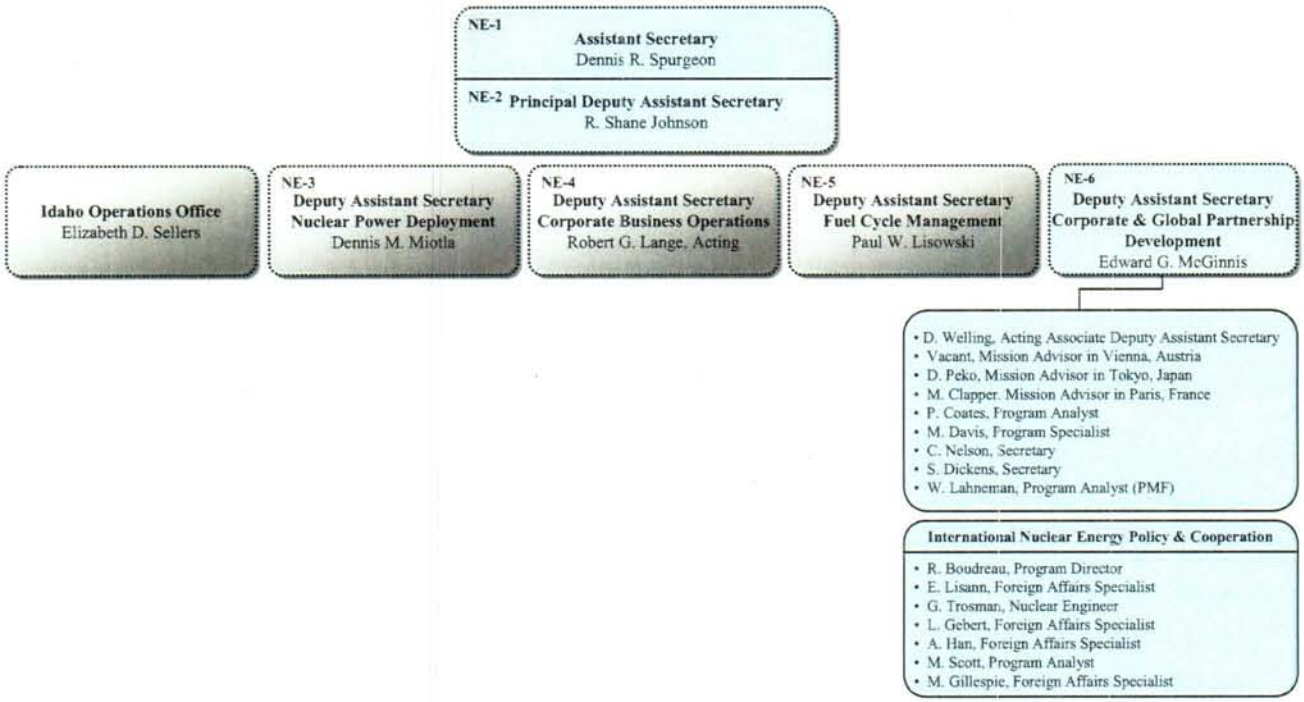
12-month events

Ongoing implementation of existing Action Plans

Hot Issues

DOE has strongly supported the growth and development of GNEP through bilateral and multilateral agreements. Congressional action on the Department's FY 2009 budget request, however, directs the Department to discontinue participation in all GNEP activities.

Current Organizational Chart



Uranium Management Program

Organization Information

Organization Name:

Office of Nuclear Energy

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POC E-mail Address:

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Supporting the DOE Mission

Strategic Theme 1 – Energy Security

Strategic Goal 1.2 – Environmental Impacts of Energy

Program Goal 1.2.15 – Maintain and Enhance National Nuclear Infrastructure

Maintain, enhance, and safeguard the Nation's nuclear infrastructure capability to meet the Nation's energy, medical research, space exploration and national security needs.

Mission Statement

To meet key nonproliferation objectives; reduce DOE costs by decreasing uranium inventories while minimizing potential impacts to the commercial nuclear fuel cycle industry.

Status

Budget:

Uranium Management Program activities are supported through the efforts of federal staff, in conjunction with support service contractors. The activities of federal staff and support services contractors are funded through the NE Program Direction account for the total annual amount of $200,000.

People:

Number of federal FTEs: 1

History

Over time, the changing missions of DOE programs have created excess inventories of uranium. In addition, DOE's former uranium enrichment program generated significant quantities of depleted uranium that must be dispositioned in a safe and secure manner. DOE's excess uranium inventories are a valuable asset that needs to be managed in a manner that provides benefits to the federal government.

In March 2008, the Secretary of Energy issued a Policy Statement that provides a framework regarding the future use and disposition of the Department's excess inventory which commits DOE to an overall, corporate approach to the management of its excess uranium inventories. As a follow-up, the Department is developing an Excess Uranium Inventory Management Plan (EUIMP) which will address the potential sales or disposition of excess highly enriched uranium, low enriched uranium, natural uranium, and depleted uranium in a manner that complies with mission objectives.

Critical Operating Procedures

The Office of Nuclear Energy (NE), the Office of Environmental Management (EM), and the Office of Fissile Materials Disposition within the National Nuclear Security Administration (NNSA), are responsible for managing DOE's excess uranium inventories. These offices closely coordinate their efforts regarding the management of uranium inventories including disposition. DOE seeks to dispose of excess inventories in ways that are not only consistent with established policy but also have little or no adverse impact to the domestic nuclear fuel industry.

Recent Organizational Accomplishments and Strengths

The draft EUIMP has received EM, NA, and NE concurrence from the program offices responsible for implementing the plan.

Leadership Challenges

The implementation of the EUIMP will require extensive coordination within and outside the Department.

Key Strategies and Timing

The EUIMP, once finalized, will provide a path forward for the Department's excess uranium through controlled spot market and long term sales or transfers of uranium based on an annual quantity of no more than ten percent of U.S. nuclear fuel requirements. The EUIMP includes a

number of current and potential uranium management activities including: downblending of highly enriched uranium to low enriched uranium; disposing of off-spec materials; making natural uranium available for use as initial cores for new reactors built in the United States; optimizing natural and depleted uranium assets in the form of low enriched uranium; and selling high assay depleted uranium.

Critical Events and Action Items

3-month events

Development and initialization of policies implementing the EUIMP as appropriate.

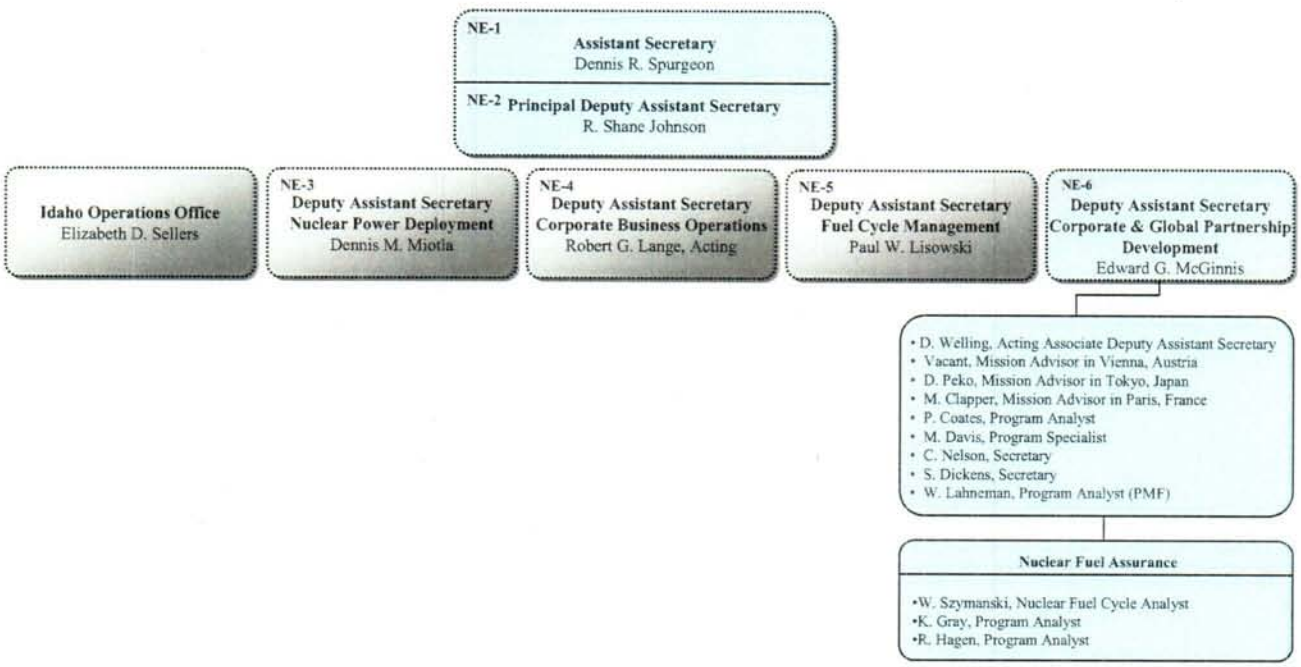
12-month events

Ongoing implementation of the EUIMP.

Hot Issues

DOE's uranium management activities have been the subject of attention from the Congress and industry.

Current Organizational Chart



Idaho National Laboratory

Mission

The Idaho National Laboratory (INL) develops advanced nuclear energy systems that are increasingly safe, economic, proliferation-resistant, and sustainable. To that end, INL is focused on developing and implementing integrated strategies for advanced fuel cycles, advanced reactor options, and nuclear science capabilities that put INL at the forefront of U.S. nuclear energy research. In addition, synergistic national and homeland security programs deliver critical technology solutions and provide indispensable prototyping and testing services to identify and defeat threats to the security of the nation: specifically, nuclear materials nonproliferation, safeguards and security in a broad array of categories (nuclear materials security; signatures and detection; advanced nuclear energy safeguards, training and testing; and evaluation of policy, solutions, and services). Additionally, the INL focuses and leverages its basic and applied research capabilities to support the above mission priorities as it strives to become a leading clean energy research, development, and demonstration laboratory as well as a regional resource.

History

The Idaho Site was established in 1950 when the U.S. Atomic Energy Commission (predecessor to the U.S. Department of Energy [DOE]) obtained land from the U.S. Navy to establish the National Reactor Testing Station to develop and test nuclear reactors and related facilities. The Idaho Site was the first location to build and test nuclear reactors as a source of commercial energy. During its 58 year existence, 52 nuclear reactors have been designed, constructed, and operated at the Idaho Site for electric power generation and nuclear propulsion systems research and training. On February 1, 2005, INL was created by merging the laboratory facilities and capabilities of the Idaho National Engineering and Environmental Laboratory with the Argonne National Laboratory-West into a single entity under a ten-year contract to Battelle Energy Alliance, LLC.

INL-at-a-Glance

Location: Southeast Idaho and Idaho Falls, ID

Type: Multiprogram Laboratory

Contract Operator: Battelle Energy Alliance, LLC

Responsible Site Office: Idaho Operations Office

Website: http://www.inl.gov/

Physical Assets:

- 569,135 acres (889 square miles)
- 577 buildings (5,878,613 GSF)
  - 331 NE buildings (3,124,262 GSF)
  - 246 EM buildings (2,754,351 GSF)
- 4,914,698 GSF in DOE-owned Buildings
- 963,915 GSF in Leased Facilities

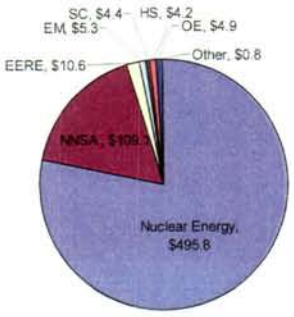
Human Capital:

- 3,835 INL Employees (as of 11/12/07)
  - 690 R&D Scientists/Engineers
  - 304 Engineers
  - 288 Technical/Operators Professionals
  - 387 General Management
  - 293 General Administrative, Secretarial & Clerical Support
  - 531 Business Specialists
  - 29 Internships
  - 534 Technicians
  - 779 Represented Employees
- 268 Students
  - 64 Graduate
  - 164 Undergraduate
  - 40 High School
- 36 Post Graduate/Doctoral Researchers

FY 2008 Total DOE Funding: $629.8M*

FY 2008 DOE Funding by Source

PALS data (BA in Millions):



FY 2008 Total Non-DOE Funding: $614M

FY 2008 Other Federal Agencies: $452M

FY 2008 Non-Federal: $16.2M

- Does not include FY 2008 EM funding for the Idaho Cleanup Project

Multipurpose Laboratory

- DOE Programs. The Office of Nuclear Energy (NE) is the Lead Program Secretarial Office with line management responsibility to ensure that INL operations protect employees, the public, and the environment. Numerous other DOE programs sponsor work conducted at the INL through the Work for Others Program; including the National Nuclear Security Administration (NNSA), the Office of Energy Efficiency and Renewable Energy (EERE), the Office of Science (SC), the Office of Electricity Delivery and Energy Reliability (OE), the Office of Fossil Energy (FE), the Office of Environmental Management, and the Office of Heath, Safety and Security (HSS).

- External Programs. Non-DOE organizations sponsoring work conducted at INL include the Department of Defense (DOD), the Department of Homeland Security (DHS), and other national security entities.

Core Competencies

As described above, INL is a DOE multi-program national laboratory. With 3,800 scientists, researchers and support staff, the laboratory works with domestic and foreign universities, industry partners, and government agencies to discover new science and develop technologies that underpin the Nation's nuclear and renewable energy, national security and environmental missions. Its core competencies, highlighted below, reflect more than half a century of nuclear energy development and decades of experience in basic and applied science research and applied engineering at the Idaho Site.

- **Nuclear Reactor Design, Demonstration and Safety:** Over its 58-year history, the Idaho Site established and maintained broad capabilities in nuclear reactor design, construction, operation and safety. This institutional knowledgebase is perhaps the Site's greatest attribute, and it has been harnessed to position the INL to become internationally recognized as an innovator in nuclear energy and the Nation's leading laboratory for nuclear energy research and applications.

- **National and Homeland Security:** INL leverages its signature capabilities in wireless and communication systems, process control and cyber security, Unmanned Aerial Vehicle platforms and sensors, and explosives testing and detection along with its complex, secure and remote facilities to provide comprehensive critical infrastructure testing and technology development to government agencies and industrial partners. INL legacy and expertise in nuclear research and development allows it to play a vital role in securing the nuclear fuel cycle and preventing the proliferation of weapons of mass destruction.

- **Research, Development and Demonstration:** INL has an experienced engineering and technical work force to develop, model, test, demonstrate and validate a variety of engineered systems and processes to solve specific DOE- and industry-related environmental and energy-efficiency challenges involved with, among other areas, fossil energy and hydrogen production and use, including materials science, plasma technologies, biotechnology and alternate fuel transportation systems.

- **Basic and Applied Science Research:** The scientific reputation and credentials of INL researchers play a key role in accomplishing research activities, including earth sciences and environmental engineering, biotechnology, physical systems modeling, systems engineering, intelligent automation and remote systems, applied engineering, materials processing, chemical

separations and processing, sensing and diagnostics; and, supercomputing research in neutron capture therapy, surface ionization mass spectrometry and fusion safety.

Major Laboratory Facilities

To support its missions, INL manages and operates three main engineering and research complexes.

- Advanced Test Reactor Complex (ATRC). The ATRC is the site of the Advanced Test Reactor (ATR), a 250-megawatt test reactor used to provide irradiation services for a range of users. The ATR is the largest and most versatile test reactor in the world. Its mission is to provide irradiation and testing services to the Office of Naval Reactors; NE's Generation IV Nuclear Energy Systems Initiative (Gen IV) and Advanced Fuel Cycle Initiative (AFCI); and the recently established ATR National Scientific User Facility (NSUF). The ATR also provides irradiation and testing services to other national and international nuclear energy research groups and medical and industrial isotope producers on a cost reimbursable basis.

- Materials and Fuels Complex (MFC). The 11 nuclear facilities at the MFC support advanced nuclear energy technology research and development, including post-irradiation examination and testing. The facilities, personnel, and infrastructure at the MFC support several important DOE nuclear energy, defense, and environmental management programs.

- Research and Education Complex (REC). Located in Idaho Falls, Idaho, the REC includes more than 30 DOE-owned and leased buildings that include extensive laboratory facilities, the Center for Advanced Energy Studies (CAES), and office space for laboratory researchers and support staff. CAES serves to advance energy security for the Nation by expanding the educational opportunities at the Idaho universities in energy-related areas, creating new capabilities within its member institutions and delivering technological innovations leading to economic development for the intermountain region.

Science and Technology Challenges

Over the next five years, several activities are planned to address challenges associated with national and global imperatives to research, develop, demonstrate, and deploy technologies that strengthen energy security. A key challenge is for INL to help pave the way to expand and diversify the use of nuclear energy by helping develop a nuclear fuel cycle that successfully addresses nuclear waste, non-proliferation objectives, and development of technology to produce high-temperature process heat and hydrogen relevant to America's industrial and transportation needs.

- **Nuclear Energy** – Nuclear energy holds enormous potential for the future and could benefit the Nation and the world with safe, secure, environmentally responsible, and affordable energy. INL will partner with other DOE national laboratories and programs, industry, universities, and the international community to provide technical and programmatic leadership by integrating key research and development to support the renaissance of nuclear power.

- **National and Homeland Security** – INL leverages its scientific expertise, engineering discipline, and unique infrastructure to provide customers with science and engineering technologies, solutions, and research and development support. The Laboratory's work seeks to identify and defeat threats to the nation's critical infrastructures and reduce the risks of illicit proliferation of nuclear materials and technologies.

- **Energy Security Portfolio** – INL will address the nation's energy production need with technology for the efficient use and transportation of fossil fuels and for renewable energy sources such as geothermal, biomass, and hydropower. In addition, INL will develop comprehensive understanding of, and provide direction on, the technical, economic, and environmental benefits of integrating nuclear energy with conventional and unconventional fossil fuel energy conversion platforms.

- **Science and Engineering Capabilities** – Science and engineering must be strengthened to support INL's nuclear energy and national and homeland security leadership, and DOE's energy security portfolio. This will be accomplished by establishing laboratory-wide distinctive scientific signatures; revitalizing U.S. nuclear science and engineering education and training; and creating resource networks among industry, academia, and national laboratories to bring INL the talent and resources needed for major projects and scientific advances. These will support crosscutting needs of INL's mission areas.

Leadership Challenges

- Revitalizing INL Facilities. Increased nuclear energy R&D initiatives at INL will directly impact NE's Idaho Nuclear Infrastructure program as well as overall infrastructure costs and long-term liabilities. R&D requirements resulting from new mission initiatives will require recapitalization and revitalization of INL facilities and assets.

- Safeguards and Security. DOE annually reviews the Graded Security Protection (GSP) policy and other safeguards and security requirements to ensure continued effective security for high value material assets (e.g., special nuclear materials) based on updated intelligence information and threat assessments. These reviews could result in significant changes in security requirements at INL. This could adversely affect INL's efforts to improve user access to the laboratory in support of the ATR NSUF and the overall laboratory missions.

- Science and Technology Workforce. Retaining a highly-skilled workforce and developing new talent is critical to achieving the laboratory's mission. Over the past two years, the hiring of scientists and engineers has just kept pace with attrition; in addition, 19 percent of existing scientists and engineers are over 55 years of age. To mitigate the impact of attrition (including retirees), further enhancement of existing employee programs and new concepts will contribute to making the INL an employer of choice. INL is also developing a mentoring program that not only transfers knowledge-based expertise from one generation to the next, but also improves retention of new INL scientists and engineers.

Recent Accomplishments

- Designated the Advanced Test Reactor as a National Scientific User Facility, 2007

- Completed construction of the facility housing the Center for Advanced Energy Studies, opening in October 2008

- Opened the High Performance Computing Center with enhanced computer modeling, simulation, and visualization capability, 2008

- Developed plug and play technology that allows "off the shelf" commercial robots to function as first responders to chemical, radiological and explosive threats, 2008

Awards

- Nine INL researchers honored with R&D 100 award, 2008

- Technical Excellence Award at the Information Management Conference to INL staff for innovative risk-based cyber security program, 2008

Office of Electricity Delivery and Energy Reliabiity

Office of Electricity Delivery and Energy Reliability

Organization Information

Organization Name:
Office of Electricity Delivery and Energy Reliability (OE)

Address:
1000 Independence Avenue, SW, Washington, DC 20585

Organization Phone Number:
202-586-1411

Organization Website:
http://www.oe.energy.gov/

POC E-mail Address:
patricia.hoffman@hq.doe.gov

Supporting the DOE Mission

Unlike other organizations within the Department, OE addresses the interdependencies in the energy infrastructure, bringing together three very different but critical aspects to create a comprehensive and integrated approach to accomplishing DOE's mission in this area. Research, policy, and emergency response make up the three prongs that support the following three DOE Strategic Themes:

Strategic Theme #1 - Energy Security
Strategic Goal 1.3 - Energy Infrastructure

Strategic Theme #3 - Scientific Discovery & Innovation

Strategic Theme #5 - Management Excellence

As the primary focal point for issues relating to energy infrastructure, OE performs the following key activities that are aligned to achieve the goals and objectives of the Department:

- Develop and demonstrate technology, in partnership with industry, government, and the public, to meet America's needs for a reliable, efficient and resilient electric power grid;
- Work with federal, regional, State, and local governments and industry to support national critical infrastructure protection through the Energy Sector Specific Plan (ESSP) in accordance with the Department of Homeland Security's National Infrastructure Protection Plan (NIPP). The NIPP is the framework in which to unify and enhance

critical infrastructure and key resources protection efforts through partnerships involving the private sector, as well as Federal, State, local, and tribal governments.

- Conduct energy emergency operations during a declared emergency or national security event in accordance with the National Response Framework, which presents the guiding principles that enable all response partners to prepare for, and provide, a unified national response to disasters and emergencies;
- Develop objective policies and analyses that can be used by States and regions in developing electricity policies;
- Analyze transmission congestion and determine if congestion merits proposing National Interest Electric Transmission Corridors (NIETC) or geographic areas that are considered necessary to designate as a NIETC to alleviate electric transmission congestion;
- Coordinate Federal agency reviews of applications to site transmission facilities, and issues permits for cross-border transmission and authorizes exports of electricity; and
- Apply and integrate business, human capital and resource management approaches through best practices.

Mission Statement

Lead national efforts to modernize the electric grid; enhance security and reliability of the energy infrastructure; and mitigate the impact of, and facilitate recovery from, disruptions to the energy supply. The implementation of OE's mission is achieved through the following four branches of the organization.

Research and Development Division
The mission is to advance technology, in partnership with industry, government, and the public, to meet America's needs for a reliable, efficient and resilient electric power grid. The Division helps lead efforts to develop technologies that can improve the reliability, energy efficiency, system efficiency, and security of the Nation's electricity delivery system. The key R&D program areas include High Temperature Superconductivity, Visualization and Controls, Renewable and Distributed Systems Integration, and Energy Storage.

Infrastructure Security and Energy Restoration Division
The mission is to lead national efforts to enhance energy infrastructure security and reliability. The Division leads the Department's infrastructure and preparedness planning, analysis, and operational efforts, as well as develops strategies, policies and plans to successfully execute energy sector responsibilities.

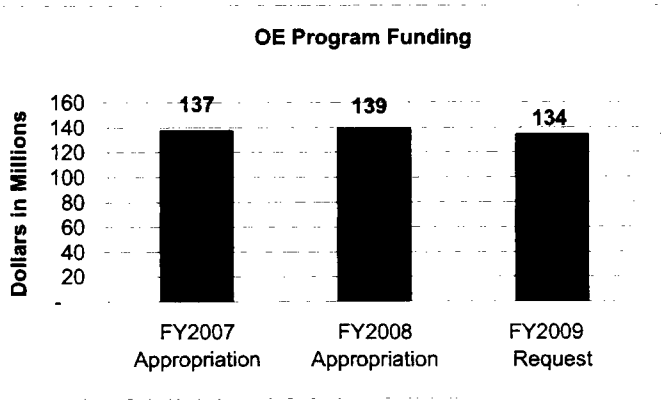
Permitting, Siting and Analysis Division
The mission is to modernize the electricity grid and enhance the reliability of the energy infrastructure by contributing to the development and implementation of electricity policy at the Federal and State levels. The division supports the Assistant Secretary in his/her role as the Department's electricity policy advisor to the Secretary; provides objective policy assistance and analysis to States and regions on State electricity policies; analyzes transmission congestion,

proposes National Interest Electric Transmission Corridors for the Secretary's consideration, coordinates Federal agency reviews of applications to site transmission facilities, and issues permits for cross-border transmission and authorizes exports of electricity.

Resource Management Division
The mission of this Division is to support the OE organization in implementing proven best business practices by institutionalizing an integrated business management, human capital and resource management approach and strategy to advance DOE's and OE's continuous business process improvement.

Status

Budget: FY 2009 Congressional Request $134,000,000



People:

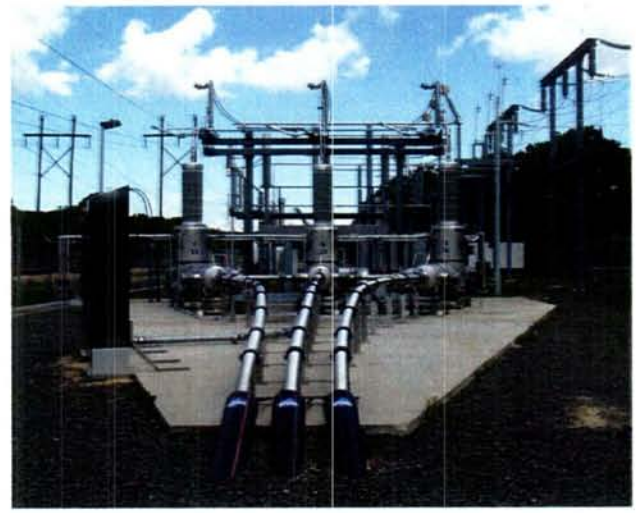
Staff (as of 9/30/08):
Estimated no. of Federal FTEs: 84
Estimated no. of contractor FTEs: 315
Estimated no. of Headquarter FTEs: 70
Estimated no. of Field Site FTEs: 14

Facilities: OE does not have landlord responsibilities for a DOE national laboratory or facility. Because of the unique analytical and technical capabilities of DOE's national labs and facilities, OE utilizes the following nine facilities to help meet its mission and goals.

Argonne National Laboratory (Illinois)
Idaho National Laboratory (Idaho)
Lawrence Berkeley National Laboratory (California)
Los Alamos National Laboratory (New Mexico)
National Energy Technology Laboratory (West Virginia)
National Renewable Energy Laboratory (Colorado)
Oak Ridge National Laboratory (Tennessee)

Pacific Northwest National Lab (Washington)
Sandia National Laboratory (New Mexico)

History



The first demonstration of an HTS transmission line in a live grid, Holbrook Substation, Long Island, NY

In March 2003, the Department created two offices to provide focus in several critical areas: the Office of Electric Transmission and Distribution (TD), to serve as the central electricity policy focus at the Department and to advance the technologies needed to ensure a reliable, robust and modern U.S. electricity grid, and the Office of Energy Assurance (EA), which coordinated Federal response activities within the energy sector during energy disruptions and developed strategies to harden infrastructure against such disruptions. In 2005, both offices, along with elements of the DOE Fossil Energy office, were merged into the new Office of Electricity Delivery and Energy Reliability (OE). The strength of this organization lies with its ability to bring together technology, policy and operations to ensure the security, reliability and resiliency of our Nation's energy infrastructure under any circumstance. For example, we lead the country in assessing transmission needs, aiding regional transmission planning, designating national transmission corridors where appropriate, conducting environmental impact studies and assisting States and locales in modernizing their energy infrastructure, all of which help stimulate R&D solutions and have key components that intersect with our infrastructure security energy restoration mitigation efforts.

In 2007, OE was elevated in stature to the position of Assistant Secretary of Electricity Delivery and Energy Reliability to match the importance of the electricity portfolio within the DOE mission. Since the inception of OE, the organization has stimulated investment in electric and energy infrastructure, advanced the state of scientific development in supply and demand side electric technologies, identified barriers to continued reliable electric service, deepened consideration of security and resiliency measures in infrastructure planning, assisted many States and regions in changes to their own electricity policies, and expanded partnerships with State and private sector stakeholders. We have played and will continue to play a major role in addressing immediate challenges to America's energy security and electricity policy while sustaining applied research into new technologies and policies to answer the challenges we face in the future.

Critical Operating Procedures

In addition to performing research that promotes state of the art technology development and demonstration, OE, unlike other DOE programs, is unique in the sense that it has core

operational responsibility to monitor and respond to energy emergencies such as hurricanes and floods. OE's Mission-critical work is addressed daily by each of its four divisions.

Operating procedures consist of Presidential and DOE Directives, supplemented by OE's standard business operating procedures. In addition, the R&D Division has developed and adopted a management and analysis process that begins with planning and continues through implementation and evaluation. The analysis and evaluation results are fed back to planning and implementation to ensure continuous improvements and proper alignment between R&D priorities and industry needs. Portfolio adjustments, including implementation of risk mitigation measures, termination of unproductive R&D pathways, and development of new R&D projects and initiatives, are crucial to better and effective management and leadership. Several of the functions of the PSA Division are mandated under the Federal Power Act and the Public Utility Regulatory Policies Act.

Recent Organizational Accomplishments and Strengths

The strength of OE is founded on the synergies of the four branches of the Organization. Building on the synergy and through collaborative efforts, the OE organization has made tremendous strides in meeting its mission.

Impact of Hurricane Katrina

Recent significant accomplishments include but are not limited to:

- Development of key visualization tools for grid operators and emergency responders;
- Influence of grid-related investment decisions through issuance of the *2006 National Electric Transmission Congestion Study* and subsequent Secretarial designation of two National Interest Electric Transmission Corridors;
- Current collaboration with Western States to identify high-potential renewable energy zones and associated transmission requirements;
- Facilitation of (with EPA) the National Action Plan for Energy Efficiency in which the utility industry and its State regulators called for aggressive energy efficiency;
- Leading the U.S. portion of the U.S.-Canada investigation of the 2003 electricity blackout and formulation and implementation or tracking of 46 recommendations;
- Supporting the rebuilding New Orleans-area grid with a high temperature superconducting cable;
- Development of an emergency response center with advanced audio, video and telecommunications capability to improve awareness and communication during energy infrastructure emergency operations.

Leadership Expectations

OE leadership is sought on a regular basis to help others meet the Nation's high expectations for innovative electric grid technology, high quality energy infrastructure analysis, and provide timely, accurate information and rapid response during disasters, natural and man made. OE as an organization stands ready to meet these challenges and expectations but will require the continued support of the Department, Administration and Congress to maintain its momentum.

Linemen restoring electric lines after winter storm in Oklahoma

Budgetary constraints remain a challenge. The current level of federal investment has not enabled this organization to achieve its full leadership potential across the federal government and in the public and private sector. With the appropriate level of funding, OE can become a full partner with industry to accelerate research and development, strengthen analytical capabilities and expand energy emergency and response assistance at the State and local levels.

Key Strategies and Timing

Over the next five to ten years, OE will strive to expand its research and development portfolio to enable the deployment of innovative technology to improve the reliability of our Nation's electric grid. For example, OE is implementing a grid monitoring system that could be deployed across North America. OE is also working to ensure that all levels of government, from the Federal to the local level, will be appropriately prepared to respond during energy emergencies. The need to expand and modernize the Nation's electricity delivery infrastructure raises an unprecedented array of institutional and policy challenges. OE is positioned and ready to work collaboratively with the States and industry to lead this transformation, especially in concert with evolving clean energy policies.

Within this timeframe, the OE strategy also includes:

- Ensure appropriate and prompt emergency preparedness.
- Energize R&D in high-capacity superconducting wire and energy storage, provide secure real-time grid monitoring and control systems, and develop advanced information and communication technologies to enable widespread adoption of distributed and renewable resources to create a more reliable and resilient power grid.
- Ongoing support for (and dialogue with) the DOE Electricity Advisory Committee (EAC); the EAC is chartered to provide balanced and expert advice to OE across the full range of OE responsibilities, including electricity policy matters, R&D priorities, and infrastructure planning and security concerns.

Critical Events and Action Items

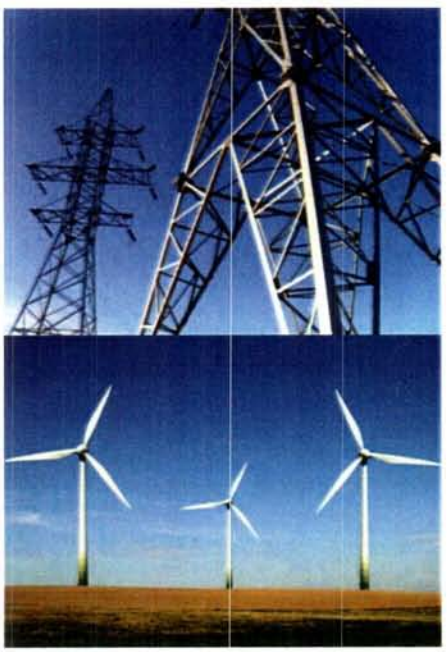
6-month events

January/February 2009
OE will finalize its rulemaking and complete the implementation of section 216(h) to the Federal Power Act. OE will coordinate all applicable Federal authorizations and related environmental reviews required to site an electric transmission facility.

August 2009
OE will release DOE's second triennial congestion study pursuant to section 1221(a) of EPAct 2005. This study will provide critical information for the Secretary of Energy to determine whether to designate additional National Interest Electric Transmission Corridors.

Summer 2009
Based on availability of funding, major solicitations will be announced in the area of energy storage and smart grid technologies.

Winter 2009
Using OE funding, the Western Governors Association will meet key milestones in its process to identify major renewable resources and associated needed transmission. One of the milestones will be to announce the results of the Western Governors Association's voluntary Renewable Energy Zones with a system-wide transmission assessment by 2009 and/or 2010.



Connecting sources of variable generation to the grid will require integrated planning

Hot Issues

Electric Grid Challenges. Across the Nation, government officials and executives from the electricity industry alike face a number of significant near-term and long-term technical and institutional challenges:

- In the short term, after several decades of under-investment, additional transmission capacity is needed in many parts of the U.S. to maintain adequacy and reliability in the face of continued electricity demand growth, enable the interconnection of needed additional generation capacity.
- For the long term, the Nation's electricity supply requirements will continue to grow. Substantial amounts of new generation capacity will be needed, but all of the

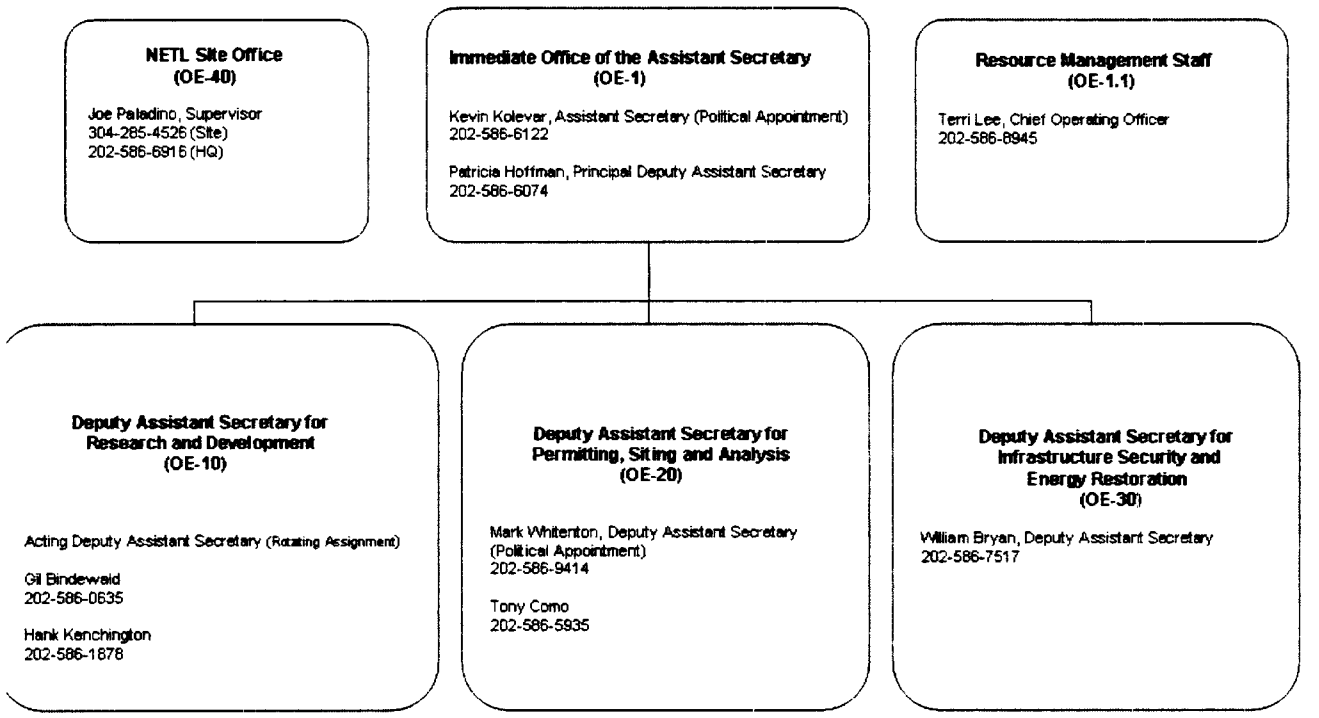
generation options available involve significant uncertainties and economic risks. Further, much of the new generation capacity will be sited distant from urban demand centers (e.g., wind, concentrated solar, nuclear, and clean coal with carbon sequestration). Delivering the output from this clean generation fleet is likely to require new networks of strategically planned and sited Extra-High-Voltage (500 kV and higher) transmission facilities.

- At the distribution level, many technical and institutional challenges must be overcome in order to modernize the distribution system to accommodate possible wide-scale use of various emerging forms of distributed generation, wide-scale use of energy efficiency and demand response to meet electric demand, and deploy the advanced information and communications technologies to develop the Smart Grid.
- To facilitate the timely modernization and expansion of the grid, institutional mechanisms are needed at the interconnection level to develop long-term plans for extra-high-voltage (EHV) transmission networks. These institutions need to be developed and sustained through joint support and participation from Federal and State agencies and industry. The EHV networks should be designed so as to remain robust, relevant, and economically productive across a wide range of potential technological and economic futures.
- Finally, the electric grid is also becoming increasingly vulnerable to cyber attacks against its vital control systems. In FY 2009, OE plans to continue to partner with industry to develop a comprehensive and national effort to implement the *Roadmap to Secure Control Systems in the Energy Sector*. Key activities include development of advanced technologies, cyber security assessment of control systems, development of an integrated risk management capability, tools and models to evaluate the cyber and physical effects of cyber attacks on the energy infrastructure and models to evaluate consequences.

Energy Emergency Cooperation. In addition to securing our national energy infrastructure, OE is sharing knowledge and technical expertise to educate our international partners on energy infrastructure security.

Current Organizational Chart

Office of Electricity Delivery and Energy Reliability



Office of Environmental Management

Office of Environmental Management

Organization Information

Organization Name:

Office of Environmental Management

Address:

1000 Independence Avenue, SW, Washington, DC 20585

Organization Phone Number:

202-586-7709

Organization Website:

http://www.em.doe.gov

POC E-mail Address:

Philip Ammirato, Management Analyst
Philip.Ammirato@hq.doe.gov

Supporting the DOE Mission

The U.S. Department of Energy (DOE) issued its Strategic Plan document in 2006. The Strategic Plan laid out five Strategic Themes to accomplish DOE's mission. The mission of the Office of Environmental Management (EM) is directly tied to Strategic Theme 4 – Environmental Responsibility: Protecting the Environment – by providing a responsible resolution to the environmental legacy of nuclear weapons production. In addition, EM is charged with DOE's Strategic Goal 4.1 – Environmental Cleanup: Complete cleanup of nuclear weapons manufacturing and testing sites across the United States by completing cleanup of 100 contaminated sites by 2025.

The programs funded under EM's Defense Environmental Cleanup, the Non-Defense Environmental Cleanup, and the Uranium Enrichment Decontaminating and Decommissioning (D&D) Fund have one Program Goal that contributes to Strategic Goal 4.1. Under Program Goal 4.1.53.00, EM is targeting 95 geographic sites to be completed by the end of FY 2020.

Key Activities:

- Stabilizing radioactive tank waste in preparation for treatment (approximately 32 percent of the FY 2009 request);
- Storing, stabilizing, and safeguarding nuclear materials and spent nuclear fuel (approximately 18 percent of the FY 2009 request);
- Disposing of transuranic, low-level, and other solid wastes (approximately 14 percent of the FY 2009 request);
- Remediating major areas of EM sites, D&D of excess facilities (approximately 26 percent of the FY 2009 request); and

- Mission activity support, including costs for program oversight provided by Federal personnel and technology development (approximately 10 percent of the FY 2009 request).

Mission Statement

EM's mission is to complete the safe cleanup of the environmental legacy brought about from five decades of nuclear weapons development, production, and Government-sponsored nuclear energy research. In order to execute its mission, EM has ranked, in priority order, its activities based on environment, safety, and health risk. Safety remains the utmost priority. EM is committed to its safety principles and will continue to maintain and demand the highest safety performance to protect the workers and the communities where EM operates.

Status

FY 2009 Congressional Budget Request: $5.528 billion

Staff (as of 10/11/08):

- Estimated number of Federal Full Time Equivalent (FTE): 1,535
- Estimated number of contractor FTEs: 30,000
- Estimated number of Headquarters (HQ) FTEs: 519
- Estimated number of Field site FTEs (Federal employees only): 1,016

Facilities/Sites Closure Dates

Consistent with EM's baseline review and approval process, EM's life-cycle cost estimates reflect a range of site completion dates. This range is illustrated in Figure 1, below. In some instances, a current single point schedule estimate has been established and approved; these dates are subject to formal change control. Note that dates are based on fiscal years to conform to the budget cycle.

Figure 1. Sites/Facilities Closures or EM Mission Completion

Site	Currently Approved Completion Date
Inhalation Toxicology Laboratory, NM	2008
Miamisburg Environmental Management Project, OH	2008
Lawrence Livermore National Laboratory- Site 300, CA	2008
Pantex Plant, TX	2008
Sandia National Laboratories, NM	2009
Argonne National Laboratory- East, IL	2009
Stanford Linear Accelerator Center, CA*	2010
General Electric Vallecitos Nuclear Center, CA*	2012
West Valley Demonstration Project, NY	2012
Separations Process Research Unit, NY	2013 - 2014
Los Alamos National Laboratory, NM	2015
Energy Technology Engineering Center, CA	2018 - 2023
Brookhaven National Laboratory, NY	2018 - 2020
Oak Ridge Reservation, TN	2021 - 2022
Nevada Test Site Projects, NV	2027 - 2038
Moab, UT	2027 - 2028
Savannah River Site, SC	2038 - 2040
Idaho National Laboratory, ID	2035 - 2044
Waste Isolation Pilot Plant, NM	2035 - 2039
Paducah Gaseous Diffusion Plant, KY	2040
Portsmouth Gaseous Diffusion Plant, OH	2044 - 2052
Hanford Site, WA	2050 - 2062

* Project baselines for these sites have not been approved by DOE

Performance:

The Program Assessment Rating Tool (PART): For the FY 2005 budget, EM was evaluated by the Office of Management and Budget (OMB) and received an improved PART score of 61 (adequate). EM was not required to do a PART evaluation for the FY 2006 through FY 2009 budgets. However, EM continues to update existing PART information, which can be viewed on the OMB website, allowing for rapid reporting of progress on EM activities toward meetings its mission goals while performing work safely. In FY 2008, EM aligned the PART database to be consistent with Joule, an internal DOE database used by the Office of the Chief Financial Officer (CFO) to report Departmental performance to Congress and the public.

History

In 1942, the U.S. Government launched an effort to develop the first atomic bombs, which came to be known as the Manhattan Project. Conducted in secret, the Manhattan Project eventually employed more than 130,000 people at research and production sites located across the United States. These sites included the Los Alamos research site in New Mexico as well as production facilities in Hanford, Washington and Oak Ridge, Tennessee.

During the Cold War, the U.S. expanded nuclear weapons research and production, building sites such as the Savannah River Plant in South Carolina, the Idaho National Laboratory in Idaho, and the Rocky Flats Plant in Colorado. The U.S. nuclear stockpile reached more than 30,000 nuclear weapons. Research and production of weapons resulted in large volumes of nuclear waste and other materials that posed unique radiation hazards, unprecedented volumes of contaminated water and soil, and a vast number of contaminated structures ranging from reactors to chemical plants for extracting nuclear materials to evaporation ponds. At that time, the United States did not have the environmental protection expertise, processes, or regulations that exist today. Therefore, large amounts of nuclear waste were generated, stored, and disposed in ways that we now consider to be unacceptable, such as in single-shell underground tanks.

In 1989, in order to address the cleanup of nuclear waste across the Nation's weapons complex, DOE created the Office of Environmental Restoration and Waste Management, which later was renamed the Office of Environmental Management. Prior to1989, separate offices within DOE had responsibility for nuclear and non-nuclear-related cleanup at all sites and facilities and it was difficult to coordinate and prioritize these activities without central management. By establishing the EM Program, DOE centralized its cleanup responsibilities and demonstrated its commitment to environmental cleanup.

Today, EM operates the world's largest nuclear cleanup program. This effort has involved two million acres of land located in 35 states and employs more than 30,000 Federal and contractor employees, including scientists, engineers, and hazardous waste technicians. EM's annual budget is greater than $5 billion.

EM's top priority is the safety of its workforce. EM ensures that its workers have the experience, expertise, and training necessary to perform each of their tasks safely. EM believes that its workers deserve to go home each day as healthy as they were when they arrived at work.

EM's ultimate goal is to reduce risks to the public and the environment posed by nuclear waste and materials, soil and groundwater contamination, and aging nuclear weapons research and production facilities.

Critical Operating Procedures

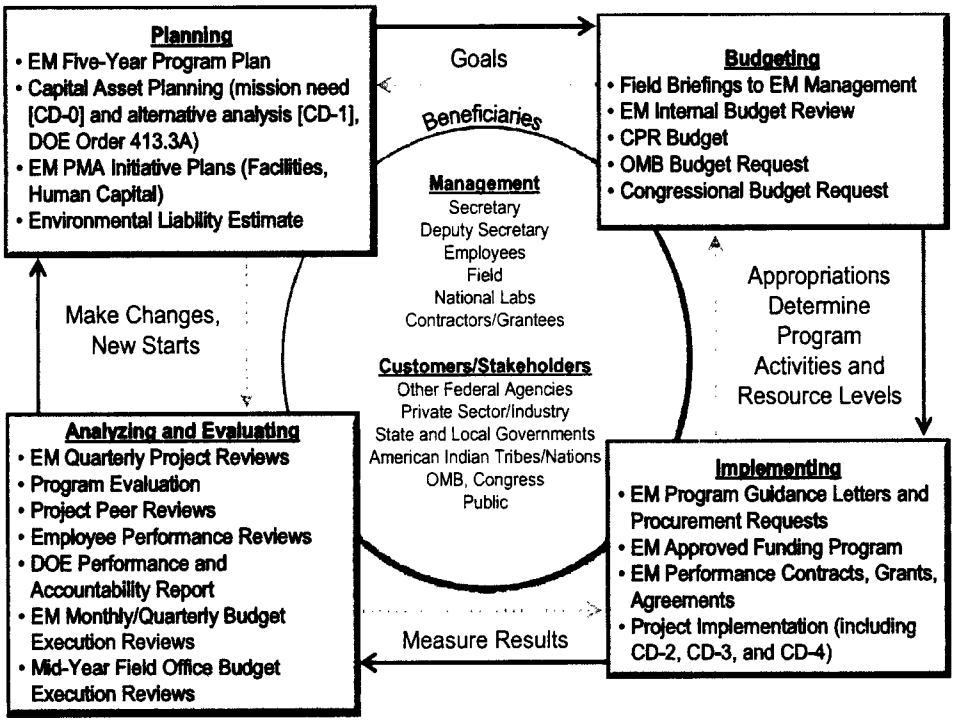
EM strives to continually improve its management system. Improvement efforts have been guided by recommendations from a comprehensive review of the EM Program by the National Academy of Public Administration (NAPA); studies by the Government Accountability Office (GAO) and DOE'S Office of Inspector General (IG); recommendations from the EM Advisory Board; and proposals from a number of EM Working Groups. The reviews and studies have

provided EM with insight into critical areas of program activity, and support EM's plans and courses of action leading to better service to stakeholders and the Nation.

EM's senior management understands that achieving its vision and implementing all of the desired management improvement efforts requires an organized, systematic approach. Such an approach ensures a synergistic, long-term, and continuing series of successful outcomes that further establish EM as a leader in organizational excellence. Accordingly, EM has developed and implemented the Environmental Management Program Management Overview that provides a framework for clarifying roles and responsibilities, as well as more integrated operations to further establish a solid baseline for workforce planning.

The EM Program Management Overview describes the EM program management structure; identifies HQ and Field relationships including specific program and project management roles and responsibilities; describes the EM Management System (EMMS); and lays out the general sequence of planning, budgeting, program implementation, and evaluation activities in the program management cycle (refer to Figure 2, below). The Overview also provides a program management summary for EM stakeholders within and outside DOE. In addition, the Overview serves as a companion document and ready reference to the more detailed EMMS System Description, currently under development. Essentially, the Overview is a "roadmap" that provides a high-level description of the extensive EMMS, and points the reader to other more detailed documents and procedures.

Figure 2. The EM Management System



Recent Organizational Accomplishments and Strengths

Over the past several years EM has made considerable progress in implementing a number of reforms to significantly improve its program and project management sectors. Some of EM's accomplishments include:

- Reformulating the entire EM cleanup scope into discrete projects. Elements of this initiative include:
  - Independent validation of the project baselines including life-cycle costs;
  - Collection and review of cost and schedule performance data for each project baseline;
  - Implementation of a management change control system for key project parameters; and
  - Quarterly progress reviews of every project by senior EM leadership.
- Creating a new acquisition process that is an integrated business system to support major EM acquisitions using standardized and repeatable business processes.
- Revitalizing the human capital systems to build a high performing organization, and implementing an integrated approach to human capital management. This includes taking steps to ensure a well-qualified, competent workforce in light of growing numbers of projected retirements.
- Developing a strategic framework for the Technology Development Program to address the formidable technical uncertainties and challenges still faced by EM in its nuclear waste cleanup efforts.

Leadership Challenges

- Overcoming stakeholder concerns about credibility of EM cost and schedule estimates and level of commitment to cleanup
- Achieving significant progress with constrained funding
- Successfully constructing and operating large, complex, first-of-a-kind facilities
- Maintaining highly skilled staff despite aging workforce
- Providing adequate technology development funding for decades long program
- Continuing to improve project management and acquisition processes
- Transforming EM's resources and liabilities into assets for Energy Independence

Key Strategies and Timing

EM has a strategic vision to deliver both near-term accomplishments and a long-term path to mission completion. The majority of the remaining EM sites contain baselines with completion dates in the out-years, beyond 2013. Through a collaborative process with the Field sites, EM is seeking to define aggressive, but achievable, strategies for accelerating cleanup of distinct and discrete sites or segments of work. Functional and cross-site activities, such as control of specific groundwater contaminants, waste or material processing campaigns, or achievement of an interim or final end state are being evaluated.

All programmatic elements and priorities are being evaluated to enhance EM's funding allocation decisions. Evaluations include understanding and documenting priorities, cost-benefit analyses, program drivers, assumptions, economies of scale, and understanding the full implications of shifts in priorities or program elements.

EM is focusing its activities on identifying and evaluating potential cost savings associated with the management and operation of tank waste and special nuclear material processing capabilities. EM is also analyzing the potential cost savings associated with various "footprint" reduction strategies.

In addition to focusing on near-term completions and the evaluation of alternative program priorities, EM is revisiting life-cycle cost profiles to inform a more optimum allocation of out-year resources at each site. A major component of this effort is the determination of the magnitude of DOE's unfunded liabilities, which is primarily the D&D of hundreds of excess (i.e., surplus) facilities from other DOE mission programs (i.e., NNSA, SC, and NE).

Based on these efforts, EM believes it can deliver three major accomplishments by 2014:
- Complete cleanup in 11 states so that cleanup remains in only seven states;
- Significantly reduce – by up to 70 percent – the contamination footprint; and
- Free up land and resources that can be utilized to meet other energy needs of the Nation.

In addition, from a longer-term perspective, EM is analyzing alternative approaches for two major components of the EM cleanup program:
- Disposition the highly radioactive waste stored in underground tanks; and
- Disposition excess nuclear materials and spent nuclear fuel.

Critical Events and Action Items

3-month events

March 2009
- Recertification of the Waste Isolation Pilot Plant (WIPP)

As directed by Congress in the WIPP Land Withdrawal Act, the recertification process for WIPP occurs every five years following receipt of initial transuranic radioactive waste on March 26, 1999. For each recertification, DOE must submit documentation that verifies the site's continued compliance with Federal disposal regulations to the Environmental Protection Agency (EPA) for technical review and approval. EPA recertification is based on a thorough review of facility information submitted by DOE, independent technical analyses, and public comments. The decision to recertify WIPP is not a reconsideration of the decision to open WIPP; rather, it is an evaluation of changes at WIPP to determine if the facility continues to meet all the requirements of EPA's disposal regulations. The applicable regulations require DOE to demonstrate to the EPA and to the public that WIPP will safely isolate transuranic waste from the human environment for at least 10,000 years. DOE's recertification application is scheduled to be transmitted by the Secretary of Energy to the EPA by March 26, 2009

March 2009
- Issue Environmental Assessment (EA) on Disposition of Depleted Uranium Conversion Product

DOE has completed constructing a new facility at the Portsmouth Gaseous Diffusion Plant to convert depleted uranium into a product suitable for disposal. A second similar facility is nearing completion at the Paducah Gaseous Diffusion Plant. The EA is needed to inform a decision concerning where the converted material will be disposed. Issuance of the EA and a decision on disposition of the conversion products will be needed to support startup of the Portsmouth facility in early 2009.

March-June 2009

- Final Supplemental Environmental Impact Statement (EIS) for the Surplus Plutonium Disposition

EM is expecting approval of the EIS in February 2009, with a ROD expected between March-June 2009. The EM Program has identified a preferred alternative for disposing of surplus plutonium by disposing it in a Mixed Oxide Fuel Fabrication Facility and H-Canyon at the Savannah River Site. The ROD would make a formal decision whether to pursue the preferred alternative. This decision has financial, technical, regulatory, policy, and non-proliferation implications for the DOE, as well as for NNSA.

12-Month Critical Events and Action Items

October 2009

- Savannah River's F-Tank Farm Waste Determination

Closure of high-level waste tanks in the F-Tank Farm at Savannah River is being performed under the provisions of Section 3116 of the Ronald Reagan National Defense Authorization Act of 2005. The final action authorizing closure is approval by the Secretary of a waste determination demonstrating, among other things, that the tanks will satisfy the containment and protection requirements of 10 CFR 61.40 through 61.44. Under the current schedule, the request to the Secretary for approval of waste determination will be submitted in the fall of 2009.

Hot Issues

Funding Issues and Impacts on EM

EM has planned its program based on assumed out-year funding targets of approximately $6 billion. With these funding targets, EM developed detailed baseline estimates of the cost, scope, and schedule of its cleanup activities. Because these baselines resulted in deferral of work scope that was tied to compliance requirements and milestones, the Department proactively has been re-negotiating compliance milestones with State and Federal regulators. In taking these actions, DOE established a credible and realistic path forward within the constraints of the assumed annual budget targets of about $6 billion.

If the annual budget targets were to drop below the $6 billion profile, DOE would be compelled to initiate a comprehensive re-baselining and a further renegotiation of compliance milestones. The reduced budgets would also prevent the acceptance of new cleanup scope into the program

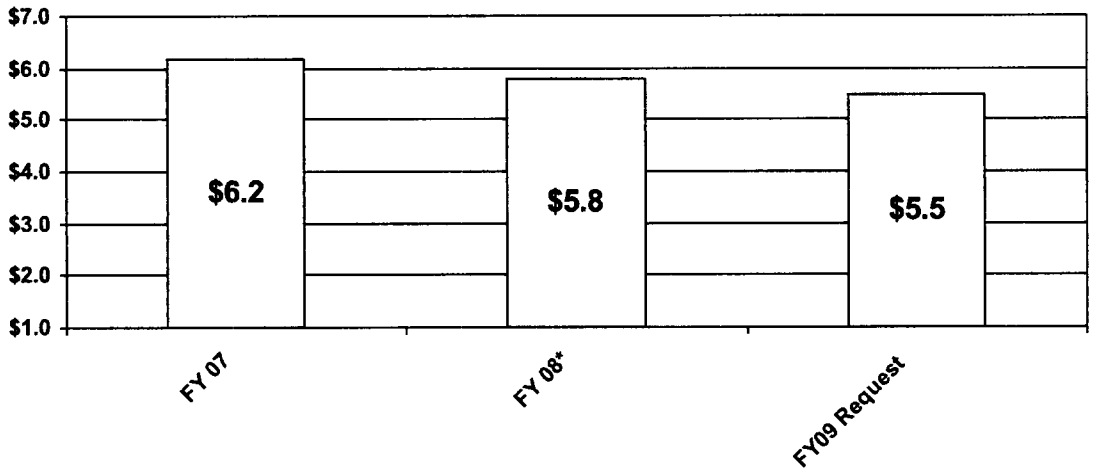
without re-prioritizing existing cleanup activities. Furthermore, cleanup activities would be deferred and life-cycle costs would increase.

Transfer of Excess Facilities

DOE has hundreds of excess contaminated facilities, materials, and radioactive wastes requiring cleanup. The Program Secretarial Offices (PSO) currently are responsible for management and maintenance of these excess facilities and materials and will require funding to support cleanup.

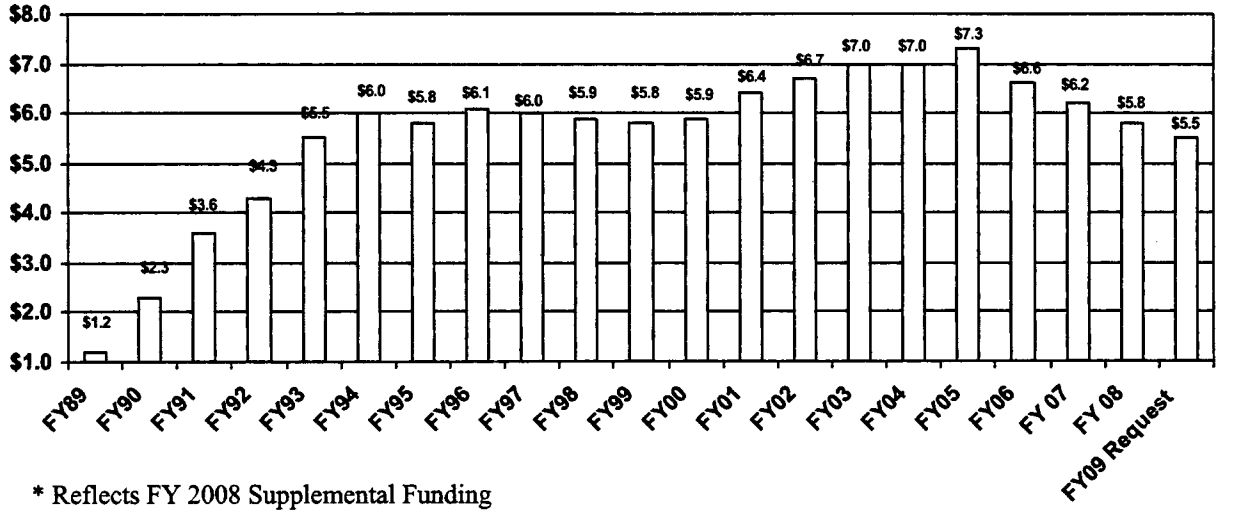
Funding Profile

Figure 3. EM FY 2009 Congressional Request



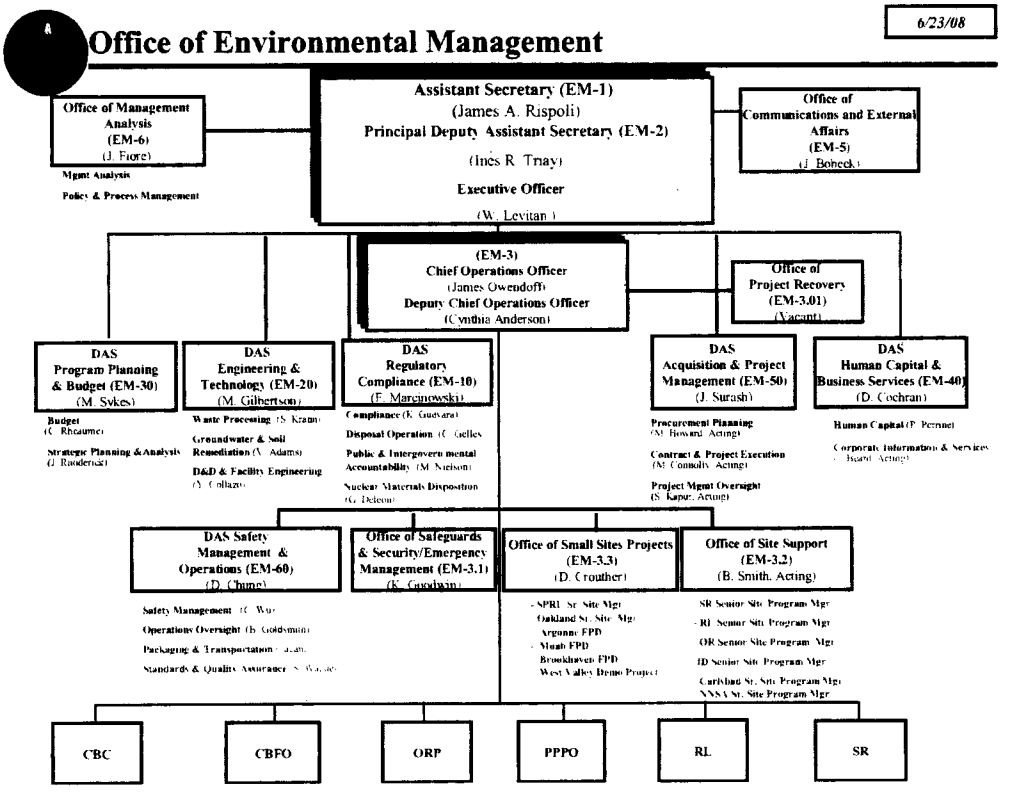
* Reflects FY 2008 Supplemental funding; EM was originally appropriated $5.7 billion.

Figure 4. EM Budget History (billions of dollars)*



* Reflects FY 2008 Supplemental Funding

Current Organizational Chart



SRNL
SAVANNAH RIVER NATIONAL LABORATORY

Mission Statement

The Savannah River National Laboratory's (SRNL) mission as a Department of Energy (DOE) multi-program applied science laboratory and Office of Environmental Management (EM) Corporate Laboratory is to address the challenges of cleaning up the environmental legacy from the Nation's weapons program and providing key support to help meet national and homeland security and energy security objectives. SRNL's three-fold mission is to utilize its technical expertise to provide vital national and regional support in achieving the broader goals of DOE and the federal government in a safe manner; to provide technical leadership for future site missions; and to enable the success of Savannah River Site (SRS) operations. To support these missions, SRNL provides applied technology through multidisciplinary programs of scientific research and applied engineering directed toward applications for new and improved techniques, materials science, specialized equipment and systems, and capabilities to exceed our customers' expectations. DOE's vision is for SRNL to be the Nation's premier applied science laboratory in environmental management, national and homeland security, and energy security by delivering world-class innovative performance in national defense and homeland security technologies, hydrogen technology and cleanup.

History

SRNL was established in 1951 to perform research and development on nuclear materials production technologies for national defense. Its focus soon expanded by adding national defense tritium missions. In the 1980s, the Laboratory expanded its portfolio to include environmental cleanup technologies to support the cleanup of the Savannah River Site. In 2004, the Secretary of Energy designated SRNL as the twelfth national laboratory in the Department. SRNL's mission as a DOE multi-program applied science laboratory and the EM Corporate Laboratory is to address the challenge of cleaning up the environmental legacy from the Nation's weapons program and providing key support to help meet national and homeland security and energy security objectives. SRNL performs work safely and cost effectively, while complying with requirements and meeting needs of SRNL customers. SRNL has achieved the status of the "Department of Energy Safest Laboratory" as reported in the National Laboratory Injury and illness Data for the year 2007, and the period 2004-2007.

Lab-at-a-Glance

Location: Aiken, SC

Type: Multi-Program National Laboratory

Contract Operator: Savannah River Nuclear Solutions

Responsible Site Office: Savannah River Operations Office

Website: http://www.srnl.doe.gov

Physical Assets:

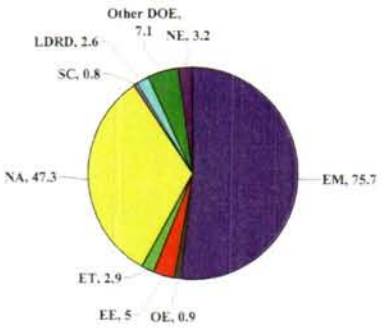
- 34 acres and 36 buildings
- 650,000 GSF in active operational buildings
- 1,000 GSF in non-operational buildings
- Replacement plant value: $1.1B
- Deferred maintenance: $ 34M
- Asset Condition Index
  - Mission Critical: 97%
  - Mission Dependent: Not tracked.
- Asset Utilization Index: 97.7%

Human Capital:

- 952 employees
- 24 students

FY 2008 Total DOE Funding: $145.5M

FY 2008 DOE Funding by Source
(BA in Millions): $145.5M



FY 2008 Total Non-DOE Funding: $26.3M

FY 2008 Breakout of NonDOE Major Funding Organizations:

- Classified $6.7M
- DOD $7.1M
- DTRA $3.9M
- DHS $7.6 M
- DOS $0.1M
- Commercial $0.9M

SRNL
SAVANNAH RIVER NATIONAL LABORATORY

Multi-program Laboratory

SRNL is a DOE multi-program applied science laboratory and EM Corporate Laboratory that addresses the challenges of cleaning up the environmental legacy from the Nation's weapons program and providing key support to help meet national and homeland security and energy security objectives. SRNL provides technical solutions to technical barriers for accelerating cleanup of DOE legacy nuclear weapons production sites and materials and provides technical assistance for resolving challenging environmental cleanup problems. In the next 5 years, as EM's Corporate Laboratory, SRNL will use its applied research technological leadership across the DOE complex for achieving life-cycle cost reductions, improving safety performance, and developing and applying innovative solutions to remediation challenges. For Defense Programs, SRNL works on hydrogen processing and weapons technology development; for nuclear material management, its work involves plutonium surveillance, monitoring, and spent nuclear fuel. In addition, SRNL addresses nuclear nonproliferation, homeland security, nuclear forensics, and defense and space technologies. As a dual-use application, SRNL is adapting its long-standing capabilities in solid state hydrogen storage materials and system development for safe and efficient hydrogen storage systems for use in the automobile industry. In partnership with major automobile manufacturers, SRNL is jointly developing a lighter-weight, cost-effective hydrogen fuel storage system for hydrogen-powered cars. SRNL provides support to EM, EE, NA, NE, OE, SC, ET, LDRD, and other DOE programs within the DOE Complex. It also provides support to DHS, DOD, DOS, DTRA, and classified and commercial customers external to DOE.

Core Competencies

- **Radioactive Chemical Processing** – Radioactive chemical processing in support of the final disposition of legacy nuclear liquid waste.
- **Glass Waste Forms** – Glass waste forms and vitrification process development to provide long term safe storage of highly radioactive legacy wastes.
- **Environmental Remediation** – Application of environmental remediation technologies to ensure the long term clean up and safe legacy management for the future of the DOE weapon sites.
- **Nuclear Material Packaging** – Development and qualification of nuclear material packaging to facilitate safe handling and shipment of nuclear materials.
- **Nuclear Fuel Storage and Handling** – Nuclear fuel storage and handling to support the DOE legacy aluminum clad fuel as well as modern commercial fuel.
- **Tritium** – Tritium production, purification, and storage in support of the safe operation and maintenance of the nuclear weapons stockpile.
- **Hydrogen Storage** – Hydrogen storage technology that has evolved from SRNL's historic tritium experience and now provides essential support for the Nation's energy independence.
- **Nuclear Measurements** – Ultra low level, high sensitivity nuclear measurements for disposition of legacy nuclear material, to detect and deter proliferation of weapons of mass destruction and perform high sensitivity analysis.

SRNL
SAVANNAH RIVER NATIONAL LABORATORY

Major Lab Facilities

High and Intermediate Level Shielded Cells – Special containment facilities that provide the shielding and confinement necessary for the safe examination, analysis and testing of highly radioactive materials.
Ultra Low-Level Underground Counting Facility – The only facility of its kind in the country, this facility is located 50 feet below ground level, and has four-inch thick walls of pre-nuclear weapons era steel. This allows highly sensitive measurements of ultra-low amounts of environmental radioactivity, free from interference by background radiation.
Remote Systems Laboratory – Laboratory for the design, development, fabrication, and testing of unique equipment systems for use in radioactive, hazardous, or inaccessible environments.
Radiochemistry and Analytical Laboratories – Laboratories with contained instruments.
Engineering Development Laboratory – Laboratory for performing innovative tests and demonstrations of equipment and existing/proposed designs.
Glovebox Facilities – Sealed, protectively-lined compartments with attached gloves, allowing workers to safely handle dangerous materials.
High-Pressure Test Facility – Facility with three unique steel-walled cells for high-pressure hydrogen exposure and testing, fatigue testing, and fracture toughness testing of metal specimens.
Metal Hydride Laboratories – Laboratories for research and development on metal hydride absorption and desorption performance.
Primary Standards Laboratory – Facilities that provide calibration services compliant with the requirements of the American national standard for calibration laboratories.
Atmospheric Technologies Center – Facility with extensive capabilities for world-wide meteorological forecasts and real-time atmospheric transport modeling and assessment.
Gamma Irradiation Facility – Facility equipped with devices for irradiating solid and liquid samples, allowing a wide range of tests to determine the effects of radiation on the material. Typically, it is used to determine the life expectancy of components to be used in a radioactive environment or to study materials performance under a variety of conditions.
Law Enforcement Support Center – Southeast Region – Specialized equipment and technical expertise to help local and regional law enforcement agencies gather and analyze evidence.
Waste Treatment Laboratories – Laboratories for research and development using nonradioactive simulants as well as shielded facilities for work with radioactive materials.
Glassblowing and Apparatus Development Laboratory – Laboratory where scientific glass apparatus are designed, fabricated and repaired, including glass models and mockups.
Rapid Fabrication Facility – Facility to produce low-cost prototypes, parts and complete working models.

Science and Technology Challenges

- **EM Corporate Laboratory** – Lead the DOE Complex to reduce technical risk and cost for cleanup operations.
- **Environmental Technologies** – Establish a preeminent Center for Research, Development, and Deployment of Technologies to clean up the environmental legacy of the Nation's nuclear programs.
- **Tritium** – Establish SRNL as the national security support laboratory for tritium weapons components and key technologies.

- **Homeland Security** – Become the acknowledged technological leader in areas reflecting SRNL's world-class competencies and that are critical to the success of homeland security, nonproliferation, and intelligence programs.
- **Energy Security** – Extend SRNL's core competencies in hydrogen, microbial remediation, chemistry, and chemical engineering to make significant contributions to the Nation's energy security.

Leadership Challenges

- **New SRNL Leadership** – As transition to the new Management and Operating contractor for SRS, Savannah River Nuclear Solutions, is now complete, new leadership will create a vision and strategies to provide direction and growth for the national lab.
- **Reinvestment** – Lack of investment in real property facilities in recent years has resulted in a significant increase in deferred maintenance. Reinvestment in SRNL is critical to maintaining its capabilities. This includes plant and facilities, research equipment, and infrastructure.
- **Work Force** – It will be crucial to replace the retiring workforce at a time when the pipeline of graduate level candidates is decreasing while national demand for graduate level candidates is increasing.
- **Cyber Security** – While the advantages of High Tech Computing are evident, maintaining the security posture of the national laboratory is extremely difficult and yet critical to its success.

Recent Accomplishments

- **(2006)EM Corporate Laboratory** — DOE designated SRNL as the DOE Office of Environmental Management's "Corporate Laboratory," recognizing SRNL as a key resource for EM and its programs at sites around the country, and giving the Laboratory a new mandate to provide targeted technical assistance and technology solutions for cleanup efforts at DOE sites. As EM's Corporate Laboratory, SRNL will use its applied research leadership to help DOE sites overcome technical barriers to accelerating cleanup, achieve cost efficiencies, and increase safety.

- **(2005-2008)DWPF Canister Waste Loading** — SRNL developed improvements in DWPF frit and in melter operations that led to an increase of about 40 percent more waste in each DWPF canister, greatly reducing lifecycle costs for operations at SRS.

- **(2007)Tritium Extraction Facility Support** — SRNL developed tritium processing, instrumentation and remote handling technology for the Tritium Extraction Facility (TEF) and provided significant startup support. The TEF startup, which was ahead of schedule and under budget, was the first time that the U.S. has produced tritium for the nuclear stockpile from commercial nuclear power plants.

- **(2006-2008)Nuclear Forensics Lab** — SRNL was selected as the East Coast Nuclear Forensics Lab for the FBI. The Radiological Evidence Analysis Lab Suite was completed, which is the laboratory

and office suite at SRNL for the forensic examination of radiological material and associated evidence. Expansion of the Suite is underway.

(2006-2008)ITER Project — SRNL was selected as a partner laboratory for the U.S. ITER project, part of an international project to demonstrate the feasibility of a full-scale fusion power reactor. SRNL is responsible for the design, fabrication, assembly, testing, and shipping of the Tokamak Exhaust Processing System.

(2006)Center for Hydrogen Research — The grand opening for Aiken County's new Center for Hydrogen Research was held with participation by former Deputy Secretary of Energy Clay Sell, Senator Graham, Governor Sanford, Representative Barrett, members of Aiken County Council, and others. Nonradioactive hydrogen research and development occurs at the new facility.

(2001-2008)Hanford's Office of River Protection — SRNL has conducted numerous projects to design, develop and test processes for treating high-level radioactive tank waste for the Office of River Protection. SRNL co-developed and demonstrated performance of the spherical resourcinol formaldehyde alternative ion-exchange resin, which was accepted for use. This alternative resin is expected to provide life-cycle cost savings in the tens of millions of dollars.

(2001-2008)DWPF Support — Provided technical support to the SRS Defense Waste Processing Facility operations in achieving contract canister production milestones, including process support, equipment development and support, sampling, design and installation of a pour-spout to extend life of the melter, and assistance with melter replacement.

(2004-2006)Monitored Natural Attenuation — Activities were completed for the SRNL-led Monitored Natural Attenuation/Enhanced Attenuation Project. SRNL coordinated the national project for DOE, looking at nature's ability to clean chlorinated solvents from the groundwater, and how to understand that process. Results of this 3-year project are expected to accelerate cleanup for DOE sites that have groundwater plumes contaminated with chlorinated solvents.

(2006)ALPES and ACE — The Aerosol-to-Liquid Particle Extraction System (ALPES) and the Aerosol Contaminant Extractor (ACE), developed by SRNL researchers and issued patents, have wide application in homeland security and law enforcement. Both devices are able to collect most aerosols and have been deployed to search for airborne microbial life and to collect bacteria to determine the presence of Legionella. ALPES received an R&D 100 Award.

(2001-2008)Law Enforcement Training — SRNL provides ongoing training and support for various homeland security and law enforcement agencies, including the FBI, Coast Guard, Customs and Border Patrol, and Immigration and Customs Enforcement.

(2006-2008)Performance Assessments — SRNL completed the E-Area Performance Assessment Revision which was [approved by DOE. A Disposal Authorization Statement was issued] which allows continued low level waste disposal at SRS. The lab also supported the Performance Assessment for F Tank Farm.

- **(2004-2008)Teleoperated Robotic Sampling** — SRNL has provided the Defense Threat Reduction Agency (DTRA) teleoperated robotic sampling vehicles in support of the National Technical Nuclear Forensics program. These vehicles provide a national level asset to collect and sample materials of evidentiary value at post blast scenes involving nuclear materials. In 2008, SRNL was tasked by DTRA to develop rotary winged based platforms to augment the ground sampling vehicles of this program.

- **(2004-2008)Rad Detection Systems for Homeland Security** — SRNL has tested and evaluated numerous radiation detection systems for the protection of U.S. ports and transportation modes. Most recently in 2008, SRNL completed a test of small maritime radiation detection equipment on the onsite L Lake, code named 'Crawdad,' utilizing boat-mounted radiation detectors, for the Department of Homeland Security Domestic Nuclear Detection Office (DNDO).

- **(2001-2008)High Level Waste Tank Sampling and Inspections** — SRNL provided key technical support for the sampling of salt and sludge in High Level Waste Tanks including the development of sample handling tools and analysis protocols. Personnel also developed and completed in-service inspections of the tanks.

- **(2001-2008)Tools to Support High Level Waste** — SRNL has developed a large number of tools for High Level Waste to perform remote retrieval, cutting, sampling, stabilizing tanks, and sparging. These tools are used in radioactive waste tanks, evaporators, cells, diversion boxes, and tank annuluses. These tools provide a means to perform work with reduced worker exposure and in locations that can not be accessed by a worker.

- **(2002-2008)NIJ and Local Law Enforcement Support** — SRNL has provided technical support to the National Institute of Justice through search and rescue efforts, body armor safety improvements, standards for law enforcement equipment, and detailee assignments. Search and recovery support has also been provided to Local Law Enforcement.

- **(2001-2008)Remote Tool Development for Spent Fuel Handling** — SRNL personnel provided key technical expertise and support to the development and fielding of tools designed to handle SRS spent fuel.

- **(2008)High Resolution Gas Mass Spectrometers** — SRNL designed and upgraded electronics for legacy high resolution gas mass spectrometers that provide gas analysis for NNSA production sites mission critical applications. This work has already resulted in over one million dollars in cost savings.

- **(2007)EM Corporate Laboratory Support** — As EM Corporate Lab for the DOE Complex, SRNL assisted in the development of the EM Engineering & Technology Roadmap and led the development of the EM Engineering & Technology Multi-Year Program Plan.

- **(2007)Hydrogen Generation** — SRNL successfully completed a 100-hour long demonstration test of an SRNL designed and fabricated sulfur dioxide depolarized electrolyzer. This electrolyzer is a key component of the Hybrid Sulfur Process for generating hydrogen as part of the proposed

Hydrogen Economy. SRNL leads the Hybrid Sulfur (HyS) hydrogen production process development for DOE's Office of Nuclear Energy.

(2007)Modular Caustic Side Solvent Extraction — SRNL completed key testing and analyses in support of the test program for the Modular Caustic Side Solvent Extraction Unit, which is used to remove cesium from the Savannah River Site's salt waste.

(2006-2007)3013 Program for Pu Storage — SRNL established the small scale corrosion program supporting the DOE complex wide 3013 corrosion program for Plutonium (Pu) storage. Personnel also established capability to perform destructive examination of 3013 container and contents in support of DOE Complex wide 3013 Surveillance Program. Initial required analyses on 22 can sets have been completed.

(2006)Hydrogen Fuel Cells — SRNL teamed with the Center for Hydrogen Research to build and test a prototype system to show how hydrogen fuel cells can be effectively used to provide emergency backup power for hospitals and other critical facilities.

(2006)Tritium Permeation — SRNL designed, built, tested, and implemented a new digital imaging system for measuring tritium permeation into metal components. As compared to the then-existing photo-emulsion technique, the digital method offers faster turnaround time, notable cost savings, and the elimination of chemical processing and the related mixed waste.

Awards

19 R&D 100 Awards
13 World's Best Technologies Showcase Awards
3 Nanotech 50 Awards

Office of Civ. Radioactive Waste Management

Office of Civilian Radioactive Waste Management (OCRWM)

Organization Information

Organization Name:
Office of Civilian Radioactive Waste Management

Address:
Room 5A-085, 1000 Independence Avenue, SW, Washington, DC 20585

Organization Phone Number:
202-586-6850

Organization Website:
http://www.ocrwm.doe.gov

POC E-mail Address:
Alan.Brownstein@rw.doe.gov

Supporting the DOE Mission

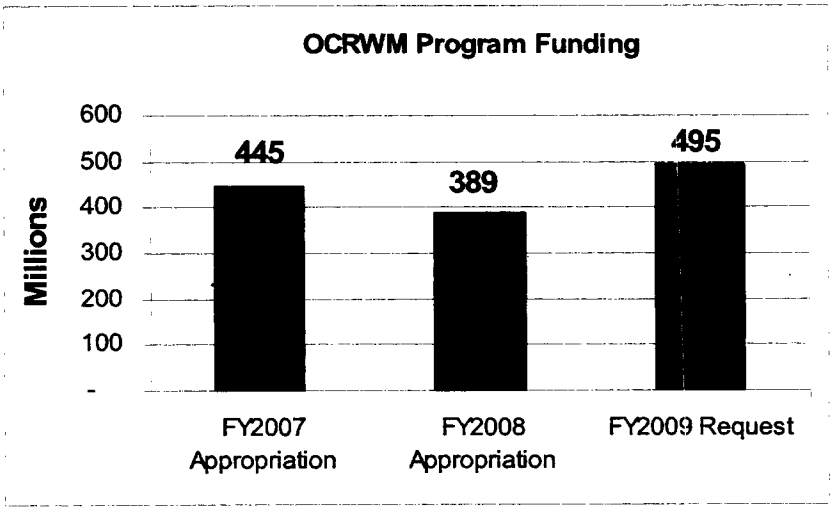
Strategic Theme 4 – Environmental Responsibility
Strategic Goal 4.2 – Managing the Legacy
Key Activity: Implement the Nuclear Waste Policy Act by constructing and operating an NRC licensed repository for the final disposal of spent nuclear fuel and high-level radioactive waste.

Mission Statement

The OCRWM Mission is to manage and dispose of the Nation's military and civilian high-level radioactive waste and spent nuclear fuel in a manner that protects the health and safety of the public without harming the environment.

Status

Budget:



FY 2009 congressional request: $494,742,000

People:

Estimated number of federal FTEs approved:	244
Estimated number of federal FTE's on-board:	203
Estimated number of contractor FTEs:	1487
Estimated number of headquarters FTEs:	65
Estimated number of Yucca Mountain FTEs:	138

Facilities:

OCRWM maintains offices in Washington, DC, and in Las Vegas, NV. OCRWM also has an office in Rockville, MD, that supports licensing activities at the Nuclear Regulatory Commission (NRC) headquarters. OCRWM has developed and maintains an Exploratory Studies Facility which is a 5-mile-long tunnel 1,000 feet below Yucca Mountain. The Yucca Mountain site is on land that is controlled by the federal government in a remote area of the Mojave Desert in Nye County in southern Nevada, approximately 90 miles northwest of Las Vegas, Nevada. The site is located on federal lands administered by the Department of Energy (Nevada Test Site), the U.S. Air Force (Nevada Test and Training Range), and the Bureau of Land Management.

Performance measures:

PART rating: Adequate

FY07 PART measure status : 3 met, 1 unmet

FY07 4th quarter Joule status: 3 Green, 1 Red

History

Geologic disposal has been the cornerstone of U.S. high-level radioactive waste management policy for over 30 years. Geologic disposal is also the focus of waste disposition efforts of all major nations with nuclear power programs and has recently been reaffirmed by independent studies and major policy reviews in the United States, France, the United Kingdom, and Canada.

U.S. commercial nuclear reactors supply approximately 20 percent of the Nation's electricity and discharge approximately 2,000 metric tons of spent nuclear fuel each year. Currently, there is an inventory of approximately 58,000 metric tons of commercial spent nuclear fuel. Commercial spent nuclear fuel and high–level radioactive waste from defense and research activities is stored at 121 temporary locations in 39 states across the Nation.

OCRWM was created by the Nuclear Waste Policy Act of 1982 (NWPA). The NWPA provides for the development of a permanent, safe geologic repository for disposal of spent nuclear fuel and high-level radioactive waste. By 1986, the site selection process outlined in the NWPA had identified three potential repository sites for further site characterization, of which Yucca Mountain was a candidate. Shortly thereafter, in 1987, the NWPA was amended to direct OCRWM to focus its scientific site characterization efforts on only the Yucca Mountain site.

Following 15 more years of site characterization studies, in 2002 the Secretary of Energy concluded that the Yucca Mountain site was scientifically and technically suitable for development as a repository. In accordance with the process defined in the NWPA, the Secretary formally recommended the Yucca Mountain site to the President for development as a repository. The President subsequently recommended the site to the Congress. In 2002, Congress passed and the President signed the Yucca Mountain Development Act, Public Law 107-200, approving the site at Yucca Mountain for development of the Nation's first permanent repository pursuant to the NWPA.

After more than two decades of gathering and analyzing information about Yucca Mountain, on June 3, 2008, the Secretary of Energy submitted a license application to the NRC seeking authorization to construct the repository. The work supporting the application was done by the Nation's top scientists and engineers. The organizations involved in preparation of the application include OCRWM and its contractors, eight DOE national laboratories, the U.S. Geologic Survey, and many colleges and universities.

On September 8, 2008, the NRC accepted for docketing DOE's license application for authority to construct a geologic repository at a geologic repository operations area at Yucca Mountain, NV. The NRC staff will conduct a detailed technical review of the license application. In addition, the NRC will conduct evidentiary hearings on the application before one or more

Atomic Safety and Licensing Boards. If the NRC finds that the license application meets the applicable standards of the Atomic Energy Act of 1954, as amended, the NWPA, and NRC's regulations, then the NRC will issue a construction authorization, in the form and containing such conditions and limitations, if any, as the NRC finds appropriate and necessary. The NWPA provides that the licensing process should be completed within 3 years, with the possibility of a fourth year.

Concurrent with the repository development process, OCRWM is also developing a plan to transport safely and securely spent nuclear fuel and high-level radioactive waste from locations around the Nation to Yucca Mountain. In 2004, OCRWM announced mostly rail as its preferred mode of transport to the repository nationwide and in the State of Nevada. As required by the NWPA, OCRWM will provide technical and financial assistance to States and Indian tribes to train local public safety officials through whose jurisdictions DOE plans to transport spent nuclear fuel or high-level radioactive waste.

Critical operating procedures

The OCRWM program has a structured process for adopting and controlling procedures to provide for standardization of processes and control of work activities. OCRWM management has committed to the following quality assurance documents for developing and using procedures: ANSI/ASME NQA-1-1983 Basic Requirement 5, Instructions, Procedures and Drawings; and DOE Order 414.1C Section 4b (5)(a). The DOE Order requires that OCRWM "Perform work consistent with technical standards, administrative controls, and hazard controls adopted to meet regulatory or contract requirements using approved instructions, procedures, etc." There are two basic types of procedures used in the OCRWM program. Administrative procedures (also known as APs) are used to establish organizational interface controls and processes for activities that will be performed across the entire OCRWM organization. Line procedures (LPs) are used to standardize and control activities that are performed by a single organization within OCRWM.

Recent Organizational Accomplishments and Strengths

In June 2008, OCRWM submitted a license application to the NRC for authorization to construct the repository, and the application was docketed by NRC on September 8, 2008. The over 8,600-page application contains scientific and engineering information that has been compiled, updated, integrated, and analyzed over the course of more than 25 years.

Also in June 2008, OCRWM completed three final National Environmental Policy Act (NEPA) documents. The first document is a supplemental environmental impact statement (EIS) that updates the 2002 Yucca Mountain EIS. This supplement evaluates the potential environmental impacts of constructing and operating the Yucca Mountain repository under the current proposed design and operational plans. The second document, the Nevada Rail Corridor Supplemental EIS, analyzes an additional corridor, the Mina rail corridor, and updates the information and analysis of the rail corridors in the 2002 Yucca Mountain EIS. The third document, the Rail Alignment EIS, analyzes the potential impacts of constructing and operating a rail line along alternative alignments within the rail corridors . All of these NEPA documents were submitted

to the NRC and copies of these documents are available on the OCRWM website, http://www.ocrwm.doe.gov. A Record of Decision addressing the Rail Alignment for the Nevada Rail Line was issued on October 10, 2008, and is also available on the OCRWM website. The Record of Decision announced OCRWM's decision to construct and operate a railroad along a rail alignment within the Caliente corridor, and to allow shipments of general freight on the rail line.

OCRWM has also made significant progress in a number areas that are vital to achieving the long term goal of accepting spent nuclear fuel and high-level nuclear waste at a licensed Yucca Mountain repository:

In May 2008, OCRWM awarded two contracts for the design, licensing, and demonstration of the Transportation, Aging, and Disposal (TAD) canister system, the primary means for packaging spent nuclear fuel for transportation to and disposal in the proposed repository.

In June 2008, OCRWM informed utilities interested in constructing new reactors that DOE is prepared to discuss disposal contracts for the new reactors that are anticipated to be constructed to replace the existing commercial fleet. The NWPA requires that utilities have such a disposal contract with DOE, or be engaged in good faith negotiations with DOE for such a contract, before the NRC may issue a license for a new reactor. Numerous utilities have indicated their desire to enter into contracts with the Department for new nuclear power plants they intend to construct, and execution of such contracts with the utilities is an essential step in the development of new reactors that are needed to meet our Nation's growing demands for electricity. OCRWM has made available to interested utilities the Standard Disposal Contract with a new reactor amendment that is intended to adequately protect the interests of the taxpayer and the contract holder.

During the Summer of 2008, OCRWM submitted two key reports to Congress. The first report is the *Analysis of the Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program, Fiscal Year 2007*. The second report is the *Fiscal Year 2007 Civilian Radioactive Waste Management Fee Adequacy Report*, analyzing the adequacy of the 1 mill per kilowatt/hour fee paid by nuclear power utilities for the permanent disposal of their spent fuel using the new total cost estimate. Copies of these reports are available on the OCRWM website, http://www.ocrwm.doe.gov. OCRWM expects to issue two additional reports in the Fall: the *Second Repository Report*, addressing the need for a second repository, and the *Interim Storage Report*, concerning the interim storage of spent nuclear fuel from decommissioned reactors, as requested in the House Report that accompanied the Consolidated Appropriations Act, 2008.

Concerning organizational development, the Program is transitioning from a science focus to a project execution focus. The organization must be ready to function successfully as an NRC licensee to construct and operate the repository, as well as manage the transport and receipt of spent nuclear fuel and high-level radioactive waste. Internal assessments have identified the need to establish and improve critical business processes, implement human capital management systems to provide a high quality workforce, and implement the organizational structure necessary to achieve optimal productivity and efficiencies during the licensing, construction, and operation phases of the project. OCRWM is currently developing and implementing the

management processes and performance indicators needed to drive continuous improvement, improve individual employee and management job performance, and develop leadership capabilities. Some recent key organizational changes include:

- Increasing the organization size and capabilities in Nevada with several functions and positions eventually shifting to the West from the East;
- Establishing an SES-level Chief Operating Officer in the Office of the Director;
- Having fewer direct reports to the OCRWM Director;
- Establishing a new office of Technical Management encompassing divisions for engineering, science, and regulatory affairs; and
- Establishing an Office of Project Management which includes federal project directors for the repository, Nevada rail, and national transportation as well as project control and procurement divisions.

Leadership challenges

Funding Reform

After receipt of a construction authorization from the NRC, the projected annual budget authority needed through repository construction and full operations is well above current and historic annual funding levels. If the Program continues to be funded at its current levels, the shortfall in the funding needed would be between $1.0 billion and $1.5 billion per year. The current level of funding is insufficient to construct the repository and the transportation systems.

The NWPA established the requirement that the generators of spent nuclear fuel pay for disposal costs. As a result, the Nuclear Waste Fund (NWF) was created and is funded by a one mill per kilowatt-hour fee on all nuclear electricity generated and sold. The NWF has a balance of approximately $21 billion which is invested in U.S. Treasury instruments. The government receives approximately $750 million per year from utilities and the NWF averages about 5.5 percent annual return on its investments (approximately $1 billion). Since 2000, the program has received approximately $1 billion less funding than requested.

Due to technical scoring requirements, the Department cannot receive appropriations from the NWF equal to its annual receipts, interest, or corpus for their intended purpose without a significant recorded negative impact on the federal budget deficit. The monies collected are counted as mandatory receipts in the budgetary process, and spending from the NWF is scored against discretionary funding caps for the appropriations process. Legislation has been proposed that would fix this problem by reclassifying mandatory NWF fees as discretionary, in an amount equal to appropriations from the NWF for authorized waste disposal activities (S 37 and HR 3358). Under this approach, funding for the Program would still have to be requested by the President and appropriated by the Congress from the NWF, but those appropriations would no longer negatively impact the federal budget deficit and the higher levels of funding needed to construct the repository would be possible.

Taxpayer Liability

In 1997, the U. S. Court of Appeals ruled that DOE is liable under the Standard Disposal Contract for damages incurred due to the failure to begin accepting spent nuclear fuel commencing in 1998. Resulting damages are paid to utilities from U.S. Treasury's Judgment Fund, which is funded by taxpayer dollars, rather than from the NWF. Currently, the earliest projected date that the repository could begin operations is 2020 and, based on that repository opening date, taxpayer liabilities are currently estimated to be up to $11 billion. Further, these liabilities are estimated to increase by an average of $500 million annually for every year OCRWM is required to delay the opening of Yucca Mountain due to funding shortfalls. Each year of delay in opening the repository has significant taxpayer cost implications. Without the funding reforms discussed above, OCRWM will not be able to set a credible opening date for the repository, and taxpayer liability will continue to grow.

Key Strategies and Timing

OCRWM's focus over the next several years will be participation in the NRC's licensing proceedings in support of the license application. The key strategy will be to assure that OCRWM responds clearly and promptly to requests for additional information from NRC staff reviews and to contentions raised during the adjudicatory NRC licensing process.

Critical Events and Action Items

3-month events

Provide timely and accurate responses to Nuclear Regulatory Commission requests for additional information as part of the ongoing licensing proceedings.

Enter into disposal contracts with utilities for new reactors.

12-month events

Continue to provide timely and accurate responses to Nuclear Regulatory Commission requests for additional information as part of the ongoing licensing proceedings.

Continue to enter into disposal contracts with utilities for new reactors.

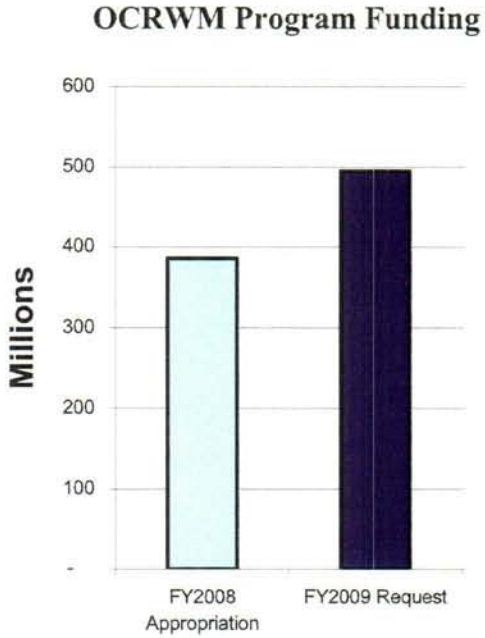
HOT Issues

Funding shortfalls for the repository program will adversely impact the repository schedule. The significant increases in annual funding needed to construct the repository assuming receipt of the construction authorization from the NRC are unlikely. This is because current technical scoring requirements have appropriations from the NWF directly impacting the federal budget deficit.

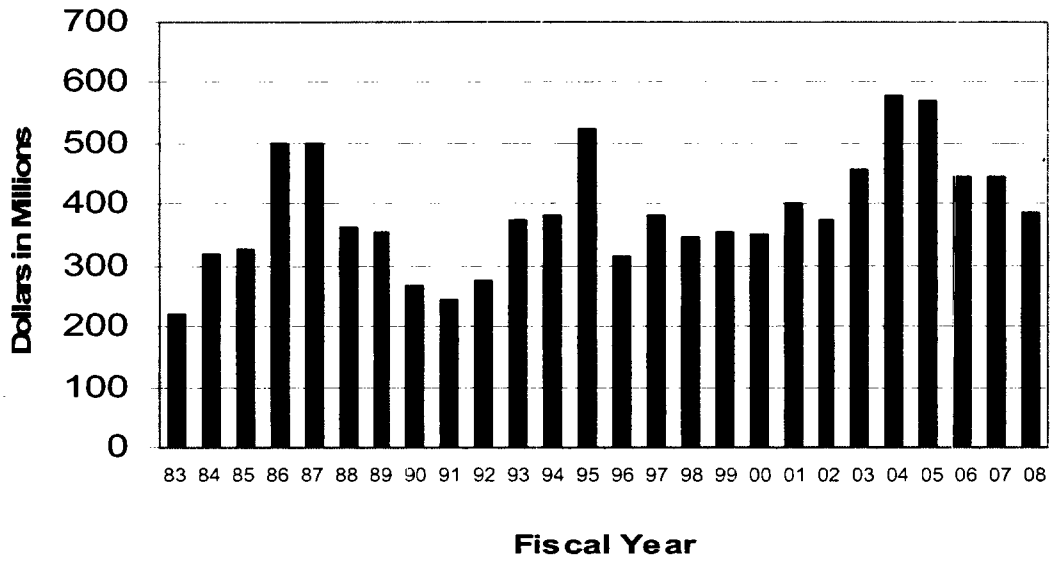
Delays in beginning acceptance of spent nuclear fuel at the Yucca Mountain repository have resulted in projected taxpayer liabilities to utilities that, based on the repository beginning operations at the current earliest projected date of 2020, are estimated to be up to $11 billion. The current process for appropriating funds from the NWF is restrictive and does not allow the NWF to be used as originally intended by Congress. If these restrictions remain unresolved causing further delays in repository development, DOE estimates that taxpayer liabilities will further increase by an average of $500 million annually beginning in 2020.

Funding profile (dollars in thousands)

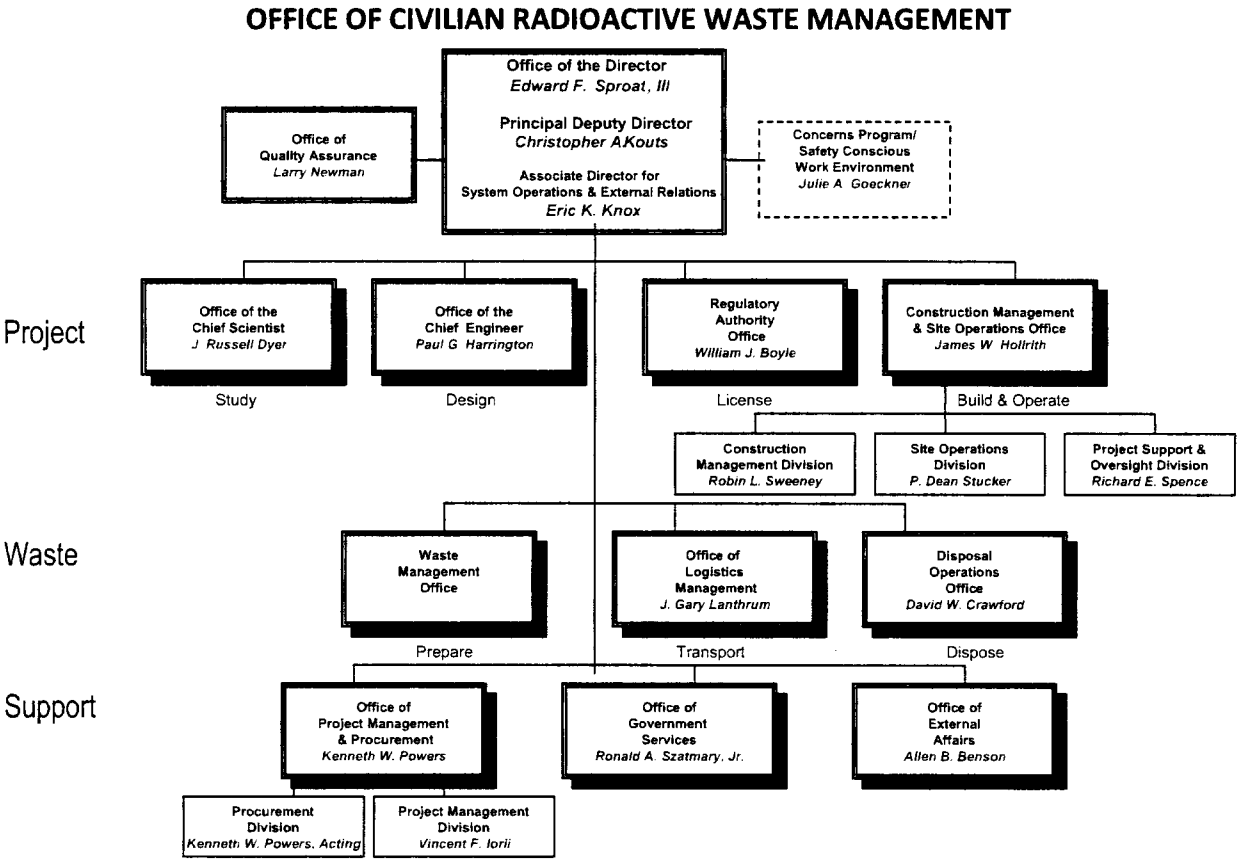
Office or Program Area	FY2008 Current Appropriation	FY2009 Congressional Request
Office of Civilian Radioactive Waste Management	386,440	494,742



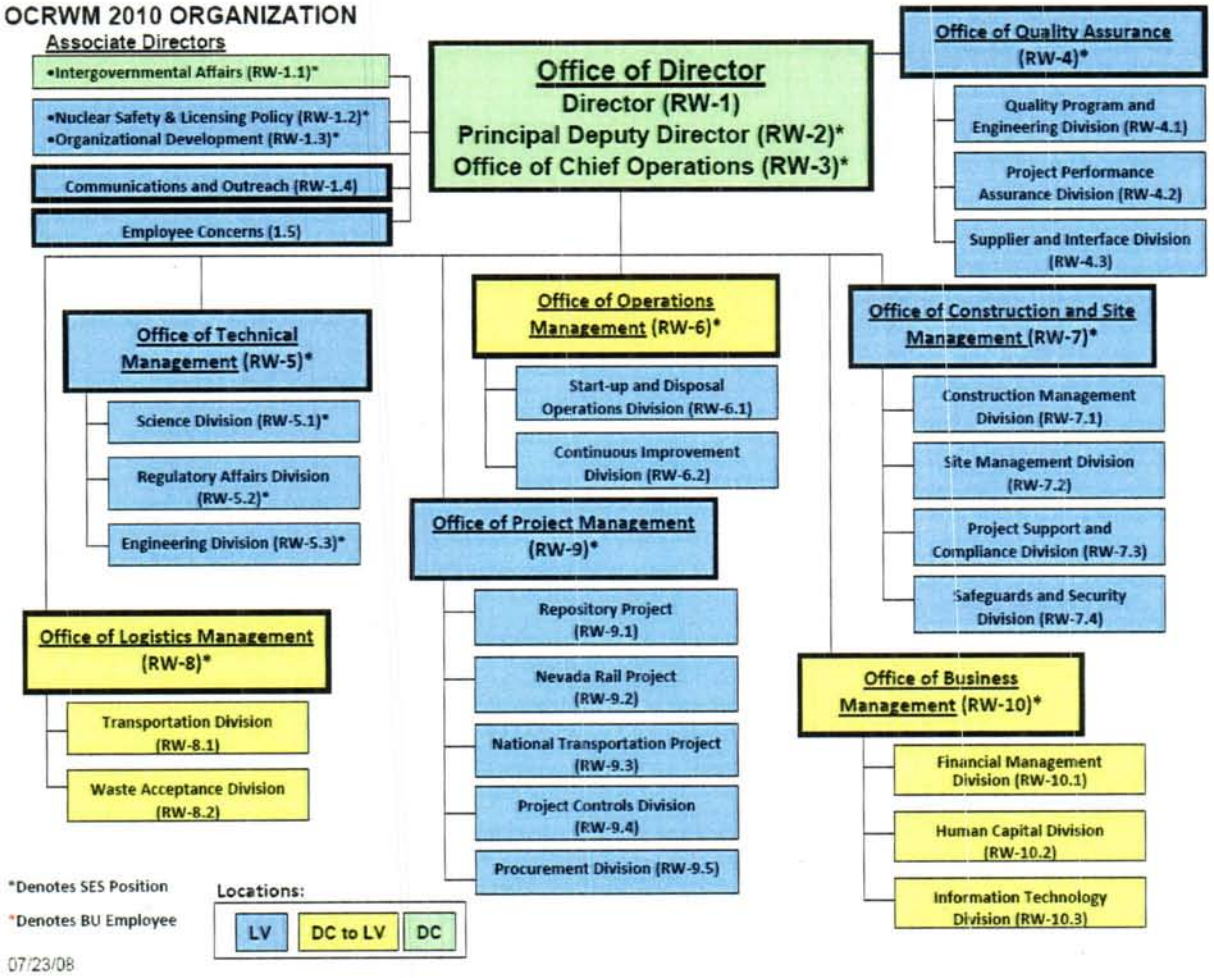
OCRWM Program Budget History



Current Organization Chart



January 4, 2009 Organization Chart



Office of Legacy Management

Office of Legacy Management

Organization Information

Organization Name:

Office of Legacy Management

Address:

1000 Independence Avenue, SW, Washington, DC 20585

Organization Phone Number:

202-586-7550

Organization Website:

http://lm.doe.gov

POC E-mail Address:

tony.carter@hq.doe.gov

Supporting the DOE Mission

The Department's Strategic Plan identifies five Strategic Themes (nuclear security, energy security, scientific discovery and innovation, management excellence, and environmental responsibility) and 16 Strategic Goals that tie to the Strategic Themes. The FY09 President's budget request (Other Defense Activities appropriation) supports the following goal:

Strategic Theme 4, Environmental Responsibility: Protecting the environment by providing a responsible resolution to the environmental legacy of nuclear weapons production.

Strategic Goal 4.2, managing the Legacy: **Manage the Department's post-closure environmental responsibilities and ensure the future protection of human health and the environment.**

The programs funded within the FY09 President's budget request (Other Defense Activities Appropriation) have one Government Performance Results Act (GPRA) Unit Program Goal that contributes to the Strategic Goals in the "goal cascade". This goal is:

GPRA Unit Program Goal 4.2.55.00: Legacy Management – By 2015, the Office of Legacy Management will be responsible for: the cost effective management of land, structures, facilities and/or records for over 120 sites; budgeting and overseeing the administration of contractors' pension and PRB programs for retired contractor employees at now closed DOE sites; and the disposal of real property at five sites.

Contribution to Strategic Goals

Within the Program Goal for the Legacy Management program, there are four programatic sub-goals that contribute to the strategic goals.

Legacy Management contributes to Strategic Goal 4.2 as follows:

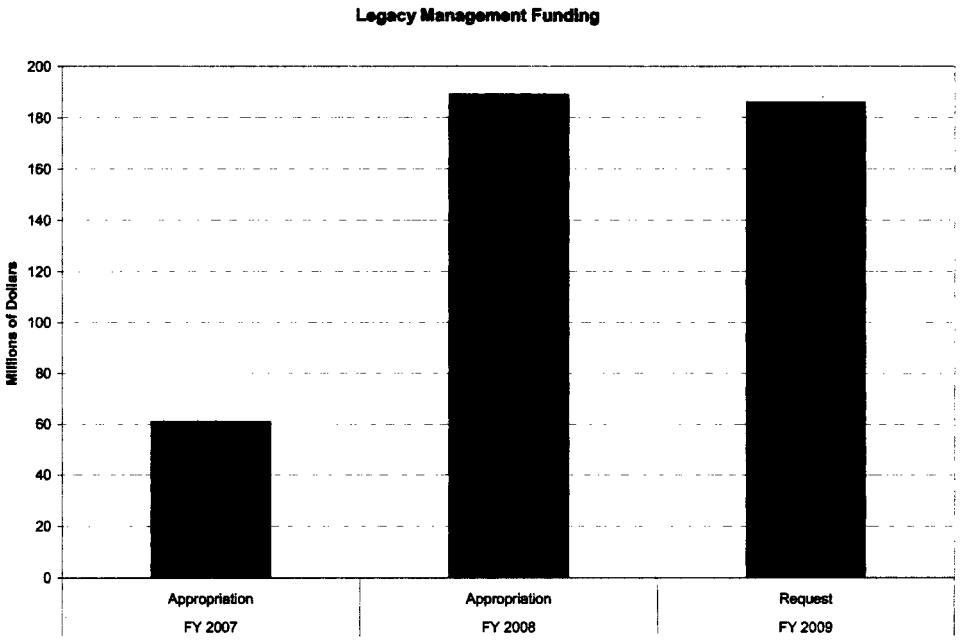
- **Protect human health and the environment through effective and efficient long-term surveillance and maintenance** – Activities associated with this sub-goal contribute to the general goal by managing the long-term surveillance and maintenance at sites where remediation has been essentially completed, allowing the Office of Environmental Management to concentrate its efforts on cleanup and site closure resulting in reduced risks to human health and the environment and reduced landlord costs.
- **Preserve, protect, and make accessible legacy records and information** – These activities assist the other activities by providing a central records management capability. This work directly supports the administration of the Energy Employees Occupational Illness Compensation Program Act (EEOICPA) and is responsive to Freedom of Information Act (FOIA) and Privacy Act (PA) requests. This enables more efficient operation of the other activities and is needed to defend the Department against future liability claims.
- **Support an effective and efficient workforce structured to accomplish Departmental missions and ensure former contractor worker pension and medical benefits** – The Legacy Management program coordinates the Department's labor relations and labor standards activities and budgets and oversees the administration and funding of pension and PRB programs for retired contractor employees. By managing these activities, the Legacy Management program enables the Department to focus on further risk reduction by remediating other sites.
- **Manage legacy land and assets, emphasizing protective real and personal property reuse and disposition** – These activities promote more efficient management of remediated resources. This allows more resources to be focused on further risk reduction.

Mission Statement

The mission of the Legacy Management (LM) program is to manage the Department's post-closure responsibilities – including long-term surveillance and maintenance, budgeting and overseeing the administration ad funding of contractors' pension and PRB programs for retired contractor employees, and archives management – and to ensure the future protection of human health and the environment. This Office has control and custody for legacy lands, structures, and facilities and is responsible for maintaining them at levels suitable for their long-term use.

Status

Budget:



FY 2009 Congressional Request: $185,981,000

People:

The LM staffing level include 58 federal employees and ~330 contractor employees. The distribution of staff by LM facilities is as follows:

Format the table:

Location	Fed	Cont
Washington, D.C.	20	5
Cincinnati, OH	2	60
Grand Junction, CO	15	175
Denver, CO	2	20
Las Vegas, NV	2	0
Morgantown, WV	17	50
Other Sites	0	20
Totals	58	330

Facilities:

Facilities Summary

Washington, D.C. - Several activities are centered in Washington D.C., including: budget formulation and execution; environmental justice; workforce restructuring; labor relations and labor standards; budgeting and overseeing the administration and funding of contractors' pension and PRB programs for retired contractor employees at now closed DOE sites;; and reuse and property management.

Grand Junction Office - The Grand Junction Office is located in western Colorado. The staff's primary function is oversight of the long-term surveillance and maintenance program. The long-term surveillance and maintenance activities managed from this office include environmental monitoring, long-term treatment of contaminants, maintaining site security, and asset disposition. A majority of the sites that require long-term surveillance and maintenance are located in the western part of the country.

Morgantown Office - The Morgantown Office is located in Morgantown, WV. Program functions include archives and information management activities in support of the missions of the Office of Legacy Management along with various business operations functions. The Legacy Management Records Storage Facility is being built in Morgantown, WV where the archives and information management staff are primarily located.

Fernald Site - The Fernald Site is located about 18 miles northwest of Cincinnati, OH. In 2009, Legacy Management will conduct long-term surveillance and maintenance activities, manage the records, and operate the Visitors Center.

Rocky Flats Site - The Rocky Flats Site is located about 17 miles northwest of Denver, CO. In 2009, Legacy Management will conduct long-term surveillance and maintenance activities, and manage the site records..

Performance:

Program Assessment Rating Tool (PART)

PART was developed by the Office of Management and Budget (OMB) to provide a standardized way to assess the effectiveness of the Federal Government's portfolio of programs. The structured framework of the PART provides a means through which programs can assess their activities differently than through traditional reviews.

The current focus is to establish outcome- and output-oriented goals, the successful completion of which will lead to benefits to the public, such as increased national security and energy security, and improved environmental conditions. DOE has incorporated feedback from OMB into the FY 2009 Budget

Request, and the Department will take the necessary steps to continue to improve performance.

In the PART review, LM received an overall score of "moderately effective". LM had high scores in Program Purpose & Design, Strategic Planning, and Program Management (100, 88, and 100, respectively). These high scores can be attributed to the program having a clear purpose and being generally well managed. LM's lowest ranking was in the area of Program Results and Accountability (67) which was expected to score lower than the others because the Office of Legacy Management is still relatively new and had not yet conducted a sufficient number of independent external reviews.

The PART summary also included a discussion of ways to improve, including connecting actions to the performance of program goals and obtaining independent evaluations of the program's effectiveness.

PART Measures Status

Updated measures in June as part of the spring 2008 update. Updates included resubmission of previously submitted measure changes that were not made as part of the fall update. Also deleted existing Goal 3 (Pension and Benefits) annual and efficiency measures and replaced with a new combined long-term annual measure.

Joule Measures developed are as follows:

- Maintain the protectiveness of installed environmental remedies through inspections and other actions at 100 percent of sites within LM's responsibility

- Reduce the cost of performing long-term surveillance and maintenance activities while meeting all regulatory requirements to protect human health and the environment. Reduction is measured in percent from the life-cycle baseline. Goal is a 2 percent reduction below the baseline for that year

Status

As of the end of FY 2008, 3rd quarter, LM has successfully achieved its Joule milestones for each quarter. LM is currently on track to achieve Joule measures for FY 2008.

History

The Office of Worker and Community Transition (WT), a predecessor office to LM, was established on September 15, 1994, to implement the provisions of section 3161 of the National Defense Authorization Act for Fiscal Year 1993. Section 3161 was intended to mitigate the impacts on DOE contractor employees and to provide assistance to communities impacted by downsizing at DOE facilities. WT was charged with: (1) developing policies and programs necessary to plan for, and mitigate the impacts of, changing conditions for workers and communities affected by DOE mission changes; (2) ensuring that those policies and programs are carried out fairly for all concerned, while recognizing the unique conditions of each site and contract; and (3) assisting those communities most affected by the changing missions at DOE sites by using DOE resources to stimulate economic development. WT became part of LM when this office was established in December 2003.

LM was created from staff located in WT and selected personnel from the Office of Environmental Management's (EM) Office of Long-Term Stewardship, its Grand Junction, Colorado Office, and selected EM personnel located at the National Energy Technology Laboratory in Morgantown, West Virginia and Pittsburg, Pennsylvania.

The breakup of the Soviet Union in 1991, together with President George H. W. Bush's announcement of the first unilateral nuclear weapons reduction agreement on September 27, 1991, signaled the end of the Cold War and dramatically reduced the need for further nuclear weapons production. This brought fundamental change as the Department shifted from weapons production to other missions such as environmental management, weapons dismantlement, and science and technology research.

LM was established to demonstrate DOE's commitment to reducing the environmental consequences of past actions and expedite the cleanup of its sites. The creation of LM allows for optimum management of legacy responsibilities.

LM has control and custody for legacy land, structures, and facilities and is responsible for maintaining them at levels suitable for their long-term use. In addition to programmatic functions, LM inherited regulatory and legal responsibilities associated with the sites that transfer into its authority.

Congress has not appropriated, and the Department has not requested, funding for worker and community transition activities since Fiscal Year 2005.

Critical Operating Procedures

LM's day-to-day operations must comply with a number of requirements, including:

- Applicable federal, state and local government laws and regulations pertaining to the cleanup of DOE sites.
- National Archives and Records Administration requirements.

- DOE Information technology requirements.
- Legal and and contractual requirements for administrative oversight of DOE reimbursement of costs to provide for continuity of pension benefits and PRBs for retired contractor employee pension benefits and PRBs.
- General Services Administration and applicable state and local laws and regulations associated with the management of real property.

Recent Organizational Accomplishments and Strengths

- In February 2007, the Office of Management and Budget (OMB) designated LM as a High Performing Organization (HPO). The designation made LM the second HPO in the federal government. The staffing of the LM HPO represents a 28 percent reduction from the original plan for federal staffing and will save the taxpayer approximately $15 million over five years (FY07-11).

- The Fernald Preserve Visitors Center (FPVC) opened on a limited basis, August 20, 2008. Implementing the vision of Fernald's neighbors and stakeholders, the FPVC will become an important educational resource for the surrounding area. The building was designed and constructed in a manner that allowed the building to receive "Platinum" certification from the U.S. Green Building Council, which sponsors the Leadership in Energy and Environmental Design rating system.

- On May 22, 2008, the Department announced the completion of its new strategy on Environmental Justice (EJ). The Department's EJ Strategy documents a commitment to: advancing the quality of life for our communities; formulates goals based on clear priorities and tangible benefits that consider programmatic, legislative, and regulatory responsibilities; emphasizes community participation, stakeholder involvement, and community empowerment; refocuses research to reflect the recognition of various health issues in minority, low-income and tribal communities; encourages new approaches to occupational and environmental-science research for high-risk communities and workers; embraces interagency coordination to facilitate environmental justice; and, heightens the sensitivity of our managers and staff to environmental justice within DOE.

- LM administers the Department's Uranium Leasing Program. The Department has awarded ten-year leases on 31 of 32 uranium lease sites to the private sector for the exploration, development, and production of uranium and vanadium ores. These lease tracts are located in the Uravan Mineral Belt in southwestern Colorado, between the communities of Gateway and Egnar, Colorado. The lease activity, in existence since the 1960s, has varied over the years based on the market value of uranium and vanadium ores. After 34 years and following the preferred alternative in the Programmatic Environmental Assessment to expand the leasing program, DOE conducted a public bid opening on May 15, 2008, in Denver, Colorado. Thirteen entities submitted 59 sealed bids and the apparent high bidders were identified. The production royalty bids, based on the highest royalty percentage bid on the fair-market value of ores produced, range from

7.67 to 36.6 percent of fair-market value that will be paid to the U.S. government as royalties.

- On June 9, 2008, the General Services Administration (GSA) awarded a lease contract on behalf of LM for a records management and operations facility to be located in Morgantown, West Virginia. The development team for the facility includes FD Partners, LLC and Petroplus and Associates, LLC as the developers, Paradigm Architecture as the architect, and Dick Corporation as the general contractor. The 59,000-square-foot facility will be located on a 10-acre site in the West Virginia University Research Park and will house more than 90 federal and contractor personnel supporting LM's mission. The facility will contain non-classified records from the Cold War nuclear legacy. The records, now being maintained at several Federal Records Centers, will be centralized at the Morgantown facility and will be accessible to researchers, former contractor employees, and other authorized persons both in on-site records research facilities and via a state of the art electronic record keeping system. In keeping with the Federal government's support of environmentally friendly buildings, the project has the goal to achieve "Silver" certification for the facility from the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED™) program. Construction is planned to commence Summer 2008 and be completed in December 2009.

Leadership Challenges

- Continue to operate in a manner commensurate with the organization's designation as a High Performing Organization, to include, maintaining a staffing level at 58 federal FTE, maintaining an appropriate federal grade structure and meet an inflation adjusted program direction request.

- Assist DOE program offices and sites in implementing contractor workforce restructuring programs resulting from reductions in funding, changes in skills requirements, and and project completions.

Key Strategies and Timing

- Long-term surveillance and maintenance will be performed in accordance with the regulatory decisions for each site. Activities range from routine inspections and maintenance at sites where remediation measures are substantially completed and the operations and maintenance of remedial action systems (e.g., ground water pump and treat and subsurface reactive barriers).

- Adequate federal staffing will be maintained to oversee the LM program. A large portion of the surveillance and maintenance and archives and information management,will be performed by contractors.

- LM will only accept responsibility for a site after all active remedies are in place and operating. [Is this statement accurate?]

Critical Events and Action Items

3-month events

Dedication of Opening of Fernald Visitors Center

Begin construction of the Records Storage Facility

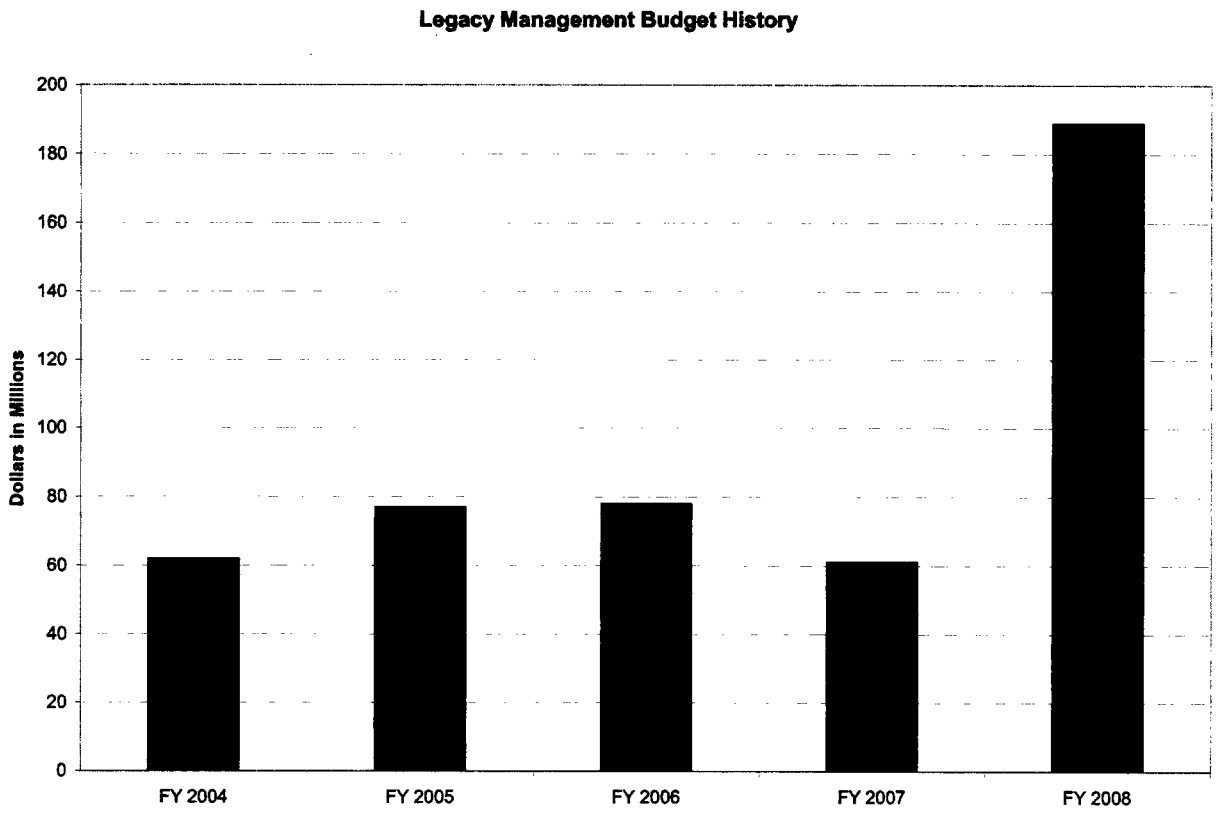
12-month events

3rd Annual Environmental Justice Conference (Summer 2009)

Hot Issues

Funding Profile

Funding Profile			
	(dollars in millions)		
Office	FY 2007 Appropriation	FY 2008 Current Appropriation	FY 2009 Congressional Request
Legacy Management	64	189	186


Legacy Management Budget History
Dollars in Millions
200
180
160
140
120
100
80
60
40
20
0
FY 2004
FY 2005
FY 2006
FY 2007
FY 2008

7/28/08
58 FTE

Office of Legacy Management

COLOR KEY:
Denver, CO
Grand Junction, CO
Las Vegas, NV
Morgantown, WV
Mound/Fernald, OH
Pittsburgh, PA
Washington DC

LM-1
M. Owen, Director
D. Geiser, Deputy Director
T. Carter, Prog Analyst
S. Verstandig, Policy Advisor
C. Flowers, Contr Ind Rel Spec
M. Downing, Env Justice Prog Mgr

Office of Business Operations – LM-10

R. Baney,Acting Director, Office of Bus Ops
D. Haddix, Program Analyst

Benefits Continuity Team LM10.1
K. Stoeckle, Team Leader
P. Ring, Contr Ind Rel Spec

Archives & Information Management Team LM-10.2
J. Montgomery, Team Leader
R. Staubly, Gen Engineer
T. Garlow, Info Tech Spec
R. Walker, Info Tech Spec
Vacant, Program Analyst
S. Dillard, Public Participation Spec
K. Hatch, Prog Analyst
J. Gueretta, Prog Analyst
M. Vignone, Prog Analyst
P. Watson, Prog Analyst

Planning, Budget, Acquisition and Integration Team LM-10.3
B. McNeal, Team Leader
M. Mescher, Bud Analyst
D. Boggs, Bus Mgmt Spec
Vacant, Fin Mgmt Spec
Student Intern

HR/Administrative Team LM-10.4
P. Poole-Shirriel, Team Leader
S. Rhodes, HCM Spec
R. King, Correspondence Spec
N. Moore, Prog Sup Spec
B. Waters, Trng Emp Dev Spec
A. Cook, Secretary (OA)

Office of Site Operations – LM-20

R. Plieness, Director, Office of Site Ops
C. Carpenter, Gen Engineer
J. Desormeau, Safety Officer
C. Pennal, Program Analyst
L. Weyler, Program Analyst
C. Johnson-Freeman, Security Spec
L. McArthur, Secretary (OA)

Environment Team LM-20.1
T. Pauling, Team Leader
C. Clayton, Phy Scientist
T. Ling, Phy Scientist
A. Kleinrath, Gen Engineer
V.J. Kothari, Gen Engineer
J. Powell, Gen Engineer
R. Bush, Gen Engineer
S. Sonnichsen, Phy Scientist
J. Maestas, Gen Engineer
M. Kautsky, Gen Engineer
T. Ribeiro, Gen Engineer

Property Reuse Team LM-20.2
Vacant, Team Leader
T. Plessinger, Phy Scientist
D. Sullivan, Pub Part Spec
C. Montano, Realty Officer
S. Schiesswohl, Realty Officer
Vacant, Supply Mgmt Spec
J. Sink, Program Analyst
J. Mroz, Staff Asst

Power Marketing Administration

Western Area Power Administration

Organization Information

Organization Name:

Western Area Power Administration

Address:

12155 West Alameda Parkway, Lakewood, CO 80228

Organization Phone Number:

202-586-5581

Organization Website:

www.wapa.gov

POC E-mail Address:

JACK@wapa.gov

Kerr@wapa.gov

Supporting the DOE Mission

Western is supporting the Department of Energy's efforts to diversify America's energy supply, improve energy efficiency, address environmental and climate change and modernize our energy infrastructure. Our Strategic Plan is aligned with and targeted toward the following Departmental strategic theme and goal:

DOE Strategic Theme 1: Energy Security
Promoting America's energy security through reliable, clean, and affordable energy.
Strategic Goal 1.3: Energy Infrastructure
Create a more flexible, more reliable, and higher capacity U.S. energy infrastructure.

Western's plan is designed to deliver results along the following four strategic themes. The strategies associated with these themes are discussed under "Key Strategies and Goals."

Western Strategic Theme 1: Energy Security through Products and Services
Provide premier power and transmission services for our customers, thereby reducing vulnerabilities to supply disruption and increasing flexibility to meet consumers' needs for electricity.

Western Strategic Theme 2: Energy Infrastructure and Industry
Contribute to creating a more reliable, flexible and robust U.S. energy infrastructure ensuring our efforts are funded and paid for by the beneficiaries.

Western Strategic Theme 3: Customer Partnerships
Further develop partnerships with our customers, including Native American tribes.

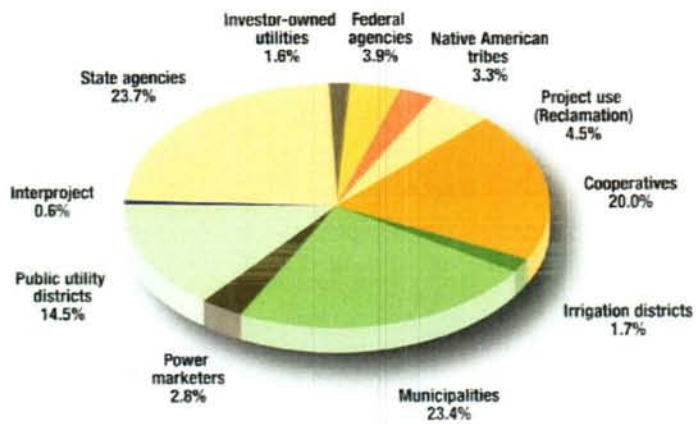
Western Strategic Theme 4: Organizational Excellence through People
Ensure Western has the organizational capabilities, people and resources to satisfy growing demands.

Key Activities
Western's two key activities are *"power marketing"* and *"transmission."*

Power Marketing—our core business
Marketing and delivering electricity—primarily clean, cost-based renewable hydroelectric power generated at Federally-owned dams—is our core business. We annually market and transmit about 10,000 megawatts of power from 56 hydropower plants and sell about 40 percent of regional hydroelectric generation in our 15 state service territory.

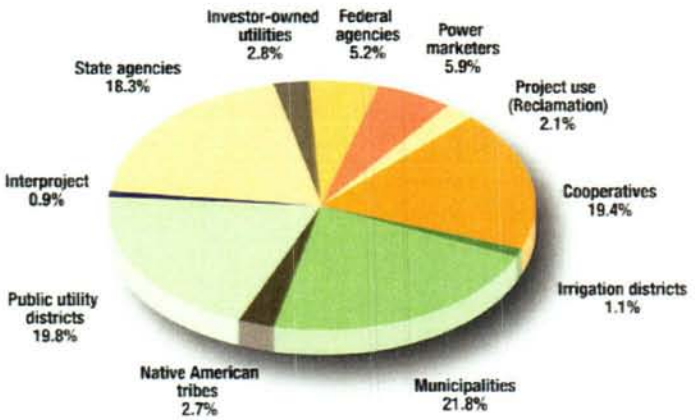
In FY 2007, Western sold power to about 670 wholesale customers who, in turn, provide retail electric service to millions of consumers in these central and western States: Arizona, California, Colorado, Iowa, Kansas, Minnesota, Montana, Nebraska, Nevada, New Mexico, North Dakota, South Dakota, Texas, Utah and Wyoming.

WHERE OUR ENERGY GOES (MWh)



We set power rates to recover all costs associated with our activities, as well as the Federal investment in the power facilities (with interest) and certain costs assigned to power for repayment, such as aid to irrigation.

WHERE OUR POWER REVENUE COMES FROM ($)



Transmission owner and provider—a central role

We deliver power over an integrated 17,000 circuit-mile, high-voltage transmission system—a Federal electrical highway system—that spans most of the western half of the United States. Our role, as transmission owner and provider, is not only critical to the delivery of Federal power, it is integral to our Nation's interconnected electrical grid and helps ensure reliable and secure delivery of our Nation's power supply. This system not only delivers Federal hydropower to cities, towns, hamlets and homes in 15 states, our high-voltage transmission lines carry electricity from other resources to consumers.

Mission Statement

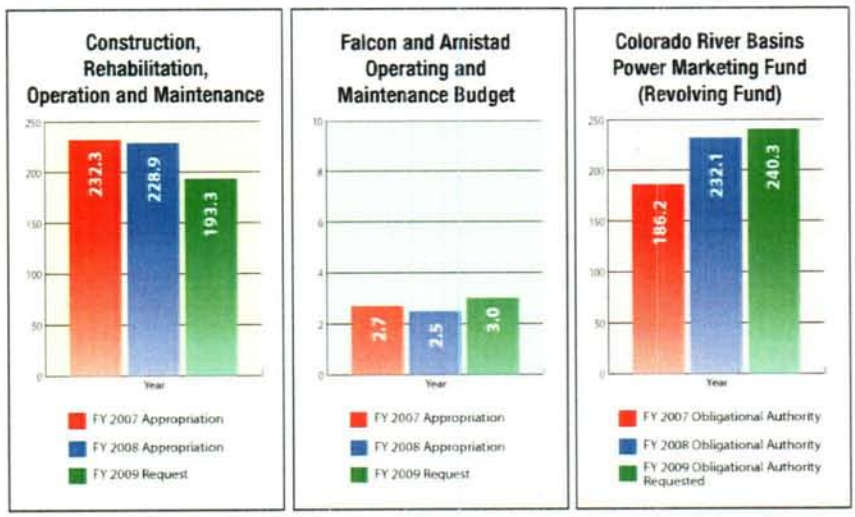
Mission: Market and deliver reliable, cost-based hydroelectric power and related services

Vision: Provide premier power marketing and transmission services

Status

Budget:

FY 2009 CONGRESSIONAL BUDGET (Dollars in millions)



Western Area Power Administration's FY 2009 Congressional Request included an appropriated request of $193.3M for the Construction, Rehabilitation, Operation and Maintenance account; $3.0M for the Falcon and Amistad Operating and Maintenance Fund; and, $240.3M of obligation authority offset by $263.3M in collections for the Colorado River Basins Power Marketing Fund (Western's Revolving Fund). Including all accounts displayed in the FY 2009 Congressional Budget, Western submitted a total budget request of $173.3M.

People:

Estimated number of Federal FTEs: 1342 as of 09/30/08. With the exception of 4 FTE duty-stationed in DOE headquarters in Washington, D.C., all of Western's FTE are duty-stationed in the field.

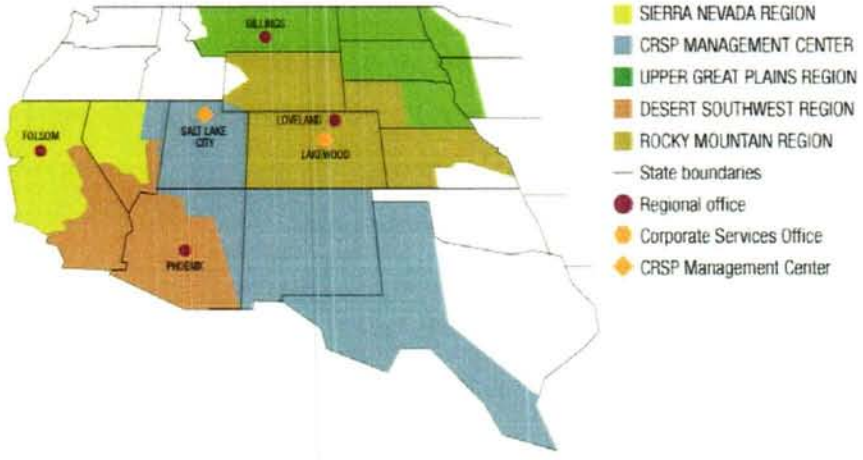
Western does not estimate the number of contract FTE under our performance based contracts. Western does not have management and operating contracts.

Facilities:

Service Areas

Our service area covers 1.3-million square-miles in 15 states. Power sales, transmission operations and engineering services for Western's system are accomplished by our employees at 51 duty stations located throughout this area. Our main offices and customer service areas are shown below.

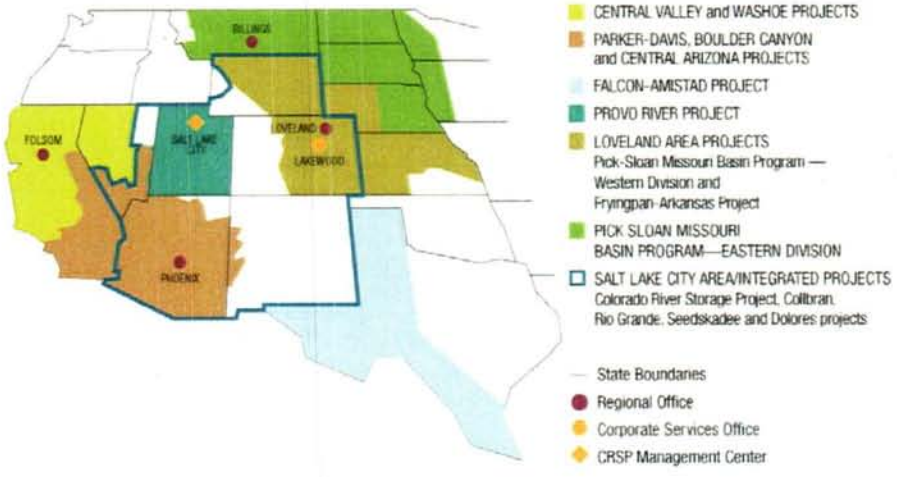
SERVICE AREAS



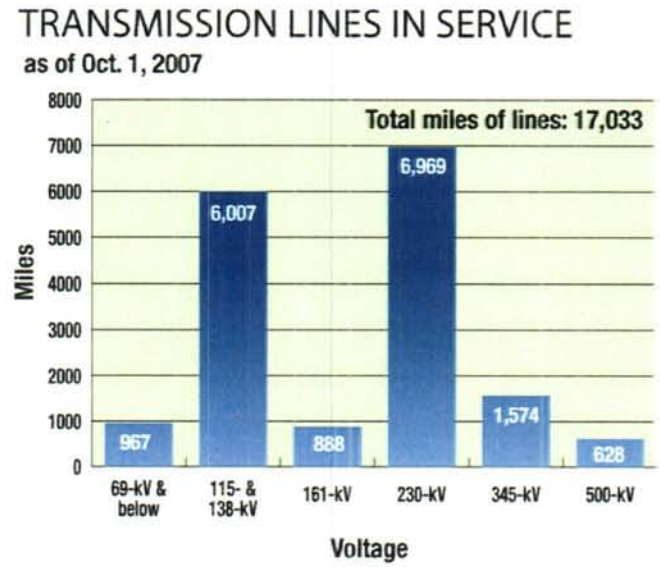
Power Resource Projects and Marketing Areas

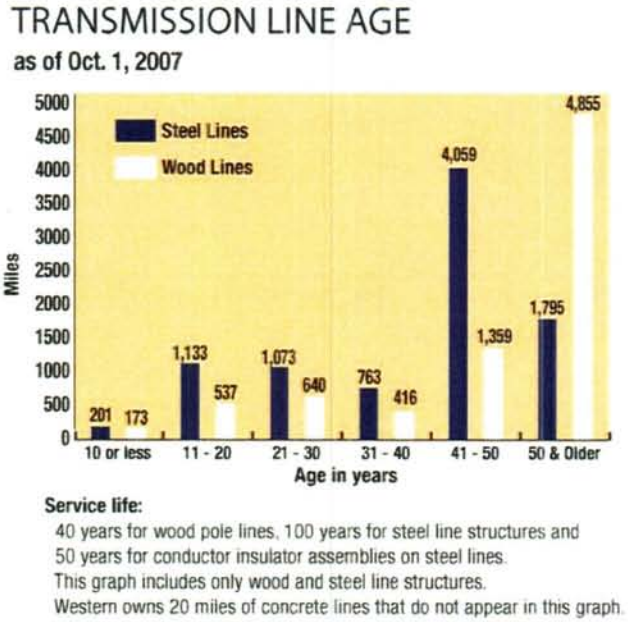
Our role in delivering power includes managing 10 different rate-setting systems. These rate systems are made up of 14 multi-purpose water resource projects and one transmission project. The systems include Western's transmission facilities along with power generation facilities owned and operated by the Bureau of Reclamation, the U.S. Army Corps of Engineers and the U.S. State Department's International Boundary and Water Commission.

MARKETING AREAS



Transmission Facilities





Service life:
40 years for wood pole lines, 100 years for steel line structures and 50 years for conductor insulator assemblies on steel lines.
This graph includes only wood and steel line structures.
Western owns 20 miles of concrete lines that do not appear in this graph.

Performance:

PART rating: Moderately effective
FY 2007 PART measure status: 3 met, 0 unmet, 0 unknown
FY 2007 4th quarter Joule status: 3 Green, 0 Yellow, 0 Red

History

Western was officially created by the Department of Energy Organization Act in 1977, when the power marketing and transmission functions of the Bureau of Reclamation were transferred to Western. From 1978 to today, Western has increased its customer base, despite no significant

increases in available Federal resources. In our first full year of operation, we served 457 customers and today we serve 670 customers, a 47-percent increase.

During this 30 year span, Western has contributed to the construction and maintenance of the existing transmission system in many ways, including realizing the long-held engineering dream to "tie" the nation's power grids together. While building the electric infrastructure that we have today was a challenge, today's challenges involve operating, maintaining and expanding that grid to meet tomorrow's needs. Today we face the following trends:

- The industry has become increasingly complex, fast-paced and fraught with uncertainty.

- Much of our nation's bulk electric power grid—including Western's power lines—is at capacity.

- Our highly-skilled technical workforce continues to age, and we are competing with the rest of the industry to attract and retain the high-caliber workforce needed to succeed.

- Mandatory transmission and operations reliability standards are being increased by the Federal Energy Regulatory Commission and its electricity reliability organization, the North American Electric Reliability Corporation.

- Many of the best sites for these renewable generating sources—wind, solar and biomass—are located in parts of the West and Midwest that are not near demand centers, and many of the nearby transmission lines don't have enough available capacity to transport this energy. This means more transmission must be built, and many of the best sites for these location-constrained generating sites are near Western's existing transmission grid.

Critical Operating Procedures

Key operating rules for day-to-day "power marketing" and "transmission" operations are discussed below:

Power marketing—our core business

Western's power marketing functions are carried out to comply with all statutory requirements and Departmental and Agency policies and procedures. These are documented in Western's Power Marketing and Policy Guidelines and Procedures, WAPA O 110.2A-Power Marketing Delegations, and RA 6120.2 Power Marketing Administration Financial Reporting.

Open access transmission—how we do business

Western sells transmission under our Open Access Transmission Tariff which was originally filed with the Federal Energy Regulatory Commission (FERC) to meet the non-public utility reciprocity requirements of Order No. 888. The tariff establishes the rules under which we sell transmission and applies to any entity seeking to purchase transmission over our system. Western has made subsequent modifications to our tariff to comply with FERC orders concerning standardization of large and small generator interconnection agreements and procedures and interconnection for wind energy.

Recent Organizational Accomplishments and Strengths

Three of our strengths include our record of reliability and technical excellence, track record of accomplishments through industry partnerships and how well our service area overlays renewable resource potential.

Reliability and technical excellence—our record

We have consistently exceeded the national standards set by the North American Electric Reliability Corporation. The Energy Policy Act of 2005 strengthened industry commitment to system reliability by giving FERC expanded authority to approve mandatory reliability standards. A recent readiness review and compliance audit in our Upper Great Plains Region revealed no compliance violations. The NERC audit team commented that Western runs the tightest operation they had audited to date.

We are also pursuing new technology and equipment enhancements to improve the capability, performance and reliable operation of existing infrastructure. These enhancements mitigate some constraints without adding new lines to the grid. One promising technology is high-capacity composite conductors designed to significantly increase the transfer capacity of existing transmission lines without requiring new towers or rights of way.

Accomplishments through industry partnerships

Generally speaking, our projects are developed cooperatively, in partnership with others, and funded by non-Federal entities in support of our common interests—wholesale electricity markets and enhanced grid reliability. In partnership with the City of Roseville and the Sacramento Municipal Utility District, Western studied alternatives to resolve the transmission-related reliability issues in the Sacramento area. Western is now moving forward to implement its preferred alternative for the Sacramento Voltage Support project.

We are working with Trans-Elect, a Path 15 partner, and the Wyoming Infrastructure Authority to solicit interest in solving the TOT3 bottleneck. TOT3, one of the three high-priority projects in the 2004 Rocky Mountain Area Transmission Study, is a transmission congestion point in southeastern Wyoming that limits power flows from resource-rich Wyoming to Colorado's growing Front Range communities. While the project is in an early phase of development, it looks promising since potential partners—including wind developers—have expressed interest in what may be enough capacity to justify the project.

The energy picture—our service area fits right in

Our service area fits well into the energy picture in the West in three ways. First, some of the fastest growing states, in population and energy consumption, are in the West. These areas present an urgent need for more generation and transmission. Second, we conduct business in the heart of our Nation's renewable energy potential. Nine of the 10 windiest states and the best geothermal and solar potential in the Nation are in our geographic footprint. And 9 of 15 states in our service territory have adopted renewable portfolio standards or have state mandates that are jump starting the number of renewable generators seeking transmission paths to market. Third, some areas in our service territory are considered "conditional congestion areas," as outlined in DOE's National Electric Transmission Congestion Study.

These are areas where existing congestion is expected to worsen significantly if large amounts of new generation resources are developed without associated transmission. In addition, the national interest electric transmission corridor in the southwest area is in our marketing area. Conditional congestion areas and national interest corridors both point to reliability and security concerns.

Leadership Challenges

Our primary challenges to achieving our goals follow:

a. *Energy security:* The United States' economy is powered by energy. Clean, reliable, affordable electricity is a key factor in increasing our energy security and independence. We are dealing with challenges associated with eight years of drought. At the same time, industry efforts to improve the reliability of the bulk power grid are placing more requirements on our workforce to implement these mandatory standards. Meanwhile, states across the nation have adopted aggressive Renewable Portfolio Standards and grid operations are becoming more and more complex.

b. *Energy infrastructure and industry:* The nation's energy infrastructure is not keeping pace with the growth in energy supply and demand, thereby endangering the reliability of the energy system. Western's transmission infrastructure continues to age, despite an ongoing replacement program (see charts under "Facilities"). The new transmission request queue continues to grow, resulting in the need to find new ways to meet future transmission requirements. Meanwhile, Western's craft workforce remains fixed. This results in regularly scheduled overtime work to accomplish necessary transmission system maintenance tasks to ensure the electric grid continues to operate reliably. Finally, we must balance the need to protect our environment while enhancing the ability of the interconnected grid to deliver electricity from where it's produced to where it's needed to power the economy.

   Partnerships: Serving the changing needs of our power and transmission service customers will always remain central to Western. As customer needs change and they diversify their supply options, Western's role in serving them often evolves. Today, finding innovative ways to fund projects often involves work with customers, neighboring utilities and others. Partnering with customers to provide funding for Western's daily activities has also become a necessity in these days of diminishing Federal appropriations. Native American tribes now make up more than 10 percent of Western's core power customers. Tribes vary widely in their interest in becoming more energy independent. While many tribal nations have lands that are rich in energy resources that they would like to develop, many need technical assistance to move development forward.

c. *Organizational excellence:* Western's unique mission presents many advantages as well as challenges. Our status as a Federal agency also provides opportunities as well as restrictions. Continuing and increasing pressures on the Federal budget result in decreased appropriations, reinforcing the need to improve our financial stability. An aging workforce of highly skilled technical staff suggests an impending knowledge and

capability gap in the not-too-distant future. Finally, the need for a nimble and flexible organizational structure is called for to meet Western's challenges in the 21st Century.

Key Strategies and Timing

The key strategies that span 2008-2013 to achieve each of our goals are:

Theme 1: Energy Security through Products and Services

Strategy 1.1: Maintain core mission focus

Continue to provide cost-effective and high-value power marketing services.

Strategy 1.2: Maintain vital services

Continue to provide transmission and resource management services upon request and at cost.

Strategy 1.3: Optimize scarce resources

Increase our efficiency and minimize costs while meeting increasing work requirements.

Strategy 1.4: Promote renewable resources

Highlight and manage Western's renewables activities.

Theme 2: Energy Infrastructure and Industry

Strategy 2.1: Resource and maintenance productivity

Meet the increasing demands on resource and maintenance staff from transmission growth and compliance requirements.

Strategy 2.2: Transmission construction

Ensure Western has the capability to construct critical reliability transmission projects.

Strategy 2.3: Planning productivity

Meet the increasing demands on transmission service staff due to increasing transmission requirements and regulatory compliance requirements.

Theme 3: Customer Partnerships

Strategy 3.1: Resources

Continue to work with customers to establish mechanisms to provide future financial stability.

Strategy 3.2: Tribal partnerships

Increase the opportunities to explore partnerships with Native American tribes.

Theme 4: Organizational Excellence through People

Strategy 4.1: Integrated management

Ensure Western has the organizational capabilities and people to meet growing demands.

Strategy 4.2: Human capital
Attract, recruit, develop and retain a safety- and reliability-focused, highly productive, customer-oriented and diverse workforce.

Critical Events and Action Items

POWER MARKETING—MARKETING PLANS AND RATES

3-month events

On-going through April 2010

Rates Process - Formula Rates for Central Valley Project, California Oregon Transmission Project, Pacific AC Intertie and Third-Party Transmission - Western pursued an extension to September 30, 2011, of these formula rates (set to expire September 30, 2009) in order to provide sufficient time for an informal rate process. The informal process will allow Western to meet and collaborate with our customers on the development of the rate structures to replace the current formula rates. The informal process is expected to conclude in April 2010, after which the formal rate process will take place.

On-going through June 2009

Upper Great Plains Region Transmission Rate Modification – A process has been started to modify the UGPR transmission rates to 1) reduce the time lag, between making a transmission investment and starting recovery; 2) change the date of the annual recalculations; 3) develop standardized templates for calculating the Annual Transmission Revenue Requirement; and 4) update the rates to be more consistent with other regions. The goal is to have the new rates effective in the first half of 2009. A public comment period started in August and end in March of 2009.

January-March 2009

Boulder Canyon Project FY 2010 Base Charge and Rates Process - Western will publish the initial Federal Register Notice for this action. Several informational and formal customer meetings will be held through March to identify and resolve issues. The rates will become effective as of October 1, 2009.

January 2009

Loveland Area Projects – Place a firm electric rate increase into effect. Approval of the Deputy Secretary is needed for this action.

February 2009

Pick-Sloan Missouri Basin Program—Eastern Division, Rate Increase – Place a firm electric and firm peaking power service rate increase into effect. The Deputy Secretary must approve the new rate.

12-month events
May 2009
Falcon and Amistad Projects FY 2009 Rate Adjustment - The Deputy Secretary's approval of this rate adjustment is needed by May 1, 2009. The effective date of the new rate is June 7, 2009.

June 2009
Boulder Canyon Project FY 2010 Base Charge and Rates Process – The Deputy Secretary approves the final rate adjustment; after which, Western publishes the Federal Register Notice.

FY 2009
Parker Davis Project, Central Arizona Project Transmission Service and WALC Ancillary Services Rates Recalculation - Western will submit these rates during fiscal year 2009. Since these are re-calculations, they do not require further approval.

Boulder Canyon Project Power Marketing Contracts - Western is responsible for marketing the Boulder Canyon Project (BCP) in conformance with the Hoover Power Plant Act of 1984 and Western's Conformed General Consolidated Power Marketing Criteria or Regulations for Boulder City Area Projects. The current contracts expire September 30, 2017. Existing BCP customers are in the process of formulating strategies to accomplish the re-distribution of the BCP asset after September 30, 2017. Based on preliminary discussions, existing BCP customers may seek legislative action to accomplish the renewal of allocations. Customers estimate that it would take at least 1 year to successfully draft a bill for Congressional review. Customers potentially may present a bill to DOE for review in advance of presenting to Congress. It appears that customers may take some course of action on this issue within 12 months of the new Administration's transition.

Central Valley Project 2015 Resource Pool – Western is currently engaged in a public process to establish the size of the resource pool that will be available for preference entities and the eligibility criteria under which such preference entities would be eligible to qualify. Once the size of the 2015 Resource Pool and the eligibility criteria are determined, the process will continue with a formal call for applications, an announcement of proposed allocations to preference entities and finally an announcement of final allocations granted. This process is expected to take approximately 12 to 18 months.

TRANSMISSION AND INDUSTRY

3-month events
On-going through FY 2009
California System Independent System Operator (CAISO) Integrated Balancing Area Authority (IBAA) Pricing – The CAISO is implementing a pricing, scheduling and settlements approach on neighboring Balancing Authorities (BA) in conjunction with their new Locational Marginal Pricing markets through their Market Redesign and

Technology Upgrade (MRTU) project. This approach will allow the CAISO to buy power at the lowest pricing point from the neighboring BA and sell power to the BA at a higher pricing point. The Federal Energy Regulatory Commission (FERC) approved the CAISO's plan, and the CAISO is planning to deploy its IBAA approach in conjunction with MRTU on February 1, 2009.

Starting fall 2008

CAISO MRTU Project – This project involves a complete redesign of the wholesale energy markets in California. With approximately 50 percent of its load in the CAISO BA, Western must respond affirmatively to these market changes to ensure that it will be able to continue serving its customers in the CAISO BA. This project requires the region to make many people, process, and technology changes as well as changes for our customers. The CAISO is scheduled to implement this project in conjunction with its IBAA proposal by February 1, 2009.

12-month events

March-July 2009

Western's Open Access Tariff (OATT) Revision - This revision is needed to incorporate requirements of FERC Order 890 into Western's Open Access Tariff. The formal public process for this action is planned to begin in March 2009 and it is estimated to end in May 2009. A filing of the revised OATT with FERC is planned for summer 2009.

May 2009

Midwest Independent System Operator (MISO)/Mid-Continent Area Power Pool (MAPP) Seams Evaluation Process - Western plans to complete this evaluation and make a final decision on the impacts to UGP and its customers. While no DOE action is expected, the outcome of this evaluation could significantly impact transmission costs in this region.

FY 2009

Resolution needed on approach for joint transmission development of new lines connecting to the CAISO - This initiative could impact Western's and DOE's long-term energy security strategic goals. In order to jointly build and operate new transmission lines in partnership with the CAISO, Western needs to resolve the difference between the CAISO's tariff-based approach and the public power community's contract-based approach to joint transmission development. If Western is unable to resolve the issue through negotiations with CAISO, joint transmission construction will be impeded.

Folsom Loop and Sacramento Voltage Support (SVS) Transmission Projects – Western is currently engaged in these two transmission projects. The Folsom Loop project entails looping Sacramento Municipal Utility District's (SMUD) Orangevale – Lake 230-kV line in and out of Western's Folsom Substation. The SVS project adds two 230 kV-lines out of Western's O'Banion Substation and terminates one line each in SMUD's Natomas and Elverta Substations. Folsom Loop is scheduled to be completed in fall 2009 with SVS completed in spring 2011.

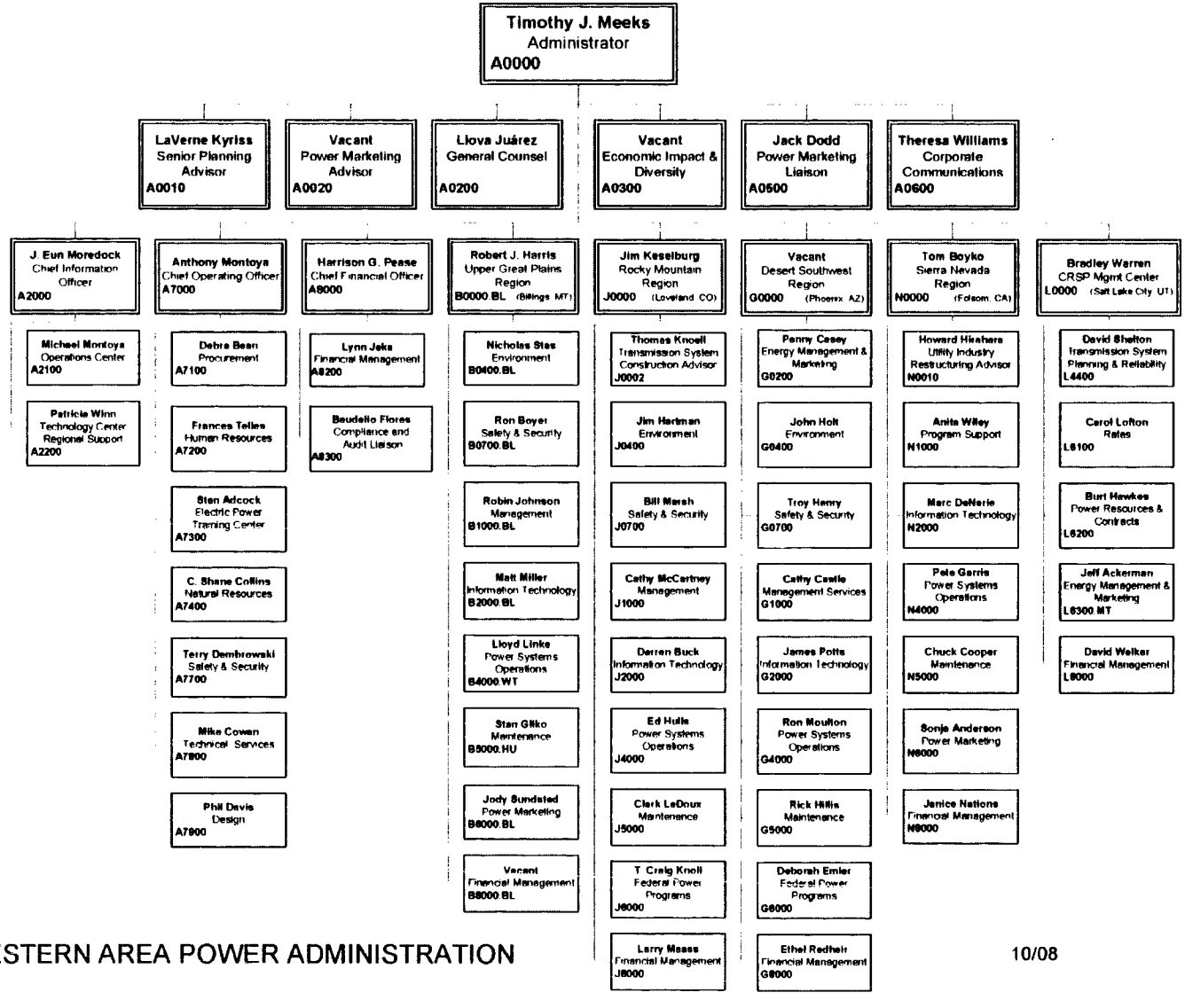
Potential UGP Region Specific OATT – Western has started a process to develop an OATT separate from the existing Western OATT. The UGPR is exploring whether it should take some Market Integration Transmission Service (MITS) under Module F, Part III of the MISO Tariff. If MITS is used, we will be required to make modifications to Western's OATT for compatibility with MITS. We believe that it would be most effective to incorporate these modifications in a UGPR OATT, rather than the Western OATT, since it would only affect UGPR. MISO has filed Module F with FERC and is currently going through the FERC public process. The final FERC determination on MISO's Module F will need to be completed before Western can determine appropriate tariff modifications.

Hot Issues

1. *Western's Role in Expanding Power Transmission in the West*
   Western owns and operates transmission lines across much of the West, but has limited authority and funding to build new transmission. In order to reduce duplication and take advantage of the economies of scale, Western could assist in the development of additional transmission to transmit renewable generation from its source to load centers if its authority and funding are expanded.

2. *Net Zero Appropriations for the Power Marketing Administrations*
   Subject to Congressional oversight, the Southeastern, Southwestern and Western Area Power Administrations are proposing to use their respective power receipts to offset (to zero) appropriations for annual expenses. Use of receipts increases funding certainty, which improves planning of PMA operation and maintenance requirements. In advance of a Net Zero language proposal, the PMAs are working with OMB, and the House and Senate Budget Committees (scorekeepers) to reclassify PMA receipts associated with annual expenses from mandatory to discretionary. In the Fall 2008 scorekeeping meeting, the scorekeepers may address the PMA receipt reclassification. Reclassification improves the likelihood of passing Net Zero language in either an authorization or appropriations act. The PMAs FY 2010 budget submittal to DOE includes a Net Zero appropriation scenario for annual expenses.

Organizational Chart



WESTERN AREA POWER ADMINISTRATION

10/08

Bonneville Power Administration

Organization Information

Organization Name:
Bonneville Power Administration

Address:
PO Box 3621, Portland, OR 97208-3621

Organization Phone Number:
503.230.3000

Organization Website:
www.bpa.gov

POC E-mail Address:
slbaskerville@bpa.gov

Supporting the DOE Mission

Strategic Theme 1 – Energy Security
Strategic Goal 1.3 – Energy Infrastructure

Key Activities:

The Bonneville Power Administration (BPA) contributes to this strategic goal through its strategic vision to advance a Northwest power system that is a national leader in providing reliability, low rates consistent with sound business principles, environmental stewardship, and accountability to the region.

BPA's strategic direction has helped to identify a number of key, long-term issues. These issues center on providing Bonneville customers with certainty over load obligations and enabling the customers and the market to respond with the necessary electric industry infrastructure investments. Other key strategic interests include general market stability, BPA risk management, and long-term assurance of funding to repay the U.S. Treasury investment in infrastructure.

Mission Statement

The strategic mission of BPA as a public service organization is to create and deliver the best value for its customers and constituents as it acts in concert with others to assure the Pacific Northwest:

- An adequate, efficient, economical, and reliable power supply;

- A transmission system that is adequate to the task of integrating and transmitting power from Federal and non-Federal generating units, providing service to BPA's customers, providing interregional interconnections, and maintaining electrical reliability and stability; and

- Mitigation of the Federal Columbia River Power System (FCRPS) impacts on fish and wildlife.

BPA is committed to cost-based rates and public and regional preference in its marketing of power. BPA will set its rates as low as possible consistent with sound business principles and the full recovery of its costs, including timely repayment of the federal investment in the system.

Status

Budget:

Fiscal Year (FY) 2009 Congressional Submission:
$2,866 million for operating expenses
$125 million for Projects Funded in Advance, and $560 million for capital investments

People:

Estimated number of Federal FTEs: 3,000
Estimated number of contractor FTEs: 683
Estimated number of headquarters FTEs: 0
Estimated number of field site FTEs: 3,000

Under the Bonneville Project Act of 1937, 16 U.S.C. § 832a(a), BPA is headquartered in the vicinity of the Bonneville Project (in Portland, Oregon).

Facilities:

BPA markets the electric power produced from 31 operating Federal dams in the Pacific Northwest owned by the U.S. Army Corps of Engineers and the Bureau of Reclamation, and from one nuclear plant, the Columbia Generating Station, to meet the needs of its customer utilities.

BPA owns and operates over 15,000 circuit miles of transmission lines, 237 substations and associated power system control and communications facilities over which electric power is delivered.

Performance:

PART rating: Moderately effective

FY07 4th quarter Joule status:

- Transmission Systems Reliability Performance: Green
- Repayment of Federal Power Investment: Green

- Hydropower Generation Efficiency Performance: Green

History

BPA was created in 1937 to market and transmit the power produced at Bonneville Dam on the Columbia River. Congress has since directed BPA to sell at wholesale the electric power from 31 operating Federal hydroelectric projects and to acquire non-Federal power and conservation resources sufficient to meet the needs of its customer utilities.

BPA also owns and operates over 15,000 miles of high-voltage transmission lines, transmitting power from the dams and other sources on an open-access non-discriminatory basis. BPA serves a 300,000 square mile area including Oregon, Washington, Idaho, Western Montana, and parts of Northern California, Nevada, Utah, and Wyoming.

The Bonneville Project Act of 1937 provided the foundation for BPA's statutory utility responsibilities and authorities. In 1974, the passage of the Federal Columbia River Transmission Act, 16 U.S.C. § 838, placed BPA under provisions of the Government Corporation Control Act (31 U.S.C. 9101-9110). The legislation provided BPA with "self-financing" authority and established the Bonneville Fund, a permanent indefinite appropriation allowing BPA to use its revenues from electric power and transmission ratepayers to directly fund all programs and to sell bonds to the U.S. Treasury (Treasury) to finance the capital projects. BPA's program is treated as mandatory and non-discretionary and no annual appropriations are required from Congress.

Over time through several Congressional acts, BPA's permanent borrowing authority has grown to a cumulative total of $4.45 billion outstanding at one time. Through FY 2007, BPA has returned approximately $23.7 billion to the Treasury in payment on FCRPS operations and maintenance and other costs, interest and amortization of appropriations and bonds.

In 1980, the Pacific Northwest Electric Power Planning and Conservation Act (Northwest Power Act), 16 U.S.C. § 839, expanded BPA's responsibilities to serve, if requested and up to the full net requirements, all preference utilities and acquire resources to serve those requirements; to encourage electric energy conservation; to give priority to conservation and renewable energy acquisitions; and to protect, mitigate, and enhance the effects of the federal hydroelectric facilities, on the fish and wildlife populations of the Columbia River and its tributaries.

Critical Operating Procedures

BPA updates its strategic direction annually to address key changes in its external and internal environment and to position it to fulfill its mission and vision in the years ahead. The purpose of each objective is to help uphold one or more of the four pillars of BPA's vision: system reliability, low rates, environmental stewardship and regional accountability. Using a balanced scorecard approach, BPA has placed its strategic objectives within four interrelated perspectives to highlight the direct and indirect relationships and interdependencies among strategic objectives. The four balanced scorecard perspectives are:

- Stakeholder Perspective
  - The value of mission deliverables as experienced by stakeholders

- Financial Perspective
  - The strength of BPA's financial health and performance

- Internal Operations Perspective
  - The efficiency and effectiveness of BPA and FCRPS operations

- People and Culture Perspective
  - The health of workforce capabilities, performance and work environment

The FCRPS' major operating segments are defined by the utility functions of generation and transmission. The Power Services segment represents the operations of the generation function, while the Transmission Services segment represents the operations of the transmission function. The service segments are not separate legal entities.

BPA follows FERC's open-access rulemaking standards of conduct as a matter of policy. FERC requires that transmission activities be functionally separate from power merchant functions and that transmission be provided in a non-discriminatory open-access manner. BPA, as a matter of policy, provides transmission pursuant to FERC's 888 Open Access Transmission Tariff (OATT) and recently filed an 890 OATT with FERC for approval.

Agency Services provide BPA's administration, financial management, legal counsel, public affairs, and certain other cross-agency functions.

Recent Organizational Accomplishments and Strengths

Strengths:

Transmission reliability

In FY 2007 there were no involuntary curtailments of firm load due to a transmission system security breach or to cascading outages on the BPA system.

Generation reliability

In FY 2007 there were no involuntary curtailments of firm load due to inadequate power supply or to breach of generation system security.

Generation availability

BPA achieved 99.6 percent heavy-load-hour availability in FY 2007, exceeding the target of 97.5 percent.

Customer satisfaction

Survey results for FY 2007 showed a customer satisfaction rating of 7.7, exceeding the target of 7.0 to 7.5 out of a possible 10.

Constituent satisfaction

Survey results for FY 2007 showed a constituent satisfaction rating of 7.6, exceeding the target of 7.0 to 7.5.

Tribal satisfaction

Survey results for FY 2007 showed a tribal government satisfaction rating of 6.9, exceeding the target of 6.0 to 6.5.

Endangered Species Act compliance

Based on regional collaboration with state, tribal, and federal parties to the FCRPS Biological Opinion court-ordered remand, BPA, the Corps of Engineers and the Bureau of Reclamation jointly developed a revised action for operation and maintenance of the FCRPS and an extensive biological analysis. BPA and the other agencies also executed 10-year agreements with four Columbia River tribes and the states of Idaho and Montana.

Treasury payments

BPA's FY 2007 payments to the U.S. Treasury of $1.045 billion were made on time and in full, the 24th consecutive year Treasury payments were made on time and in full.

Workforce gap closure

In FY 2007, BPA implemented 94 percent of the agency workforce plan actions to effectively recruit, retain and develop critical skills and occupations, exceeding the target of 80 percent.

Recent Accomplishments:

Completion of 20-year power sale contracts:

In 2007, BPA signed its Regional Dialogue Record of Decision. This was the product of five years of regional discussion of BPA's role in power marketing beyond 2011, when current power sales contracts expire. The policy includes a new tiered rate approach, with the Tier 1 rate based on the cost of the existing Federal system with limited and defined augmentation. If preference customers choose to buy more power from BPA beyond their Tier 1 designation, this power will be sold at a Tier 2 rate set to fully recover BPA's costs of securing the resources to serve this load growth. By defining the amount of power that will be available at the Tier 1 rate, BPA expects to provide the clarity utilities and other resource developers need to make decisions about developing or acquiring new power resources. A low and stable Tier 1 rate will also greatly enhance BPA's financial stability and significantly reduce future risk to BPA's ability to make its payments to the Treasury.

BPA expects to have completed development of its tiered rates methodology in 2008. A separate process to set post-2011 rates will be underway in 2009. BPA will sign new 20-year contracts with its preference power customers in late 2008 as well as contracts with its investor-owned utility and potentially with its remaining direct service industrial customers so that it can provide certainty about the respective rights and obligations of BPA and its customers.

Completion of Network Open Season:
In June 2008, BPA successfully completed its first Network Open Season (NOS) to efficiently offer transmission service as well as manage its transmission service request queue. Prior to the NOS, BPA had a queue of transmission service requests with little indication of whether or not sales of transmission service would justify capital expenditures for capacity upgrades or expansion of BPA's transmission system. BPA opened the NOS to invite potential transmission customers to sign Precedent Transmission Service Agreements (PTSAs). Once completed, the PTSAs were secured by financial deposits from the potential customers. Twenty-seven customers made deposits of $83 million on 153 PTSAs for 6410 megawatts of transmission service. With these deposits in hand, BPA will conduct cluster studies to determine what transmission system upgrades are needed to meet those requests. BPA expects to conduct a NOS at least annually.

Signing of the Columbia Basin Fish Accords:
BPA is joining with the U.S. Army Corps of Engineers and the Bureau of Reclamation to begin implementing the Columbia Basin Fish Accords, 10-year agreements signed on May 2, 2008 by the three Federal agencies, four Columbia Basin Indian Tribes and the States of Idaho and Montana. By signing these Accords, the parties agree that implementation will meet Federal requirements for Columbia River fish efforts under the Endangered Species Act (ESA) and the Northwest Power Act. BPA expects to commit $900 million over 10 years to implement the Accords.

Technology Innovation:
In 2005, BPA created a new Technology Innovation function and appointed a Chief Technology Innovation Officer to lead and focus BPA's research development and demonstration investments. BPA's technology innovation interests are driven by business challenges the agency faces and are defined through publicly available technology roadmaps.

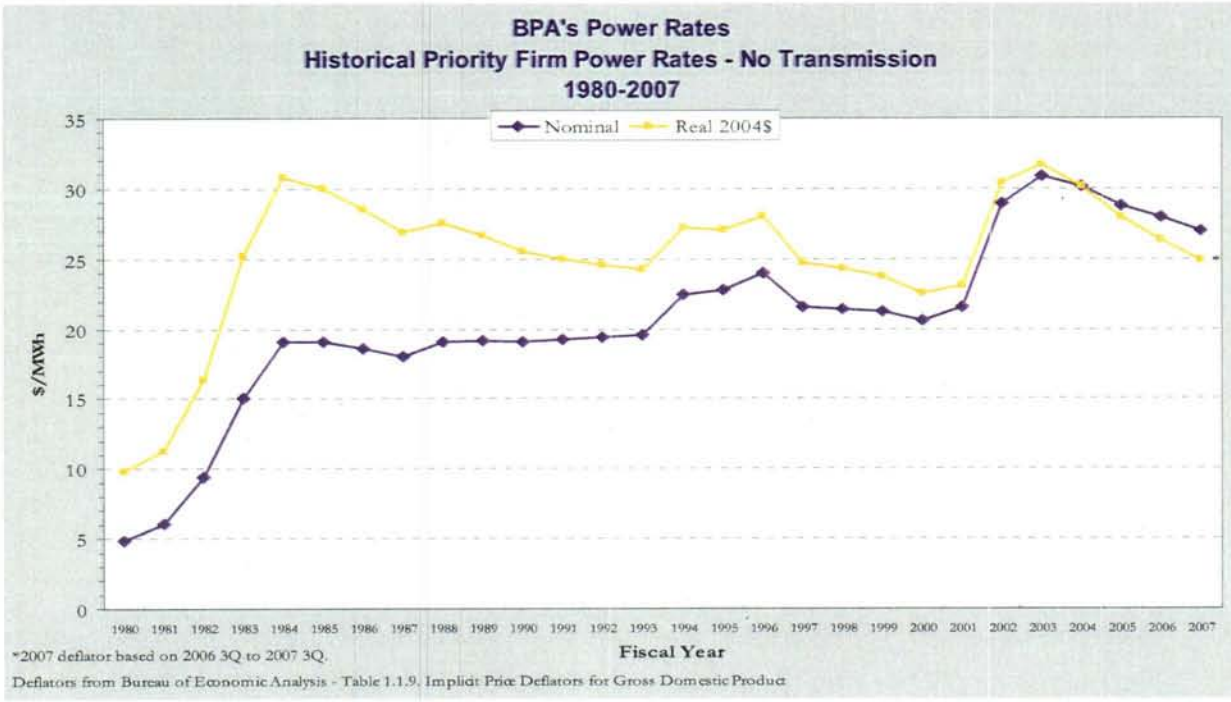
Leadership Challenges

Key Strategies and Timing

Adequate, Efficient and Reliable Power and Transmission Service:
BPA will advance policies for regional infrastructure investment, regional resource adequacy standards, one-utility transmission management, and reliability standards.

FCRPS Operations and Expansion:
Operation of the FCRPS power and transmission facilities will meet availability and reliability standards in the most regionally cost-effective manner. Expansion of FCRPS power and transmission supplies will result in regionally cost-effective service.

Transmission Access and Rates:
BPA will provide open access, non-discriminatory transmission services at rates that are kept low through achievement of BPA's objectives at the lowest practical cost.



Tiered Rates:
BPA's Tier 1 rates to public preference customers will reflect the cost of the undiluted Federal Base System, and will be below market for comparable products. For services in excess of those covered by the Tier 1 rate, BPA will charge a Tier 2 rate to reflect the incremental or market costs associated with such services.

Energy Efficiency, Renewables and Non-Wires:
BPA will pursue energy efficiency that is regionally cost effective and will continue to treat energy efficiency as a resource integral to meeting its load-serving obligations. BPA's renewable resources goal will be to ensure the development of its share of cost-effective renewables. BPA will evaluate and deploy cost-effective non-wires solutions to transmission needs, including demand-side management on equal footing with new transmission construction.

Governance and Internal Controls:
BPA will comply with the Office of Management and Budget's Circular A-123. Complete implementation of a governance model that will document, assess, and treat the various objectives, risks, and controls of critical business processes.

Environment, Fish and Wildlife:
BPA will manage its environmental, fish, and wildlife responsibilities with clearly-defined performance standards emphasizing "on-the-ground" results and cost-effective solutions.

Stakeholder Satisfaction:
BPA will provide a fundamental public service to the Pacific Northwest and deliver on its responsibilities through a commercially successful business. Customer, constituent and tribal government satisfaction will reflect how effectively and fairly the agency is balancing the needs of its various constituencies. BPA will regularly survey its customers, constituents, and tribes to determine its performance in meeting its targets for the quality of its relationships, communications, programs and service.

Critical Events and Action Items

3-month events

January 2009
The U.S. District Court for Oregon may rule on litigation on the Biological Opinion for the operation of the FCRPS. NOAA Fisheries issued the Endangered Species Act section 7 consultation in May 2008. These matters may have substantial cost and rate impacts for BPA.

February 2009
Submission of BPA's Fiscal Year 2010 Budget to Congress.

March 2009
Nothing to report

12-month events

BPA plans to complete a draft Resource Program in August 2009. The Resource Program will analyze the best blend of resource types that are expected to be available to meet BPA's future supply needs through 2020.

BPA plans to complete a Climate Change Action Plan in 2009. The plan will describe how BPA will integrate considerations about greenhouse gas emissions into relevant agency plans and decisions.

BPA will complete the 2010-2011 Power and Transmission Rate Cases in September 2009.

BPA will continue the work plan of the Wind Integration Team as committed in the settlement of the 2009 Wind Integration Rate Case.

BPA will continue implementing the 10-year Columbia Basin Fish Accords.

Hot Issues

BPA Rate Processes for 2010-2011:
BPA will begin the rate case in which it sets its 2010-11 power and transmission rates early in 2009, and will conclude it in time for rates to go into effect October 2009. BPA is conducting the process to determine its expected costs for Fiscal Years 2010 and 2011 with a public Integrated Program Review (IPR). The IPR has had workshops to present BPA's estimates of

program costs for the rate period and respond to public questions and comments. Costs estimated in the IPR will form the cost inputs for BPA's subsequent rate proceedings. BPA faces future cost pressures from several factors, including the new Biological Opinion for the FCRPS, needed investments at the Columbia Generating Station to improve the plant's condition and to prepare for relicensing, and needed overhaul of aging components of the federal hydropower and transmission system that are nearing or beyond their expected life.

A potential hot topic during the rate case may be BPA's Residential Exchange Program (REP) under the Northwest Power Act . The REP is intended to provide rate relief to small farm and residential customers of qualifying Pacific Northwest utilities, primarily investor-owned utilities (IOUs) with high average system costs. In May 2007, the Court of Appeals for the Ninth Circuit issued opinions related to REP settlements BPA had executed in 2000. The Court was responding to lawsuits brought primarily by BPA's public preference customers. The Court ruled that the settlement agreements were inconsistent with the Northwest Power Act and that BPA had improperly allocated costs of the settlement to its preference customers. BPA immediately suspended REP payments under the settlement and began a process to re-establish a residential exchange program, including a determination of overpayments made by public customers and new methodologies needed to determine REP benefits in 2009 and beyond. BPA established interim REP payments that will be "trued-up" at the completion of the process.

Transmission System Reliability, Congestion Management, and Construction:
In recent years, congestion on the Pacific Northwest transmission grid has become an increasing concern to BPA. Development of renewable electricity generation and changes in markets and load patterns stress the capability of the transmission system and reduce its flexibility to accommodate service requests and maintain reliability standards. BPA has several initiatives to manage transmission congestion and improve reliability. Beginning in June 2007, reliability standards became mandatory and sanctionable for all owners, operators, and users of the bulk electric system. BPA experienced two vegetation related transmission outages within 12 months. BPA has taken strenuous steps to resolve the root causes of this problem. BPA is proposing to make significant investments in transmission system upgrades and additions.

Biological Opinions for the Federal Columbia River Power System and the Willamette River Dams:
ESA requirements for Columbia River salmon are an ongoing source of uncertainty for BPA and the Pacific Northwest economy. BPA, the U.S. Army Corps of Engineers, and the Bureau of Reclamation recently signed 10-year agreements with four Columbia River tribes and the states of Montana and Idaho to establish commitments to strategies for ESA-listed fish and resolve legal disputes. NOAA Fisheries issued a Biological Opinion for operation of the FCRPS, which incorporates these agreements. NOAA Fisheries also issued a Biological Opinion for operation of Federal dams on the Willamette River in July 2008.

Wind Integration:
Wind power is the fastest growing renewable energy resource. BPA has 1,490 megawatts (MW) of wind power integrated in its balancing area as of July 2008. The Northwest Power and Conservation Council's (Council) 5th Power Plan calls for up to 6,000 MW of wind development in the Pacific Northwest in the next 20 years. Because wind power output can vary moment-to-

moment based on changes in wind speed, BPA has to adjust power produced from other sources to respond to the variable wind output so that loads and generation remain balanced. BPA and the Council developed a Wind Integration Action Plan in 2007 to define needed regional actions to address wind integration that can have significant impacts on reliable system operations and began implementing that plan in 2008.

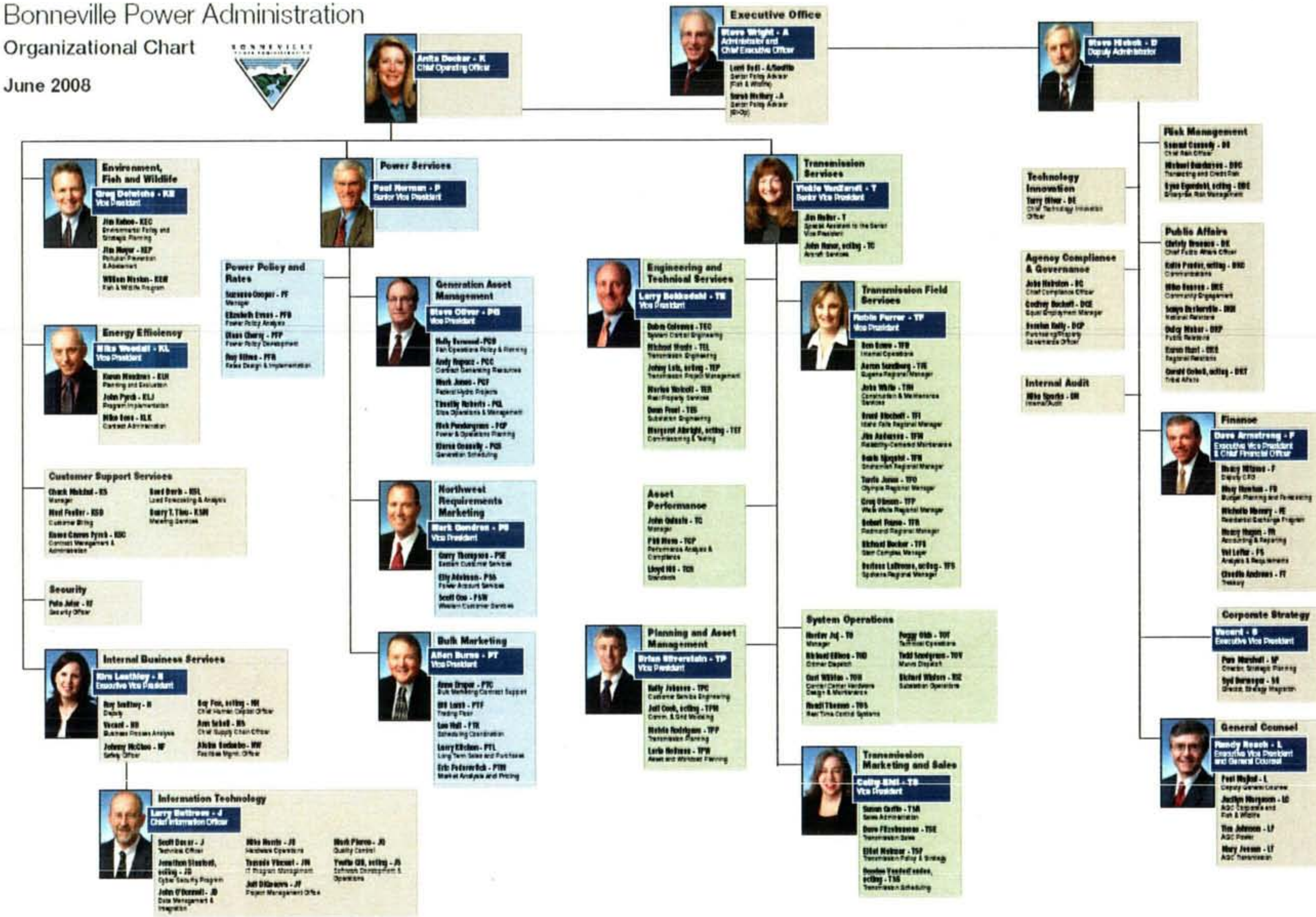
Future Service to Direct Service Industries:
BPA will be deciding the level of future benefits it will provide to direct service industries (DSIs). Although BPA is not obligated to sell DSIs power, the DSIs are longstanding customers who are the economic mainstays of several communities. BPA anticipates an agreement that gives the DSIs a reasonable chance of sustaining their operations within the region while strictly limiting BPA's costs and risks.

Bonneville Power Administration

Organizational Chart

June 2008

Current Organizational Chart



Southeastern Power Administration

Organization Information

Organization Name:

Southeastern Power Administration (Southeastern)

Address:

1166 Athens Tech Rd., Elberton, GA 30635-6711

Organization Phone Number:

(706) 213.3800

Organization Website:

www.sepa.doe.gov

POC E-mail Address:

melissas@sepa.doe.gov

Supporting the DOE Mission

Strategic Theme 1 – Energy Security

- Strategic Goal 1.3 – Energy Infrastructure

Key Activities:

- Market and deliver Federal hydroelectric power to preference customers in Georgia, Florida, Alabama, Mississippi, southern Illinois, Virginia, Tennessee, Kentucky, North Carolina, and South Carolina from 22 U.S. Army Corps of Engineers' (Corps') dams.
- Repay Federal investment (principal and interest) for the projects from which power is marketed
- Set rates to recover all costs allocated to power
- Participate in regional Electric Reliability initiatives
- Support the Energy Efficiency and Renewable Energy goals outlined in the Energy Policy Act of 2005, and the Energy Security Act of 2007

Mission Statement

Market Federal hydroelectric power at the lowest possible cost to public bodies and cooperatives in the southeastern United States in a professional, innovative, customer-oriented manner, while

continuing to meet the challenges of an ever-changing electric utility environment through continuous improvement.

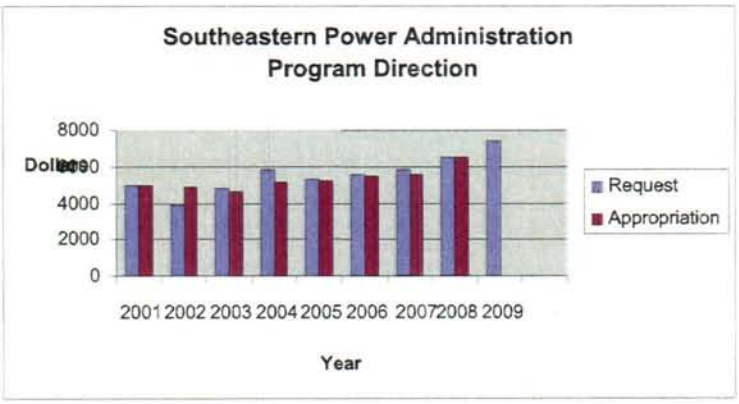
Status

Budget:

The Senate Committee on Energy & Natural Resource, and the House Committee on Natural Resources have oversight of Southeastern's mission. House and Senate Energy & Water Development subcommittees have oversight of Southeastern's appropriations.

Program Direction:

For comparison purposes, Southeastern's Program Direction for years FY 2001-2009 is shown below.



Program direction funding by category for the years 2007-2009 is shown below. The FY 2009 request is from the Administration's budget submission to Congress.

Program Direction

(dollars in thousands/whole FTEs)

	FY 2007	FY 2008	FY 2009 (Request)
Southeastern Power Administration			
Salaries and Benefits	4,051	4,599	4,976
Travel	126	346	467
Support Services	37	41	60
Other Related Expenses	1,388	1,418	1,917
Total, Program Direction	5,602	6,404	7,420
Total, Full Time Equivalents	42	44	44

Purchase Power and Wheeling:

The Purchase Power and Wheeling program supports Southeastern's mission to market and deliver reliable, cost-based hydroelectric power and related services. Significant increases in purchased power costs are primarily attributed to drought conditions. Southeastern's Purchase Power and Wheeling Funding by Category for FY 2007-2009 is shown below.

Purchase Power and Wheeling

(dollars in thousands)

	FY 2007	FY 2008	FY 2009
Purchase Power and Wheeling			
Purchase Power	12,895	26,370	28,349
Wheeling	34,303	35,845	35,173
Subtotal, Purchase Power and Wheeling	47,198	62,215	63,522
Alternate Financing			
Net Billing	-14,485	-13,802	-14,002
Subtotal, Purchase Power and Wheeling	32,713	48,413	49,520
Offsetting Collections Realized	-32,713	-48,413	-49,520
Total, Purchase Power and Wheeling Budget Authority	0	0	0

Southeastern uses net billing and offsetting collections to pay for Purchase Power and Wheeling Expenses

People:

- Estimated Number of Federal FTEs: 44
- Estimated Number of Contractor FTEs: 1
- Estimated Number of Contractors: 1

Facilities:

- Headquarters: Elberton, Georgia
- Transmission Lines: None
- Field Offices: None
- Marketing Area: Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Tennessee, Kentucky, southern Illinois

Performance:

- PART Rating: Moderately effective
- FY07 PART Measure Status: 4 met, 0 unmet, 0 unknown
- FY07 4th Quarter Joule Status: 6 Green, 0 Yellow, 0 Red

History

Southeastern was established in 1950 by the Secretary of the Interior to carry out the functions assigned to the Secretary by the Flood Control Act of 1944. In 1977, Southeastern was transferred to the Department of Energy. Headquartered in Elberton, Georgia, Southeastern markets electric power and energy generated from 22 multiple-purpose projects owned and maintained by the Corps of Engineers. With a nameplate capacity totaling 3,412 megawatts, Southeastern's 22 projects are divided into four separate power systems:

- Georgia-Alabama-South Carolina System
- Cumberland System
- Kerr-Philpott System
- Jim Woodruff System

Critical Operating Procedures

Southeastern markets generation from 22 hydroelectric facilities owned by the U.S. Army Corps of Engineers (Corps). These facilities are operated in accordance with *Project Reservoir Regulation Manuals* and *River Basin Water Control Plans* which specify project operating parameters for flood control operations, conservation operations, special operations, stream flow regulations, system hydropower operations, generation scheduling, and equipment maintenance activities. These documents also define minimum hydropower releases, project operational guide curves, in-stream flow requirements, project minimum and maximum operating elevations, and overall plant efficiency parameters.

Nineteen of these projects are located within the balancing area boundaries of interconnected utilities while the other three comprise the Southeastern Balancing Area. The operation of Southeastern's Balancing Area and scheduling of power deliveries from the other projects is conducted in accordance with current North American Electric Reliability Corporation (NERC) and Regional Reliability Organization standards and criteria.

Recent Organizational Accomplishments and Strengths

In compliance with North American Electric Reliability (NERC) standards, Southeastern marketed 5,028 gigawatt-hours of renewable hydroelectric energy to municipal and cooperative utilities, and state and Federal agencies in FY 2007. Through the generation of this energy, we saved the Nation equivalent of an estimated:

- 9.1 million barrels of oil;
- 2.2 million tons of coal;
- or 50.6 billion cubic feet of gas

Southeastern's hydroelectric generation offsets:

- Carbon dioxide emissions by 4.4 million metric tons
- Sulfur dioxide emissions by 15,506 tons; and
- Nitrogen oxide emissions by 5,271 tons

By working with area utilities, Southeastern supports the Climate Change and Technology Program by promoting residential, commercial, and industrial energy efficiency, as well as development of wind, solar, and biomass technologies when they are economically feasible. Southeastern also works closely with the Department of Energy's Wind Powering America Program to ensure customers in areas with category three winds or higher have the information necessary to benefit from implementing advanced wind technology.

Operating Compliance:

Southeastern's Power Operations are subject to NERC operating standards and are audited by a subcommittee of the SERC Reliability Corporation – a region of the NERC. Southeastern remains in compliance with all of the NERC operating standards. *(more information about Operating Compliance is included in the "Key Strategies and Timing" section of this briefing.)*

Financial Audit:

Southeastern is responsible for the annual audit of the Southeastern Federal Power Program which is performed by an independent auditing firm.

Rates and Repayment:

In accordance with the Secretary's delegation to the Deputy Secretary, the Administrators of the Southeastern, Southwestern, and Western Area Power Administrations, and the Federal Energy Regulatory Commission (FERC), Southeastern's rates for its four marketing systems are approved on an interim basis by the Deputy Secretary, DOE, and on a final basis by FERC.

Leadership Challenges

Use of Receipts for Annual Operating Expenses:

The OMB and DOE support reclassification of receipts from mandatory to discretionary (Net Zero Appropriations) for the annual operating expenses of Southeastern, Southwestern, and Western Area Power Administrations (PMAs). Reclassification of receipts in this manner would allow all the PMA programs to benefit from the alignment of PMA receipts with their annual (non-capital) expenditures provided by appropriations. This alignment would foster increased planning certainty for the PMA programs, which would ultimately improve the reliability and

operating efficiency of the Federal Power System. *(more information about the advantages of Net Zero Appropriations is included in the "Hot Issues" section of this paper.)*

Continuing Fund:

During drought conditions, Southeastern must purchase power to meet contractual power delivery commitments. The extreme drought condition occurring over Southeastern's service area during FY 2005-2008 has resulted in the need for Southeastern to fund these purchases through the Continuing Fund. The Continuing Fund allows Southeastern to temporarily borrow against receipts in order to meet emergency needs. All costs incurred must then be repaid by Southeastern customers. Because of the short term or emergency nature of these needs, costs are frequently higher than normal resulting in higher bills for Southeastern's customers.

Succession Planning:

Southeastern has an active succession management plan that is reviewed on an on-going basis. The succession plan addresses the need of replacing several members of its executive management team and other critical staff. The plan also addresses recruiting highly skilled technical personnel over the next two years. Without implementing this plan, Southeastern will lose a significant amount of expertise in the next several years because of pending retirements.

Key Strategies and Timing

Use of Receipts for Corps O&M:

The Corps has a backlog of capitalized items that to date have not been funded. Southeastern, the Corps, and Southeastern's customers have several Memoranda of Agreement (MOA) in place that have partially funded this backlog consistent with federal law. As the hydropower equipment continues to age, significant funding will be needed for major replacements of the necessary equipment to keep the projects operational.

Additional use of receipts for capitalized items:

- Reduces pressure on Congressional Appropriations
- Allows for better program planning
- Improves system reliability

Regional Reliability Initiatives:

Southeastern participates in regional reliability initiatives through the SERC Reliability Corporation – a region of NERC. Efforts include studies for the modernization of the electric grid, security enhancements for Critical Infrastructure Protection, and bulk electric system restoration. Southeastern also participates in committee meetings which discuss the development of NERC Reliability Standards and Regional Reliability Policy and Plans. By participating in the

regional reliability initiatives, Southeastern is able to meet strategic goal 1.3.23 which requires our agency to remain in compliance with NERC performance goals CPS1 and CPS2.

Critical Events and Action Items

3-Month Events:

January 2009

- FY 2010 Congressional Budget due
- A-123 Internal Control Quarterly

February – March 2009

- FY 2010 Budget Hearings

12-Month Events:

April 2009

- A-123 Internal Control Quarterly

April – May 2009

- Formulation of FY 2011 Corporate Program Review

May – June 2009

- FY 2011 Corporate Program Review due to DOE

June – July 2009

- Work with DOE to finalize budget issues

July 2009

- A-123 Internal Control Quarterly
- Southeastern receives Program Decision Memorandum which identifies approved baseline for the formulation of the FY 2011 OMB Budget Request

August 2009

- FY 2011 OMB Budget due to DOE

September – October 2009

- Southeastern meets with OMB to present budget overview and answer any questions concerning budget justifications

September 2009

- FY 2011 OMB Budget due to OMB
- A-123 Internal Control Final Assurance Letter to the Secretary

October 2009

- New FY 2010 begins, usually under a Continuing Resolution
- Audited Financial Statements submitted to DOE

November 2009

- Southeastern receives the FY 2011 OMB pass back and prepares any appeals

December 2009

- Southeastern works with DOE and OMB on any appealed items and answers questions or requests from the OMB pass back
- Southeastern prepares justifications for the FY 2011 Congressional Budget request

Hot Issues

Net Zero Appropriations:

Three of DOE's Power Marketing Administration's (PMAs) – Southeastern, Southwestern, and Western Area Power Administration – are seeking authority to fund their annual expenses through the use of Net Zero appropriations beginning in FY 2010. The proposal does not include funding the generating agencies' expenses through this process.

Net Zero appropriations use current year revenues collected by a Federal agency to offset current year appropriations provided by Congress in the annual appropriations act. The result is a Net Zero appropriation for any activity funded in this manner. This financing method could be used to fund the PMAs' annual Operating & Maintenance (O&M) expenses. Capitalized investments would continue to be funded through annual appropriations. Because annual expenses are recovered in the same year they are incurred, there would be a one-for-one relationship between Net Zero appropriations and PMA receipts for annual expenses.

Net Zero appropriations could be implemented using the following steps:

(1) PMA proprietary receipts that are currently classified as "mandatory" in the Federal budget would be reclassified as "discretionary," so subsequent annual appropriation acts will not face scoring issues;

(2) Southeastern's entire Program Direction budget will be funded by Net Zero and will be repaid in the year expensed;

(3) The FY 2010 Energy & Water Development Appropriations Act and subsequent annual appropriations acts would incorporate Net Zero language for the three PMAs.

Drought Conditions:

During FY 2005-2007 and continuing into FY 2008, the majority of the southeastern United States has experienced well-below average rainfall amounts. Over this period, the conditions have grown progressively worse with the respect to the levels of rainfall and corresponding hydrologic flows. The lack of rainfall equates to a deficit of more than twenty inches in a number of areas which encompass the drainage areas for Southeastern's major storage projects.

The adverse hydrological conditions have impacted hydropower as the Corps has implemented its drought operational plans for the river basins from which Southeastern markets generation. As a result, Southeastern has experienced reductions in the quantities of generation available which has necessitated the purchase of replacement power to fulfill existing contractual obligations.

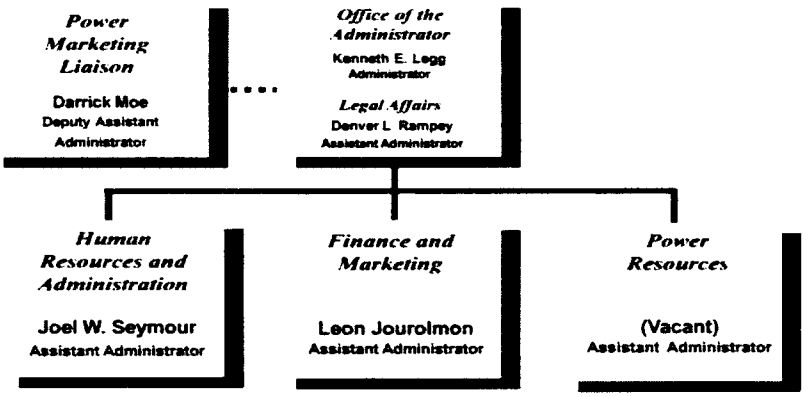
Southeastern continues to work with the Corps, its customers, and other river basin stakeholders in an attempt to preserve the remaining storage at the projects in order to maintain the operating flexibility of the generation resources.

Cumberland System Dam Safety Issues:

In July 2005, the Nashville District, Corps of Engineers informed Southeastern of dam safety issues at the Wolf Creek and Center Hill Projects located in the Cumberland System. These projects are the two largest tributary storage projects in the Cumberland System, and their operation and management significantly affect the flows in the entire Cumberland River System. According to the Corps, both projects are experiencing serious seepage problems. Long-term operating procedures were proposed by the Corps in FY 2006 to address the safety concerns while minimizing the overall impact to Congressionally-authorized project purposes.

As a result of the altered operation of these two projects, Southeastern implemented an Interim Operating Plan for the Cumberland System which allows some level of benefits to be provided to all of Southeastern's Cumberland System customers on a ratable basis as generation is made available by the Corps. Southeastern has operated the System under this plan for over a year and will adapt and modify the operation as necessary to meet changing System conditions.

Current Organizational Chart



Southwestern Power Administration

Organization Information

Organization Name:

Southwestern Power Administration

Address:

One West Third Street, Tulsa, Oklahoma 74103-3502

Organization Phone Number:

918-595-6600

Organization Website:

www.swpa.gov

POC E-mail Address:

Darrick Moe, Deputy Assistant Administrator
moe@wapa.gov

Supporting the DOE Mission

Strategic Theme 1 – Energy Security

- Strategic Goal 1.3 – Energy Infrastructure

Key Activities

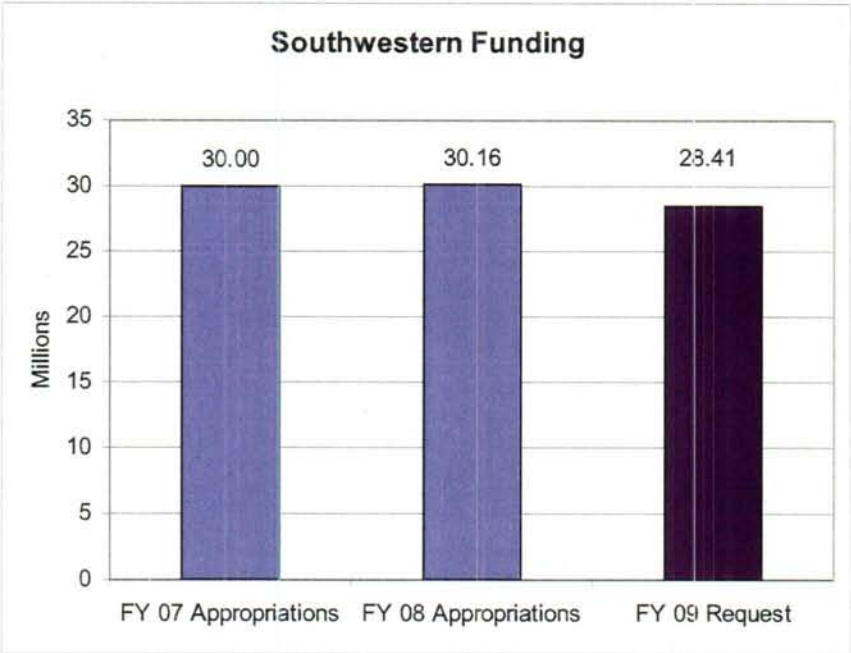
- Market and deliver federal power to preference customers in Arkansas, Kansas, Louisiana, Missouri, Oklahoma, and Texas from 24 U.S. Army Corps of Engineers reservoir projects
- Repay taxpayer investment (principal and interest) in the projects from which power is marketed
- Participate in regional electric reliability initiatives

Mission Statement

Market and reliably deliver federal hydroelectric power with preference to public bodies and cooperatives. This is accomplished by maximizing the use of federal assets to repay the federal investment and participating with other water resource users in an effort to balance their diverse interests with power needs within broad parameters set by the U.S. Army Corps of Engineers, and implementing public policy.

Status

Budget:



FY 2009 Congressional Request: $28,414,000

People:

- Number of federal FTEs: 179
- Number of contractor FTEs: 39
- Number of headquarters FTEs: 0
- Number of field site FTEs: 179

Facilities:

- Gore, Oklahoma - Maintenance Center
- Jonesboro, Arkansas - Maintenance Center
- Springfield, Missouri - Scheduling, Operations, Engineering, and Maintenance Center
- Tulsa, Oklahoma - Headquarters
- 24 substations, 46 microwave and VHF radio sites, and operation of 1,380 miles of transmission line

Performance:

- PART rating: Moderately effective
- FY 2007 PART measure status : 4 met, 0 unmet, 0 unknown
- FY 2007 4th quarter Joule status: 6 Green, 0 Yellow, 0 Red

History

Southwestern was established in 1943 by the Secretary of the Interior as a federal agency that today operates within the Department of Energy as authorized by Section 5 of the Flood Control Act of 1944. By law, Southwestern markets and delivers federal power primarily to public bodies and rural electric cooperatives. Southwestern has over one hundred such preference customers, and these entities ultimately serve another eight million end-use customers.

Timeline of Significant Events:

August 31, 1943
Department of Interior Orders 1865 and 1866 respectively created the Southwestern Power Administration and named Douglas Wright as its first Administrator.

December 22, 1944
The Flood Control Act of 1944 authorized the Secretary of the Interior to transmit and dispose of power and energy at U.S. Army Corps of Engineers projects in such manner as to encourage the most widespread use thereof at the lowest possible rates to consumers consistent with sound business principles and to formulate rate schedules to recover the cost of producing and delivering such power.

November 21, 1945
Department of Interior Order 2135 directed Southwestern, as the agent of the Secretary of the Interior, to market surplus power from the existing Norfork and Denison projects, as well as all other Corps projects in Arkansas and Louisiana, and in designated areas of Kansas, Missouri, Oklahoma, and Texas.

August 4, 1977
Southwestern is transferred from the Department of Interior to the Department of Energy.

Dam Development in Southwestern's Marketing Area

Dam Name	Date Online	Dam Name	Date Online
NORFORK	1944	EUFAULA	1965
DENISON	1945	SAM RAYBURN	1966
NARROWS	1950	KEYSTONE	1968
BULL SHOALS	1953	BROKEN BOW	1970
FT GIBSON	1953	ROBERT S KERR	1971
TENKILLER	1954	DEGRAY	1972
WHITNEY	1955	OZARK	1973
BLAKELY MOUNTAIN	1956	STOCKTON	1973
TABLE ROCK	1959	WEBBERS FALLS	1974
GREERS FERRY	1964	HARRY S TRUMAN	1982
BEAVER	1965	CLARENCE CANNON	1985
DARDANELLE	1965	ROBERT D WILLIS	1989

Critical Operating Procedures

Southwestern's Division of Scheduling and Operations, located in Springfield Missouri, directly operates 17 hydroelectric facilities within its balancing area, and operates 1,380 miles of transmission line located in Arkansas, Missouri, and Oklahoma.

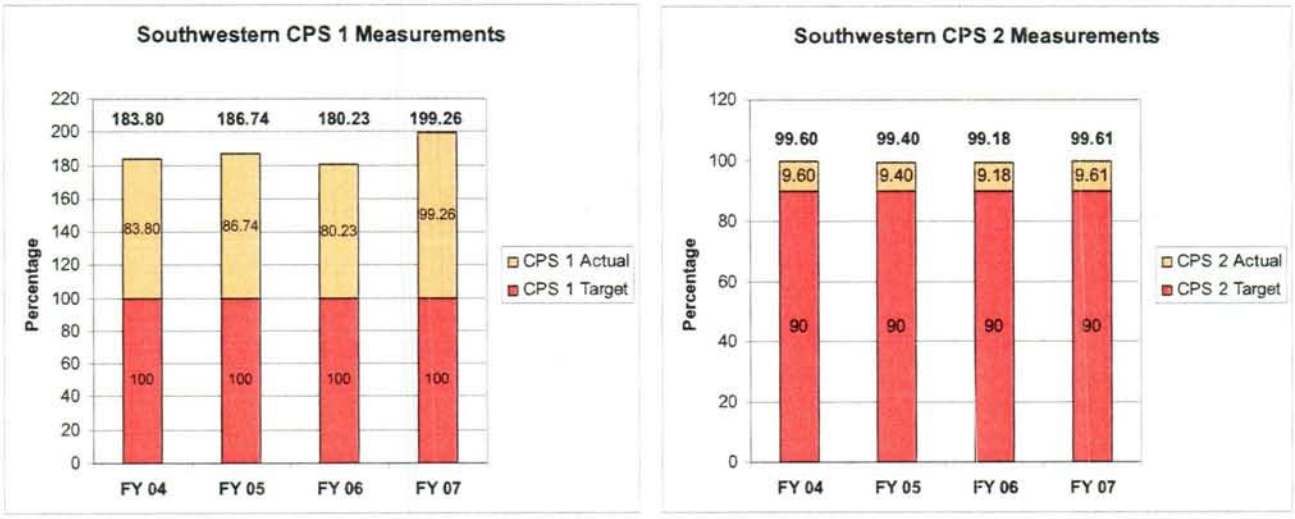
Hydroelectric facilities are owned by the U.S. Army Corps of Engineers (Corps), and are operated in accordance with operating arrangements between Southwestern and the Corps. These arrangements provide for Flood Control Operations, Conservation Operations, Special Operations, Individual Project Regulation and System Hydropower Operations, Generation Scheduling, Generation Equipment Maintenance Schedules, and Switching activities. Also, these arrangements define minimum hydropower releases during flood conditions, water release requirements for instream flow needs, maximum drawdown rates, response time to change in generation, water control manuals, and plant efficiency curves.

The bulk electric transmission system is operated in accordance with current North American Electric Reliability Corporation (NERC) standards, and with established Regional Reliability Organization standards and criteria.

Recent Organizational Accomplishments and Strengths

On average, Southwestern provides nearly 5.6 billion kWh of renewable, clean hydroelectric energy each year to not-for-profit municipal, cooperative, and military customers. Through the generation of this energy, Southwestern annually saves the Nation the equivalent of an estimated 9.2 million barrels of oil, 2.7 million tons of coal, or 56.5 billion cubic feet of gas, and prevents the emission of harmful gases equivalent to 4.6 million tons of carbon dioxide, 13.2 thousand tons of sulfur dioxide, and 11.1 thousand tons of nitrogen oxide.

Southwestern also consistently outperforms its targets for NERC's Control Performance Standards (CPS). Since NERC began measuring a utility's ability to balance generating supply to electrical load (CPS 1) and to limit the magnitude of generation and demand imbalances (CPS 2), Southwestern has met or exceeded its targets (see "Southwestern Measurements of NERC Control Performance Standards" charts).



Southwestern Measurements of NERC Control Performance Standards

Finally, Southwestern operates and maintains its portion of the federal power system at a cost well below the national average for the utility industry. Southwestern consistently repays the federal investment in the hydropower facilities, as well as a significant portion of joint costs shared with flood control, navigation, recreation, and other project purposes.

Leadership Challenges

- Alleviating severe rate impacts to Southwestern's customers due to a new requirement, beginning in FY 2009, that expenditures from the Continuing Fund be repaid within one year
- Securing adequate funding to run Southwestern's program in the face of decreasing appropriations

Key Strategies and Timing

(Receipt/Disbursement Account and Continuing Fund; and Use of Receipts for Southwestern O&M are discussed under the "Hot Issues.")

Maintenance of Corps Projects

To keep the hydroelectric projects from which Southwestern markets power in good working order, Southwestern proposes to continue to fund non-routine maintenance of certain Corps projects through a Memorandum of Agreement with its customers and the Corps which has been in place since 1999. Additional arrangements, scheduled tentatively to begin in FY 2009, include the transfer of switchyard equipment from the Corps to Southwestern. As a registered transmission system owner and operator with NERC, Southwestern has the expertise and resources not always available to the Corps for responsibility and maintenance of transmission equipment such as that located within Corps switchyards. The transfer of equipment integral to the bulk transmission system will improve regional reliability by ensuring that Corps powerplants stay connected to the grid.

Regional Reliability Initiatives

As authorized in Section 1232 of the Energy Policy Act of 2005, Southwestern proposes to continue participating in the Southwest Power Pool Regional Transmission Organization (SPP RTO), which is also the Regional Entity within Southwestern's region charged with ensuring reliable power supplies and adequate transmission infrastructure. Southwestern will continue in FY 2009 and beyond to provide input into the following SPP RTO activities: periodic assessments of the transmission system, evaluation of transmission additions, Available Transfer Capability (ATC) calculations, seasonal flowgate ratings, transmission contingency evaluations, and regional transmission expansion planning efforts.

Studies by the SPP RTO and Southwestern have supported conclusions by the National Transmission Grid Study and other industry sources that the future provision of reliable and affordable electricity requires modernizing the structure and operation of the Nation's transmission systems. Planned improvements for Southwestern's system include:

- Microwave Radio Replacement/Addition
  (FY 2008 – FY 2014) $19.3 million
- Transformer Replacements/Additions
  (FY 2008 - FY 2017) $17.9 million
- Relaying Replacements
  (FY 2008 – FY 2017) $9.6 million
- Static Wire Replacement
  (FY 2010 – FY 2017) $9.2 million
- Microwave Tower Replacement/Addition
  (FY 2008 – FY 2011) $7.9 million
- Disconnect Switch Replacements
  (FY 2008 - FY 2017) $6.5 million
- Data Acquisition/Telemetry Improvements
  (FY 2008 – FY 2017) $4.2 million
- Foundation/Grounding Improvement
  (FY 2008 - FY 2015) $3.2 million
- System Security
  (FY 2011 – FY 2015) $3.9 million
- Breaker and Metering Replacements
  (FY 2008 - FY 2017) $2.7 million

Critical Events and Action Items

3-month events

January 2009

- FY 2010 Congressional Budget due

February thru March 2009

- FY 2010 Budget Hearings

12-month events

January thru December 2009
- Spectrum Relocation Initiative

April thru May 2009
- Formulation of FY 2011-15 Corporate Program Review

May thru June 2009
- FY 2011-15 Corporate Program Review due to DOE

June thru July 2009
- Work with DOE to finalize budget issues

July 2009
- Southwestern receives Program Decision Memorandum which identifies approved baseline for the formulation of the FY 2011-15 OMB Budget Request

August 2009
- FY 2011 OMB Budget due to DOE

September thru October 2009
- Southwestern meets with OMB to present budget overview and answers any questions concerning budget justifications

September 2009
- FY 2011-15 OMB Budget due to OMB

October 1, 2009
- New Fiscal Year (FY 2010) begins, usually under a Continuing Resolution

November 2009
- Southwestern receives the FY 2011-15 OMB Passback and prepares any appeals.

December 2009
- Southwestern works with DOE and OMB on any appealed items and answers any questions or requests from the OMB Passback.
- Southwestern prepares justifications for the FY 2011 Congressional Budget request.

Hot Issues

1. Special Southwestern Receipt/Disbursement Account and Continuing Fund

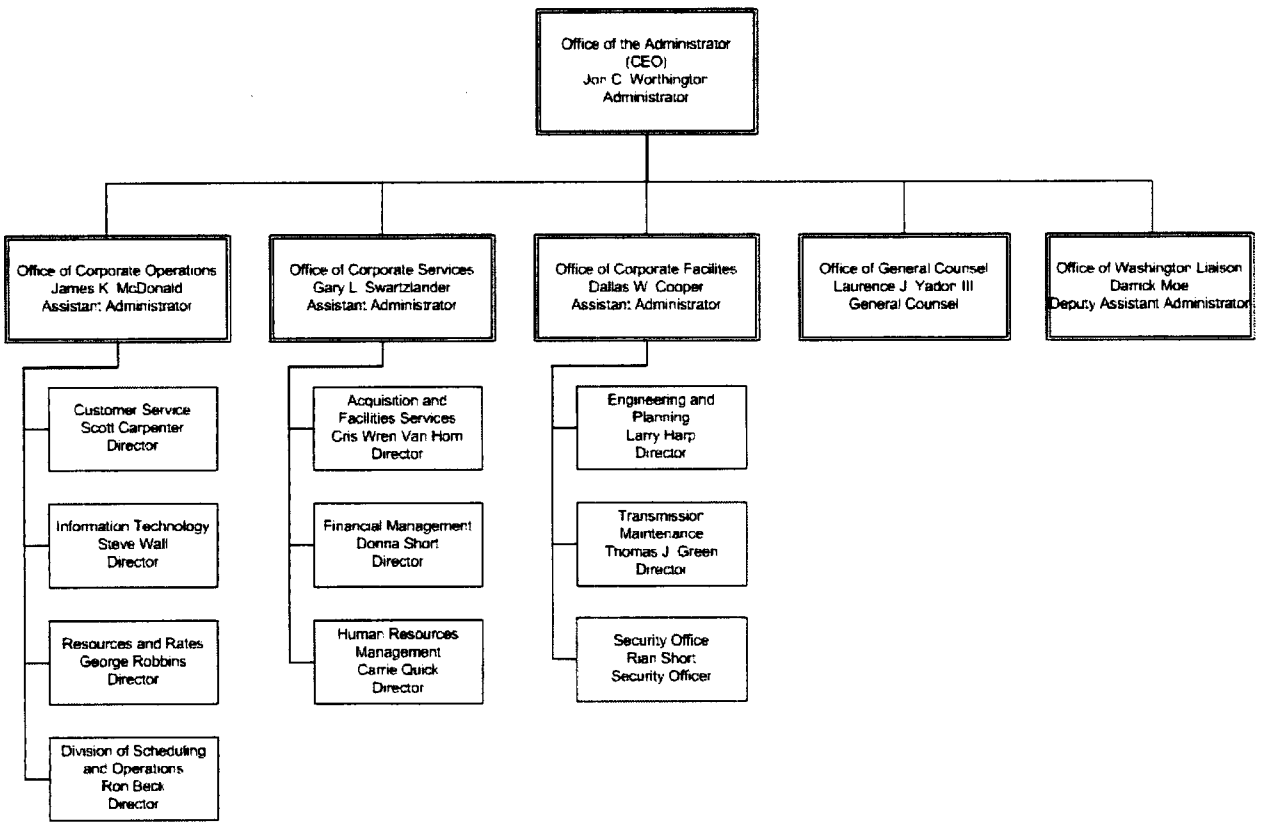
Beginning in FY 2009, Southwestern will be required to recover from Southwestern's customers within one year any expenditures for Purchased Power and Wheeling (PPW) that Southwestern funds through the Continuing Fund. Large apportionments from the Continuing Fund for Southwestern's use for PPW have the potential to cause a severe rate impact to the smaller municipals and cooperatives which Southwestern serves. Southwestern is proposing several alternative financing methods to alleviate these impacts, including establishing a Special

Receipt/Disbursement Account. Southwestern and DOE, with support from Southwestern's customers, are currently studying the details of a proposal to establish such an account in Treasury. This proposal would result in Southwestern's customers prepaying a significant portion of estimated PPW costs through Southwestern's rates. Southwestern proposes to build a balance of $30 million in this account. The receipts collected from Southwestern's customers would be set aside in the account and would be accessed in years of extreme drought to fund a portion of the required power purchases. This would reduce the need to utilize the Continuing Fund, and thereby mitigate rate volatility during future droughts.

2. *Net Zero Appropriations for the Power Marketing Administrations*

Subject to Congressional oversight, the Southeastern, Southwestern and Western Area Power Administrations are proposing to use their respective power receipts to offset (to zero) appropriations for annual expenses. Use of receipts increases funding certainty, which improves planning of PMA operation and maintenance requirements. In advance of a Net Zero language proposal, the PMAs are working with OMB, and the House and Senate Budget Committees (scorekeepers) to reclassify PMA receipts associated with annual expenses from mandatory to discretionary. In the Fall 2008 scorekeeping meeting, the scorekeepers may address the PMA receipt reclassification. Reclassification improves the likelihood of passing Net Zero language in either an authorization or appropriations act. The PMAs FY 2010 budget submittal to DOE includes a Net Zero appropriation scenario for annual expenses.

Current Organizational Chart



Southwestern Power Administration Organization

Energy Information Administration

Energy Information Administration

Organization Information

Organization Name:

Energy Information Administration

Address:

1000 Independence Ave. SW

Washington, DC 20585

Organization Phone Number:

202-586-4361

Organization Website:

http://www.eia.doe.gov

POC E-mail Address:

Margot.Anderson@eia.doe.gov

Supporting the DOE Mission

Strategic Theme 1 – Energy Security

Strategic Goal 1.1 – Energy Diversity

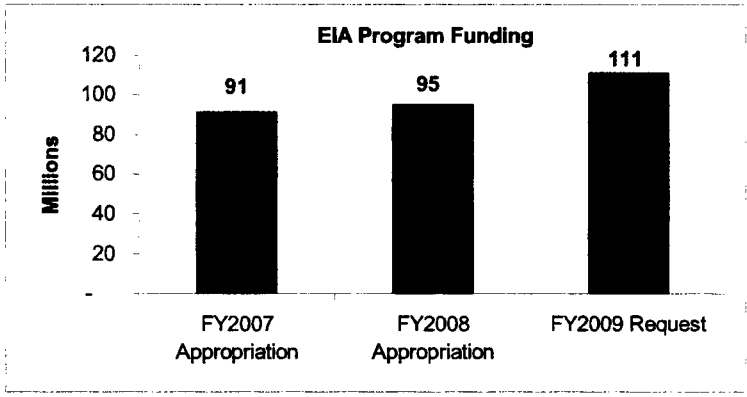
The Energy Information Administration (EIA) provides accurate, reliable, and timely policy-neutral energy data and information to meet the needs of Government, industry, and the public for the purpose of promoting sound policy decision-making, efficient markets, and an informed public. EIA conducts a comprehensive data collection program that covers the full spectrum of energy sources and energy flows. EIA generates short- and long-term domestic and international energy forecasts and performs energy analyses. EIA disseminates its data products, analyses, reports, and services primarily through its web site and telephone contact centers. Major users of EIA's work products include the Congress, Federal and State government, industry, academia, financial institutions, news media and the public.

Mission Statement

EIA provides high-quality, policy-neutral energy information to meet the requirements of the Congress, the Executive Branch, the private energy sector, and the public to promote sound policymaking, efficient markets, and an informed public.

Status

Budget:



FY2009 Congressional Request: $110,595,000

People:

Estimated number of federal FTEs: 370

Estimated number of contractor FTEs: 225

Estimated number of headquarters FTEs: 358

Estimated number of field site FTEs: 12

Facilities:

EIA is located in the Forrestal Building and has one small field office in Dallas, Texas.

Performance:

PART rating: Results Not Demonstrated

EIA participated in a PART evaluation in 2004 in conjunction with the FY 2006 budget process. The assessment found that EIA's program compares favorably with other federal statistical agencies, has a clear purpose, addresses a specific need, and is well designed. However, at that time EIA received an overall rating of "Results Not Demonstrated" due to the lack of annual performance targets and the lack of independent peer review of sufficient scope.

Subsequently, EIA established annual measures, baselines, and targets, and in May 2006 an independent, external expert review of EIA's programs was completed.

FY 2007 PART measure status: met all three measures--timeliness of EIA information products, quality of EIA information products, and cost savings realized from a subset of surveys, released on schedule.

FY 2007 4th quarter Joule status: green on both measures-- 1.1.12.1 Products meeting release schedules, and 1.1.12.2 Complete customer satisfaction survey.

History

EIA was created in response to the need for additional Federal initiatives to collect and disseminate energy-related information, and to evaluate and analyze this information. These needs were revealed as the United States (U.S.) sought to respond to the energy crises of the 1970s. The first law to address these needs was the Federal Energy Administration (FEA) Act of 1974, Public Law 93-275, as amended, which created the first U.S. agency with a primary focus on energy and mandated the establishment of a National Energy Information System to ". . .contain such energy information as is necessary to carry out the. . .[FEA's] statistical and forecasting activities. . . ." (Section 52). It also provided data collection enforcement authority with respect to energy producing and major consuming firms.

EIA in its present form was created by the Department of Energy (DOE) Organization Act of 1977, Public Law 95-91. Section 205(a) of this law charged the new organization with carrying out a

> central, comprehensive, and unified energy data and information program which will collect, evaluate, assemble, analyze, and disseminate data and information which is relevant to energy resource reserves, energy production, demand, and technology, and related economic and statistical information, or which is relevant to the adequacy of energy resources to meet demands in the near and longer term future for the Nation's economic and social needs.

Section 205(d) provides that the EIA Administrator

> shall not be required to obtain the approval of any other officer or employee of the Department in connection with the collection or analysis of any information; nor shall the Administrator be required, prior to publication, to obtain the approval of any other officer or employee of the United States with respect to the substance of any statistical or forecasting technical reports which he has prepared in accordance with law.

Critical Operating Procedures

EIA is the Nation's premier source of unbiased energy data, analysis and forecasting. EIA provides this information to promote sound policymaking, efficient energy markets, and public understanding about energy and its interaction with the economy and the environment. EIA neither formulates nor advocates any policy conclusions.

EIA issues a wide range of weekly, monthly and annual reports on energy production, stocks, demand, imports, exports, and prices, and prepares analyses, special reports, and brochures on topics of current interest. EIA's data and analyses are widely used by Federal and state agencies, industry, news media, consumers, and educators. All of EIA's products can be accessed through its Web site, http://www.eia.doe.gov, which logs more than 2 million user sessions a month.

Examples include:

Weekly Reports: *This Week in Petroleum; Coal News and Markets; Natural Gas Weekly Update; Weekly Natural Gas Storage Report; Weekly Coal Production Report; Weekly Petroleum Status Report.*

Monthly Reports: *Short-Term Energy Outlook; Natural Gas Monthly; Electric Power Monthly; Monthly Energy Review*

Annual Reports: *Annual Energy Outlook with Projections to 2030; Annual Energy Review; International Energy Outlook; Natural Gas Annual; Annual Coal Report; Annual Emissions of Greenhouse Gases in the U.S.*

Special and Periodic Reports: *Energy in Briefs; Analysis of Oil and Gas Production in the Arctic National Wildlife Refuge; Energy Market and Economic Impacts of S. 2191; the Lieberman-Warner Climate Security Act of 2007; The Impact of Increased Use of Hydrogen on Petroleum Consumption and Carbon Dioxide Emissions; Residential Natural Gas Price Information for Consumers; Country Energy Profiles; State Energy Profiles .*

Recent Organizational Accomplishments and Strengths

The Nation's leaders rely on EIA for timely and comprehensive information to formulate energy policy and programs. Industry looks to EIA for official estimates on energy demand, supply, prices, markets and financial indicators. News media and the general public rely on EIA for the most comprehensive Government source of current and historical data and information on all aspects of U.S. energy. The international community relies on EIA's products for timely information on world energy supply and demand. The EIA Kid's Page, http://www.eia.doe.gov/kids/, provides a wealth of energy-related information and activities for primary and secondary schools.

EIA Major Offices

Office of Integrated Analysis and Forecasting (OIAF): OIAF conducts forward-looking analyses and develops mid- to long-term forecasts of alternative energy futures for both domestic and international energy markets. OIAF maintains, develops, and applies the National Energy Modeling System (NEMS), and other modeling systems. The Office performs analytic studies of integrated energy markets and how alternative energy policies, economic conditions, or environmental regulations affect them. The Energy Policy Act of 1992 requires EIA, through OIAF, to measure and estimate greenhouse gas emissions and to carry out the voluntary program for reporting greenhouse gas. The Office publishes the *Annual Energy Outlook*, the *International Energy Outlook*, *Emissions of Greenhouse Gases in the United States*, and *Voluntary Report of Greenhouse Gas Emissions*, along with other analyses requested by the Department, the Congress, or Administration.

Office of Energy Markets and End Use (EMEU): EMEU compiles and disseminates monthly and annual data on domestic and international energy production and consumption. EMEU conducts quadrennial energy consumption surveys and analyzes historical and near-term energy consumption. EMEU collects, compiles and disseminates data on financial and operating information for major U.S. energy companies. EMEU prepares the monthly EIA *Short-Term Energy Outlook* (STEO) forecast (demand, supply, stocks, prices); assesses energy and economic impacts of domestic and international energy contingencies; and, analyzes international energy supplies, demand, and environmental trends.

Office of Oil and Gas: The Office of Oil and Gas (OOG) collects, analyzes and disseminates information on petroleum and natural gas on weekly, monthly and annual schedules. The weekly releases on oil and natural gas inventories have a significant impact on spot and futures prices and are closely watched in the markets and media. To gather accurate source information, OOG operates 35 statistical surveys of companies operating in the energy industry, covering petroleum and natural gas resources, reserves, supply and marketing (prices). OOG also produces analytical reports for general publication, and special briefings and analyses for policymakers in the Executive Branch and Congress.

Office of Coal, Nuclear, Electric and Alternate Fuels (CNEAF): CNEAF collects data from energy market participants including utilities, independent power producers, energy service providers, combined heat and power plants, coal producers, manufacturing plants that consume coal, and manufacturers of alternative-fuel vehicles. These data are disseminated in a variety of on-line publications on the EIA Web site on a weekly, monthly, quarterly, and annual basis. The Office also produces short-term forecasts and historical analyses of coal, electricity, and renewable fuels markets, and provides data and forecast inputs to other offices in EIA.

Leadership Challenges

Energy Data Quality Improvements

Accurate data drive energy analyses, investment and trade decisions; improve market function; and lead to efficient pricing. EIA has deferred or canceled several petroleum data quality activities over the past decade, due to resource constraints. Recent changes in the industry have exposed major gaps in EIA's most important petroleum data, due to EIA's inability to fully track gasoline blending activity, missing gasoline and missing imports, significant discrepancies between marketing and supply survey volumes, outdated frames, and antiquated survey systems. These issues are increasingly noted in the trade press, and Section 805 of the *Energy Independence and Security Act of 2007* authorizes resources for improvements in oil and gas data and requires that EIA "establish a 5-year plan to enhance the quality and scope of the data collection to ensure the scope, accuracy, and timeliness of information needed for efficient functioning of energy markets and related financial operations."

National Energy Model

In FY 2009, EIA proposes to resume development and testing of the next generation National Energy Model to replace the existing National Energy Modeling System (NEMS). The new Model will improve EIA's ability to assess and forecast supply, demand, and technology trends impacting U.S. and world energy markets. A reliable and maintainable mid-term energy model is needed for EIA to develop credible baseline energy projections that meet the needs of the Administration, DOE programs, and other customers for relevant, reliable, timely, consistent, accurate, and high quality energy analyses, and execute policy analyses requested by the Executive Branch and Congress.

Key Strategies and Timing

EIA employs the following strategies:

Strategies

Goal 1 (Workforce): EIA has a diverse, highly-skilled and motivated workforce that innovates and improves our products, processes, and services. To implement this goal, EIA strives to:

- Conduct an EIA-wide recruitment program designed to identify and attract qualified candidates.
- Conduct an EIA-wide employee retention program.
- Implement employee training and knowledge-sharing programs specifically linked to workforce proficiency.
- Enhance staff capabilities and opportunities through collaborative projects, job rotations, mentor-protégé relationships, and challenging assignments.
- Develop useful, easily updatable and locatable documentation for all EIA products and processes.
- Implement approaches to enhance project management and process improvement.
- Encourage innovation through recognition.

Goal 2 (Customer): EIA products and services are responsive to the needs of stakeholders, customers, and partners. To implement this goal, EIA strives to:

- Use customer surveys, cognitive techniques and other relevant means to identify customer groups and their needs, and to develop target products and services.
- Increase collaboration and/or partnerships with Federal agencies, academia, associations, and others while upholding EIA's standards for objectivity and policy neutrality.
- Develop and implement an EIA-wide customer outreach strategy.
- Implement a customer outreach plan for every major EIA product and service.

Goal 3 (Analysis): EIA is the key Government source of relevant energy analysis to inform policymakers, industry, academia, and the public. To implement this plan, EIA strives to:

- Identify and regularly update relevant energy analysis topics.
- Develop and implement a coordinated EIA-wide energy analysis process.
- Solicit customer feedback on analytical products.
- Develop, implement, and continually improve energy modeling and analysis tools.
- Enhance analytical staff capabilities and cross-Office collaboration.

Goal 4 (Tools): EIA is a model for the innovative use of communication and information technologies to enhance organization performance and efficiency, product quality, and service delivery. To implement this plan, EIA strives to:

- Develop and implement an EIA-wide plan to guide the development of the public website.
- Develop and implement EIA-wide IT plans in a collaborative manner and in support of both EIA and DOE mission and strategic goals.
- Define and implement new online products that embody a "web-centric" approach to disseminating information.
- Implement and expand common processes and systems for data collection, processing, storage, dissemination, and internal communication.
- Proactively share best practices and lessons learned about new communication and information technologies.

Goal 5 (Data): EIA provides relevant, timely, and reliable data that are consistent with industry changes and end use markets and its data products are easily accessible to all customers. To implement this plan, EIA strives to:

- Conduct regular evaluations of its information collection programs and periodically review current data series against customers requests to eliminate data that are no longer required or add data if appropriate.
- Looks for opportunities to review its data collection systems to provide efficiencies in collection, maintenance—including use of the EIA-wide Internet Data Collection system where warranted—and to reduce respondent burden.
- Implement best-practice guidance to consolidate data into common data repositories for easier access for all customers.
- Improve its data collection and editing to reduce the need for respondent follow-up.
- Establish a feedback loop on data quality issues and on data relevance so that concerns from users both within and outside of EIA are identified and addressed. EIA provides specific information about data quality (including error measures) and timeliness on its website.

Critical Events and Action Items

3-month events

Monthly

Short-Term Energy Outlook –short-term (up to 8 quarters), monthly forecast of U.S. supplies, demands, imports, stocks, and prices of various forms of energy.

November 2008

Release of the *Emissions of Greenhouse Gases in the United States* annual report of the latest estimates of emissions for carbon dioxide, methane, nitrous oxide, and other greenhouse gases.

December 2008

Early release of the *Annual Energy Outlook 2009 (AEO2009)*, an integrated projection (about 20 years) of U.S. energy supply, demand, and prices.

January (usually is March) 2009

Complete *AEO2009* scheduled for release on the EIA website.

12-month events

May 2009

The *International Energy Annual (IEA)* is EIA's primary report of international energy statistics. Included are data on energy consumption and production; overviews of petroleum, natural gas, coal, and electricity, as well as carbon dioxide emissions from the use of fossil fuels, petroleum prices, and energy reserves, and; and data unit conversion tables.

June 2009

The *Annual Energy Review* (*AER*) is the primary report of historical annual energy statistics. Included are data on total energy production, consumption, and trade; overviews of petroleum, natural gas, coal, electricity, nuclear energy, renewable energy, international energy, as well as financial and environmental indicators; and data unit conversion tables.

Hot Issues

High Gasoline and Diesel Prices

With the average price of gasoline and diesel fuel holding above $3.50 per gallon, possible short and long term actions will continue to be discussed by the Executive Brand and the Congress. For example, EIA has been examming the array of factors that can contribute to short term price volatility, including financial market, global market instability, changes in the demand and supply, and low global spare capacity.

Winter Heating Season

In its recent Short Term Energy Outlook, EIA has reported that average fuel expenditures are expected to be higher for all fuels this winter; heating oil customers are likely to be particularly hard hit. Heating oil is used in 7 percent of all U.S homes, but use is concentrated in the Northeast, where 32 percent of all homes use heating oil. Residential heating oil prices during the heating season (October though March) are projected to increase significantly over last heating season. Residential natural gas prices also are projected to increase, though at a lesser rate.

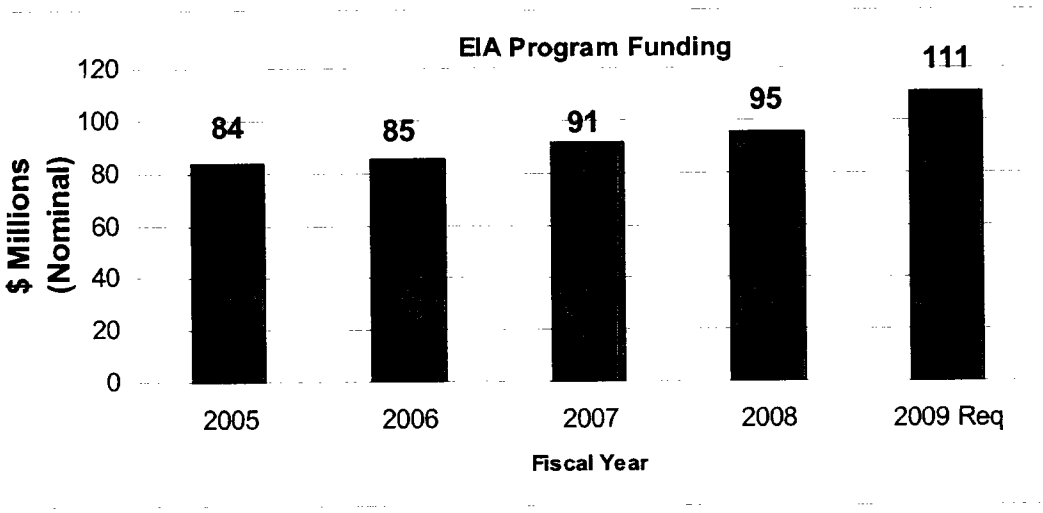
Funding Profile:

Current Funding and the FY 2009 Request

(dollars in thousands)

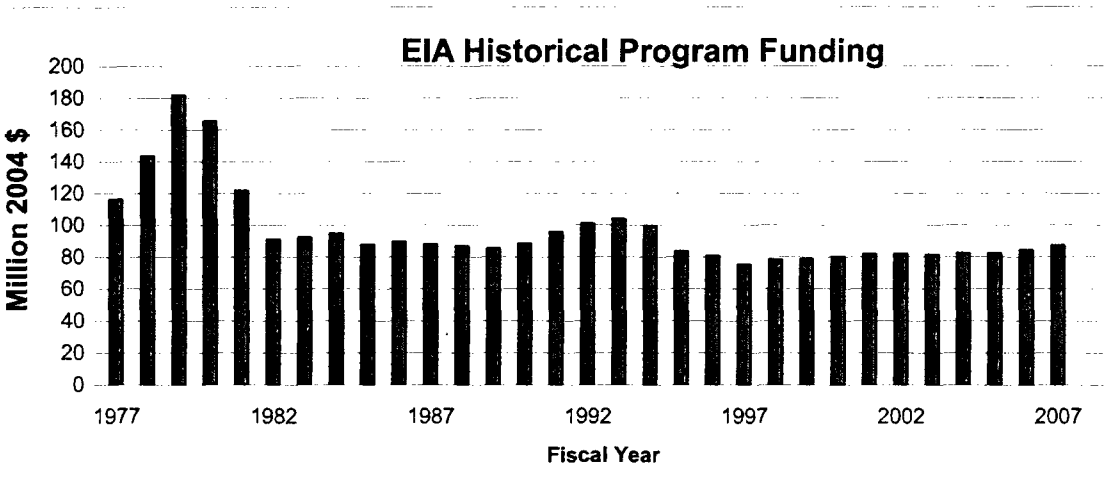
	FY 2007	FY 2008	FY 2009
Energy Information Administration			
Salaries and Benefits	44,155	47,498	48,800
Travel	249	370	370
Support Services	31,136	33,912[1]	46,063
Other Related Expenses	15,113	13,680	15,362
Total	90,653	95,460	110,595

Five-Year Funding

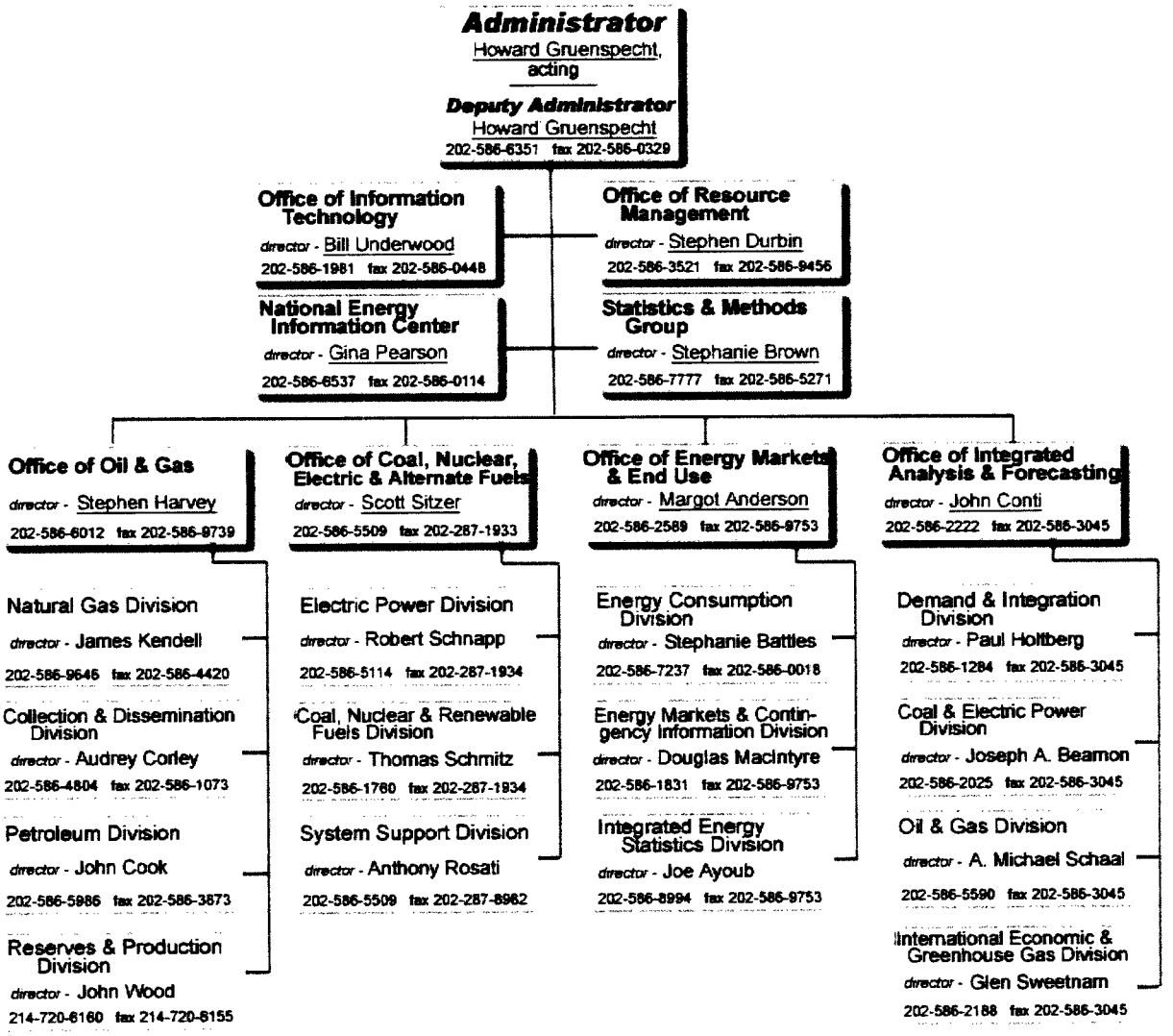


[1] Includes a Congressionally Directed Activity of $991,000.

Funding History



Current Organizational Chart



Energy Information Administration
Organization Chart

Department Staff and Support Offices

Chief Financial Officer

Organization Information

Organization Name:
Chief Financial Officer

Address:
1000 Independence Avenue, SW, Washington, DC 20585

Organization Phone Number:
202-586-4171

Organization Website:
http://www.cfo.doe.gov/

POC E-mail Address:
howard.borgstrom@hq.doe.gov

Supporting the DOE Mission

The Chief Financial Officer (CFO) organization directly supports the Strategic Theme 5 – Management Excellence, notably Resources Goal 5.4: Institutionalize a fully integrated resource management strategy that supports mission needs and postures the Department for continuous business process improvement.

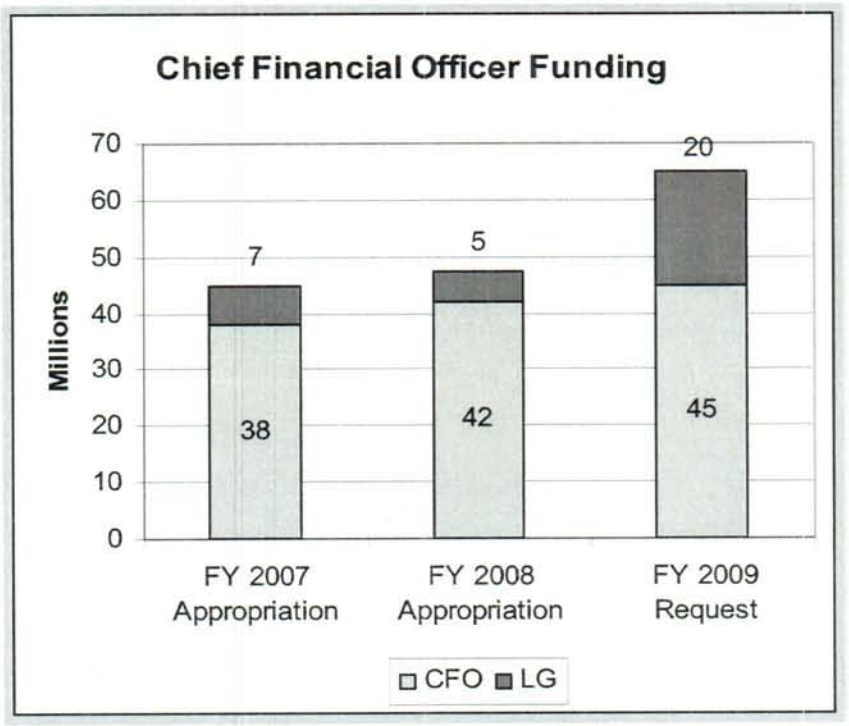
Mission Statement

Our mission is to assure the effective management and financial integrity of Department of Energy (DOE) programs, activities, and resources by developing and implementing and monitoring Department-wide policies and systems in the areas of budget formulation and execution, program analysis and evaluation, finance and accounting, internal controls, corporate financial systems, strategic planning, cost analysis, loan guarantees and advanced technology vehicle manufacturing loan programs.

Status

Budget:
CFO operations are funded in the Departmental Administration appropriation account. In addition, the CFO manages the Loan Guarantee Program (LGP) which is funded under a separate appropriation account titled "Title XVII Innovative Technology Loan Guarantee Loan Program." Beginning in FY 2009, the costs for the LGP are expected to be offset by fee payments from applicants, resulting in a net zero budget request. In October 2008, the CFO was charged with administering the Advanced Vehicles Manufacturing Loan Program Office

(ATVMLPO). The Continuing Appropriations Resolution, 2009, includes $10 million for administering $25 billion in direct loans to vehicle manufacturers.



FY2009 Congressional Request: $64,928,000

People: (on 9/30/08)

Estimated number of federal FTEs: CFO: 216; LGP: 16; Total of 232

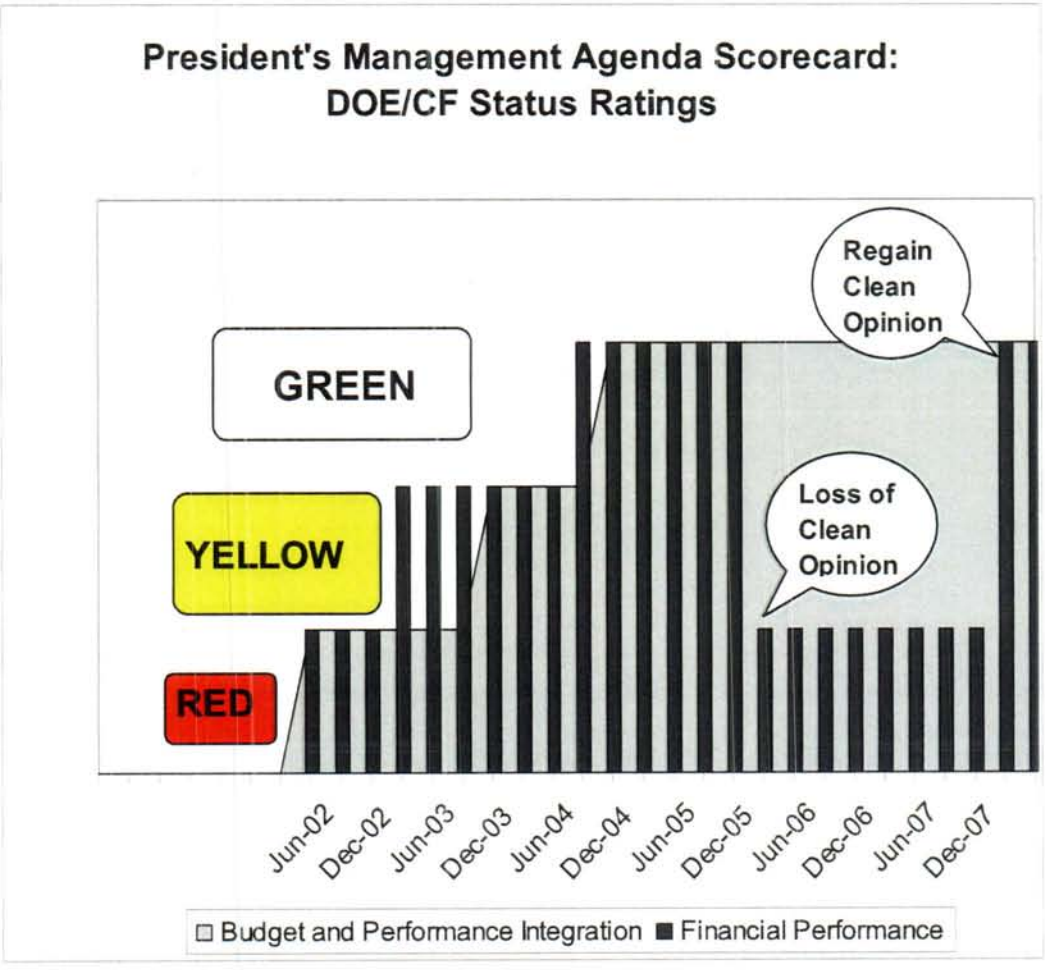
Estimated number of contractor FTEs: CFO: 80; LGP: 10; Total of 90

All CFO employees are classified as headquarters. However, the overall size of the Federal financial management workforce in the Department is closer to 1000 employees, including the CFO and financial staffs of the Power Marketing Administrations, staff of the Field CFO's and program office budget and financial personnel.

Performance:

While the CFO does not operate programs subject to the PART process, the CFO is responsible for DOE performance under two elements of the President's Management Agenda, Financial Management and Performance Improvement (originally Budget and Performance Integration). The following figure illustrates the status scores awarded by the Office of Management and Budget (OMB) since the 2001 establishment of the scoring system. It shows the improvement in status scores for both elements, achieving a Green rating by the end of 2004. In 2006-2007, the Financial Management scores dropped back to Red in response to the audit concerns raised during the early implementation stage of the Standard Accounting and Reporting Systems (STARS) coupled with the effects of the

reorganization associated with the Competitive Sourcing Initiative. During 2008, DOE has regained a Green score in both elements.



History

The Department and its predecessors have always had a financial management lead organization, but the Chief Financial Officers Act of 1990 specified that the Department's CFO, as with other cabinet agencies, shall be appointed by the President, by and with the advice and consent of the Senate. During the mid-late 1990's the CFO function declined rather sharply in staff, along with other staff organizations.

The CFO was combined with other key staff units (including human resources and procurement) into a new Office of Management, Budget and Evaluation (OMBE) in 2001, at the start of the Bush Administration. In 2002, the Department announced a competitive sourcing (A-76) study on financial services functions, affecting approximately 159 Federal employees at headquarters and at DOE field locations. In late 2003, it was announced that the Federal "Most Efficient Organization" (MEO) had been selected as a result of this study, and significant realignments of headquarters and field personnel were undertaken during 2004.

Concurrently, the Department installed a new accounting system, based on Oracle Federal Financials, replacing the legacy DISCAS system that had been in place since the 1980's. The new accounting system, STARS, was implemented at the mid-point of FY 2005. The Department lost its "clean" audit opinion for both FY 2005 and FY 2006, due in large part to the joint effects of the staffing realignment and the deployment of the new accounting system.

At the start of FY 2006, the OMBE organization was abolished, and the CFO organization returned to being a stand-alone entity reporting to the Deputy Secretary and Secretary. Only one career SES manager remained in place from the executive corps at the time the CFO became part of OMBE five years earlier. Much of the effort in 2006 was oriented toward remediation of financial systems issues through a series of DOE-wide "tiger teams" and related activities. These efforts resulted in the regaining of a "clean" opinion on DOE's financial statement by the independent auditor in FY 2007.

Since 2005, three major functions have been added to the CFO office:

The LGP authorized by Title XVII of the Energy Policy Act of 2005 has been assigned to the CFO. The function was formally funded and established, including the issuance of regulations, during 2007. The LGP effort expands considerably the tools available for encouraging the deployment of new technologies, but it requires new and different workforce skills.

A Cost Analysis function was added in the FY 2009 budget process as a proposed increase, but is being financed from prior year unobligated balances in FY 2008. Through this office, DOE senior leadership and managers will have access to independent cost estimates on major engineering projects. Intended results are to improve cost, schedule, and performance of DOE programs and projects through consistent and accurate independent cost estimates and to provide leadership with better information to support informed decisions.

Through the Continuing Appropriations Resolution, 2009, CFO has been charged with administering the Advanced Vehicles Manufacturing Loan Program Office (ATVMLPO). We are working to set up an ATVMLPO office, establish and recruit staff for the ATVMLPO, including an SES Director, conduct a rulemaking, and review the membership and draft charter of the Advanced Technology Auto Loan Credit Review Board (ALB).

Critical Operating Procedures

The CFO organization and its field office counterparts operate under extensive Federal law, regulations, and procedures covering the full life cycle of budget formulation and financial execution transactions and reporting. In addition to laws, regulations, and reporting requirements generally applicable to Federal business transactions, the Department has agency-specific procedures addressing the unique features of the DOE financial management structure as summarized below. These include reprogramming of funds, intradepartmental allocations of obligation authority, financing of management and operating contracts, the unique features of the Power Marketing Administrations, recording and updating of estimates of environmental restoration liabilities, conduct of "work for others" in the national laboratory system, petroleum reserves acquisition and drawdown transactions, Working Capital Fund management, and other matters pertaining to unique DOE activities. The CFO home page provides access to the DOE Accounting Handbook, budget formulation materials, DOE budget and performance data, Working Capital Fund reports, and related policies and procedures (**www.cfo.doe.gov**).

The Department of Energy financial management structure is complex, reflecting the diversity of programs and missions assigned to the agency. Key characteristics that reflect the range of budgetary and financial issues, based on FY 2008 conditions, include:

- The Department receives 34 direct appropriations totaling approximately $24 billion, which are distributed among 27 program organizations.
- Within this structure, there are over 400 "Congressional control" levels; under current practice, "reprogramming" notifications to Congressional committees are made to transfer authority between these levels.
- Most (over 70%) of the funding is allotted to 16 DOE field allottees, many of which receive funding from multiple program organizations and appropriations.
- Much of the funding from direct appropriations is used to finance the "management and operating" (M&O) contractors who maintain their own corporate accounting systems that are integrated into the DOE accounting system (STARS).
- In addition to direct appropriations, DOE manages nearly $5 billion in gross customer revenues through the four Power Marketing Administrations, and approximately another $5 billion is received by DOE labs and facilities under the Work for Others programs.
- DOE administers a number of special funds, including the Nuclear Waste Fund (financed by power generators), the Uranium Enrichment Decontamination & Decommissioning Fund, and the Falcon & Amistad Operating and Maintenance Fund. The CFO administers the intragovernmental Working Capital Fund for common administrative services and oversees M&O contractor pension liabilities.
- With the passage of Title XVII of the Energy Policy Act of 2005, DOE began administering a federal loan guarantee program for advanced technology projects that avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases, and have a reasonable prospect of repaying the principal and interest on their debt obligations. DOE has established credit accounts as required by the Federal Credit Reform Act of 1990.
- Through the Continuing Appropriations Resolution, 2009, CFO has been charged with administering direct loans of up to $25 billion through the Advanced Vehicles Manufacturing Loan Program.

The Department's balance sheet also has unique features, including Unfunded Environmental Cleanup and Disposal Liabilities (the $260.9 billion FY 2007 liability was the third largest on the U.S. Government balance sheet) and Contractor Pension and Other Actuarial Liabilities of over $12 billion, also for FY 2007.

Recent Organizational Accomplishments and Strengths

The Department has achieved several necessary milestones toward achieving financial excellence:

- Regaining a clean audit opinion for FY 2007 following installation of the STARS system;
- Meeting or exceeding the government-wide averages for financial metrics for financial management, as established by OMB, as shown below.

The Department has made significant progress in initiating the LGP under Title XVII of the Energy Policy Act of 2005, including the June 2008 issuance of three solicitations for a total of up to $30.5 billion in federal loan guarantees for projects that employ advanced energy technologies and that avoid, reduce or sequester anthropogenic emissions of air pollutants or greenhouse gases. A new Cost Analysis function has been established, and the Program Analysis and Evaluation organization has strengthened research and analysis capabilities to conduct strategic analysis of the DOE programmatic portfolio. Steps are underway to enhance the Department's Integrated Management Navigation (iManage) Program, including the deployment of a procurement system, design of a budget formulation/execution system, and the initial rollout of the iManage Portal.

During 2007-8, the CFO has also led a series of initiatives to strengthen the overall DOE financial management community, including:

- Reestablishment of the practice of an annual Financial Management conference;
- Creation of a CFO Fellows program for succession planning; and
- Reinvigoration of the Financial Management Development Program.

OMB Measurement Tracking System – June 30, 2008*

METRIC	DOE	Gov't-Wide Avg. ** *As of June 2008*	Targets for Green	Status - DOE	Status– Gov't-wide**
Fund Balance (Net)*** – % Unreconciled/Total Cash Balances	0.1%	0.089%	≤ 2%	Green	Green
Suspense Clearing (Net) - % over 60 days Qtrly – June	2%	15.62%	≤ 5%	Green	Red
Delinquent A/R from Public – % Receivables >180 days old Qtrly - June	2.5%	21.85%	≤ 10%	Green	Red
EFT - % Electronic Payments to Total Payments	98.9%	96.74%	≥ 96%	Green	Green
Non Credit Card Invoices – % Paid on Time	98.8%	98.29%	≥ 98%	Green	Green
Interest Penalties Paid – Penalties as % Total Invoices	$5.5	$111.71	≤ $200	Green	Green
Travel Card Delinquency - Individually Billed % 61+ days to Total	1.33%	3.37%	≤ 2%	Green	Yellow
Travel Card Delinquency - Centrally Billed % 61+ days to Total	0%	3.37%	0%	Green	Red
Purchase Card Delinquency - % 61 + days to Total Delinquency	0%	0.82%	0%	Green	Yellow

* Note: OMB reporting lags by 30 days due to the availability of requested data.

** Government-wide averages and ratings have been calculated based on June 2008 data.

*** The Fund Balance target is now calculated based on percentage unreconciled.

Leadership Challenges

CFO management is tracking a series of risk areas, some of which are addressed in the Hot Issues paper section below. Challenges addressed cover a variety of areas, including

1. Human capital - ability to attract and hire candidates for vacancies;
2. Sustaining a clean audit opinion, including management of certain contingent liabilities;
3. Loan Guarantee accounting systems and procedures (see Hot Issues);
4. Office and accounting systems for Advanced Technology Auto Loan Credit Program (see Hot Issues);
5. Standard Budget System (SBS) implementation;
6. Modeling and analysis capability and planning;
7. Change management support; and
8. Improved cost estimating for both programs and projects.

Risk levels in these and related areas are reviewed individually by assigned managers and overall by the management team.

Key Strategies and Timing

The CFO has a summary strategic plan that focuses on actions and priorities through 2008, as shown on the following page.

Plans for the period starting in FY 2009 are under development by the management team.

Critical Events and Action Items

3-month events

February –March 2009

Development of revised Administration FY 2009-2010 budget estimates as appropriate

April 2009

Support revised budget presentation to the Congress.

Initiate FY 2011-2015 budget/planning processes.

Spring 2009

Review by National Academy of Public Administration (NAPA)

- The House and Senate Appropriations Subcommittees on Energy and Water Development have directed the Department to contract with NAPA to undertake a management review of the Offices of Procurement, Human Capital Management and the Chief Financial Officer.
- The NAPA review began in May 2008 and final results are expected in late spring 2009. Intermediate observations will be shared with the Department throughout the process.

12-month events

Prepare update to the September 2006 DOE Strategic Plan.

Complete FY 2009 financial statements and support an independent audit.

Issue the DOE Performance Accountability Reporting (PAR) pilot reports.

Hot Issues

1. **The Loan Guarantee Program** has the authority to issue up to $42.5 billion in loan guarantees for projects that employ advanced energy technologies that avoid, reduce, or sequester air pollutants or greenhouse gas emissions.
2. **Advanced Technology Vehicles Manufacturing Loan Program Office** has the authority to issue up to $25 billion in loans to automobile manufacturers and component suppliers to finance the cost of re-equipping, expanding, or establishing manufacturing facilities for advanced vehicles and components.

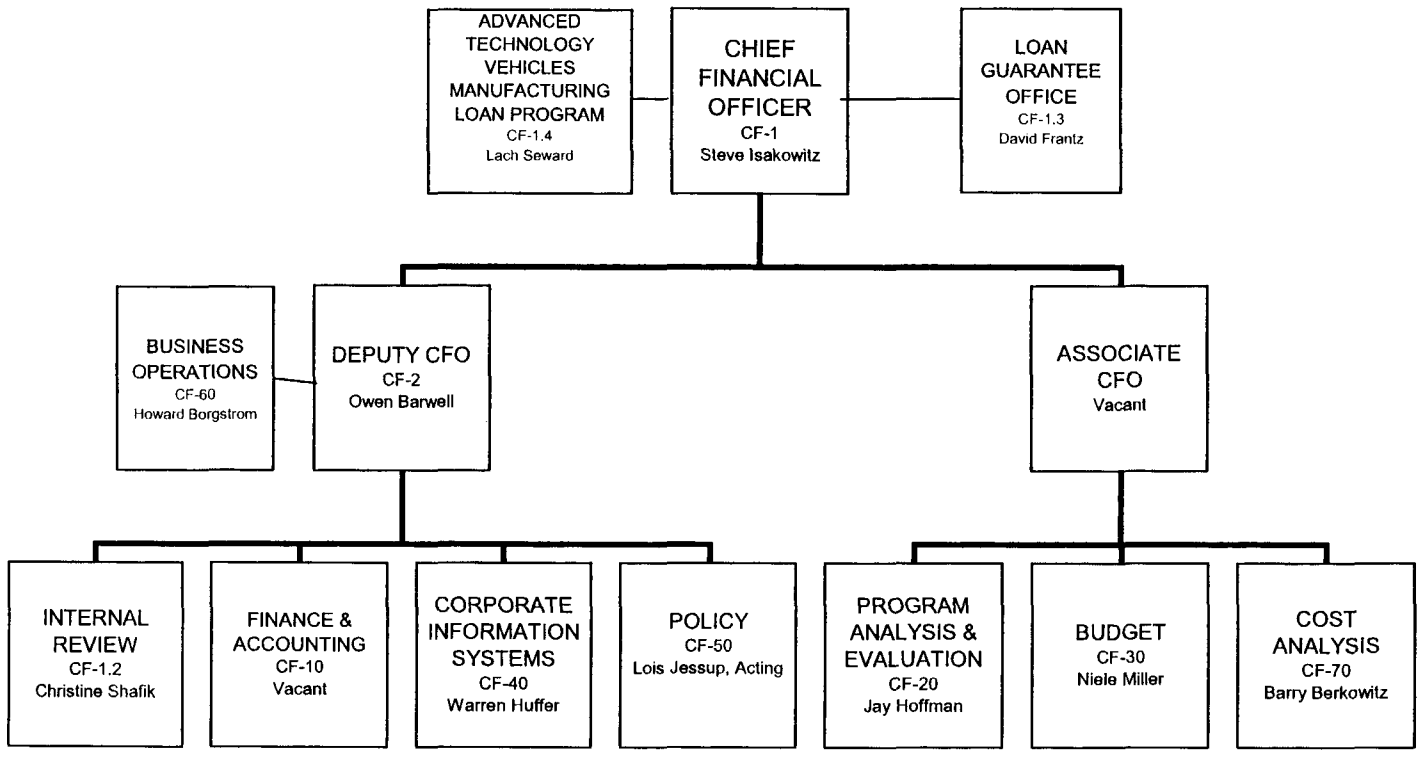
More details on each of these are contained in separate Hot Issue Papers.

Funding Profile

The following table summarizes the CFO and LGP operating funding under the OMB targets for the FY 2008 and 2009. The CFO budget is salary intensive, so the effects of flat nominal targets are that inflation is absorbed through projected staffing declines. The LGP budget targets are contract-intensive, permitting salary funds to rise in order to sustain planned staffing levels. While not included in the Presidenyt's FY 2009 request, Congress has provided a further $10 million for the operating expenses associated with the Advanced Technology Vehicles Manufacturing Loan Program.

Chief Financial Officer Budget at OMB Target ($ Millions)		
	FY2008 Current Appropriation	FY2009 Congressional Request
Salaries/Benefits	$29.3	$31.4
Working Capital Fund	$4.6	$5.4
CIO Computer Services	$0.8	$1.0
Travel	$0.3	$0.4
Other Contracts	$6.9	$6.8
Total, DA Account	$42.0	$45.0
Staffing	236	236
Salaries/Benefits	$2.1	$3.7
Working Capital Fund	$0.4	$1.2
Travel	$0.1	$0.6
Other Contracts	$2.9	$14.4
Total, LGO Operations	$5.5	$19.9
Staffing	16	35
Total, CFO and LGP	**$47.5**	**$64.9**
Staff	252	271

Current Organizational Chart



Office of the Chief Information Officer (IM)

Organization Information

Organization Name:
Office of the Chief Information Officer (IM)

Address:
Forrestal Building, 8H-085,1000 Independence Ave, SW, Washington, DC 20585

Organization Phone Number:
(202) 586-0166

Organization Website:
http://cio.energy.gov/

Point of Contact E-mail Address
carl.staton@hq.doe.gov

Supporting the DOE Mission

The Office of the Chief Information Officer (OCIO) supports the Department of Energy's Strategic Goal of Management Excellence in the areas of Integrated Management and Infrastructure.

Strategic Theme 5 – Management Excellence

Strategic Goal 5.1 - Integrated Management

OCIO oversees a comprehensive, DOE-wide IT management program that ensures that the Department acquires, manages, and disposes of IT resources so as to support DOE missions well, and at lowest cost. This approach has clear roles, responsibilities, and accountability focused on effective line management oversight of both Federal and contractor organizations.

KEY ACTIVITIES TO REACH THIS GOAL

- Cyber Security
  The OCIO is responsible for DOE implementation of the Federal Information Security Management Act of 2002 (FISMA). This Act sets the requirements for the implementation of strong information technology security controls that are to be implemented throughout the federal government. The DOE OCIO is responsible to set Department-wide IT policy and guidance in compliance with FISMA.

- Enterprise Architecture
  The OCIO leads and coordinates agency alignment with the Federal Enterprise Architecture and government-wide initiatives to leverage opportunities for improved services, improved interoperability, and cost savings.

- IT Capital Planning and Investment Control and Review
  The OCIO implements a Department-wide IT capital planning and investment control process to ensure that information on IT investments is reported, analyzed, and used by senior management to support improved operational decision-making.

Strategic Goal 5.3 - Infrastructure

To achieve mission goals and ensure a safe and secure workplace, the OCIO is leading the Department-wide initiative to build, modernize, and maintain its IT infrastructure as part of the IT MEO Modernization effort.

KEY ACTIVITIES TO REACH THIS GOAL

- Operations and Maintenance
  The OCIO Energy Information Technology Services (EITS) organization provides computer, network, and telecommunications products and services to DOE federal employees and their direct support contractors. EITS delivers these services in a secure, reliable, and cost-effective manner.

- Cyber Security
  The OCIO develops and maintains an agile, effective, and cost-efficient approach to cyber security aligned with current threats and adaptable to DOE's missions.

- Green Computing
  The OCIO's significant contributions to green computing have allowed DOE to be recognized as the leader among Federal agencies in green computing.

Mission Statement

The mission of the OCIO is to oversee and manage the effective use of IT throughout the Department as well as provide advice and assistance to the Secretary of Energy and other senior managers to ensure that IT is secure and is acquired and managed in a timely and cost effective and efficient manner.

Status

In order to accomplish its missions and functions, the OCIO has established an integrated federal and contractor team located both at DOE Headquarters and the field. The OCIO Fiscal Year 2008 budget of approximately $111 million supports a total staff of about 584 – both Federal and contractor employees with responsibilities for agency-wide oversight, cyber security, IT operations and IT acquisition. The following sections provide more detail from a budgetary, staffing, facility, and performance perspective:

Budget

CIO's Control Table (dollars in thousands)		
	FY 2008	FY 2009
CIO Programs	CR Appropriated	Congressional Request
Cyber Security (IM-30)	34,865	34,512
Corporate Mgmt. Information Program (IM-20)	28,164	27,250
Program Direction	47,106	53,738
TOTAL OCIO	**110,135**	**115,500**

People:

Estimated number of Federal FTEs: 141

Estimated number of contractor FTEs: 443

Estimated number of Headquarters FTEs: 506 (141 Federal + 365 contractor)

Estimated number of Field FTEs: 78 (0 Federal + 78 contractor)

Facilities:

The OCIO provides IT support across the DOE complex. OCIO employees are housed in various shared office buildings in Headquarters, Albuquerque, Nevada, Pittsburgh, and Idaho. The list below details the facilities in which we maintain specialized IT facilities and capabilities:

Cyber Forensics Laboratory
Columbia, Maryland

Germantown Building (Data Center and Application Hosting Environment)
19901 Germantown Road
Germantown, Maryland 20874

Albuquerque Service Center (Data Center)
Pennsylvania & H Street, Kirtland Air Force Base
Albuquerque, NM 87185

DOE Computer Incident Response Capability
Las Vegas, Nevada

Performance

The OCIO measures and tracks performance in key areas to ensure organizational missions are achieved. We have achieved positive results in critical areas of performance including Cyber Security, Corporate Management, and IT Operations, as measured by the Office of Management and Budget (OMB).

PART rating: Not Applicable to OCIO

PART measure status: Not applicable to OCIO

FY08 3rd quarter Joule Status: 3 Green, 0 Yellow, 0 Red

History

The Clinger Cohen Act of 1996 established Chief Information Officers for Federal agencies. The OCIO has undergone a significant organizational transformation in the last few years, moving from a primarily staff/advisory role with limited HQ IT operational responsibilities to becoming an IT service provider of choice for DOE. Significant events include the consolidation of IT Services across Headquarters and the revitalization of cyber security across the complex.

Energy Information Technology Services (EITS)

For the last three years, there has been a strong emphasis on a single operating environment to improve security and reduce support costs. EITS provides services intended to maximize cost savings through enterprise licenses, consolidated administrative support and other cost efficiencies.

Cyber Security Revitalization Plan

Beginning in February 2006, the OCIO, as part of its Cyber Security Revitalization Plan, defined a number of goals to improve the Department's security posture. A primary goal is to clearly define the cyber security governance model and the importance of the Under Secretaries', NNSA Administrator's, and other Departmental executives' responsibilities in establishing, implementing, and maintaining cyber security initiatives throughout the DOE complex.

CRITICAL OPERATING PROCEDURES

The OCIO performs critical functions for the Department both in coordination and oversight of agency-wide IT and in operations of IT services. In support of these functions, policies, procedures, and coordination groups have been established to ensure smooth and effective IT management. Critical functions include: Consolidated IT Services; Enterprise Customer Partnership Council; Liaison with the Office of Management and Budget; Comprehensive Agency Wide Policy; Cyber Governance Model; Records Administration; Enterprise-Wide Agreement Program; Chief Information Officers Council; and Information Technology Council.

Energy IT Services (EITS)

EITS IT Support Services (ITSS) provides a consistent, standard, reliable, and stable computing environment. The use of the EITS ITSS reduces redundant operations (such as the development and maintenance of multiple directories) and provides a consistent operating environment and integrated services. The EITS ITSS provides opportunities for cost efficiencies through shared resources, economies of scale and enterprise integration.

EITS ITSS consist of:

- Cyber Security Services
- IT Support Services
- Desktop Services
- Network and Data Center Services
- Voice, Video and Data Service
- Technical Support Services

Enterprise Customer Partnership Council (ECPC)

The ECPC was established to provide an effective communication channel between the OCIO and DOE program and staff offices, as well as Field locations, to improve the delivery of IT services.

Liaison with the Office of Management and Budget (OMB)

A key function of the OCIO is to serve as the primary liaison between the Department and the OMB on issues related to:

- Federal Information Security Management Act (FISMA);
- Federal and Agency Enterprise Architecture;
- Departmental IT Portfolio of investments;
- Information Collection activities as required by the Paperwork Reduction Act;

- Federal and Agency E-Government initiatives.

Comprehensive Agency Wide Directives

The OCIO has developed key directives in the areas of IT acquisition and IT management and cyber security. Overviews of these key directives are provided below:

DOE Order 200.1A, *Information Technology Management*

This order provides fundamental requirements for IT acquisition and management and provides a framework for DOE's overall IT management strategy.

DOE Order 205.1A, *Department of Energy Cyber Security Management*

The Order establishes a federated program that integrates cyber security governance, accountability for cyber security risk management decisions, and reporting, into one management structure for the Department. The governance model for cyber security is based on the understanding that not all organizations or sites can operate under the same detailed guidance due to wide variations in mission. Flexibility in the program is needed to address security requirements while supporting the diverse missions across the Department. This model provides for the development of a top-level policy that addresses the common policy needs of the entire Department while allowing augmentation and tailoring of these policies at the Under Secretary-level to recognize mission-unique needs and avoid a "one size fits all" approach.

Records Management

The OCIO serves as the primary liaison with the National Archives & Records Administration (NARA) on issues related to the Department's records including:

- The disposition of temporary records;
- The preservation and transfer of permanent records;
- The management of electronic records;
- Records storage and retrieval services provided by NARA for nearly 400,000 cubic feet of inactive DOE records.

Enterprise-Wide Agreement (EWA) Program

The IT EWA Program consolidates IT contracts for commercial off-the-shelf (COTS) hardware and software. The EWA Program serves as a framework to consolidate bulk purchasing requirements aligned with identified IT target architecture solutions and acquisition activities that support the Department's mission, strategic, and information resource management goals. The EWA Program has two core objectives – to leverage the buying power of the DOE Complex to maximize price reductions, and to streamline the total acquisition lifecycle to reduce administrative costs.

Information Technology Council

In order to promote coordination and efficient IT management Department-wide, the OCIO has established the IT Council as a key governance body for IT across the agency. The IT Council is comprised of representatives from Program and Staff Offices across the Department with the Associate CIO for IT Planning, Architecture, and E-Government serving as the Chair of the Council.

The IT Council helps coordinate IT management within DOE to promote collaboration and the effective efficient acquisition and use of information resources; reduces the cost of operations; shares best practices; improves the management and execution of the Department's mission; and provides recommendations on the Department's IT investments to the CIO.

Recent Organizational Accomplishments and Strengths

Recent accomplishments of the OCIO include: improvement of the Department's Cyber Security Posture; high performance in key IT management areas; promulgation of green computing initiatives; enhanced HQ IT customer service; improved DOE E-Government management; and recognition of strong environmental, energy, and safety practices.

Improvement of Cyber Security Posture

The OCIO continues to lead the continuous improvement of DOE cyber security posture through revitalization of the DOE cyber security program, the development of improved cyber security directives, participation in a Presidential Directive on cyber security, and upgrading computer systems to reduce vulnerabilities. The success of the continuous improvement efforts have been noted by the House Government Reform Committee.

Improved cyber security policies have been developed and released through the DOE Directives process. These policies include the governance process, standards for cyber security processes, controls for unclassified and national security (classified) computers and networks, and management and reporting of cyber incidents.

The OCIO is participating in the implementation of the Presidential Directive on cyber security (HSPD-54/NS-23). DOE's involvement includes reviews of strategy and implementation plans, providing staff support to the joint task force monitoring the activities associated with the Directive and complying with the Trusted Internet Connection (TIC) element of the Directive.

Achievement of OMB Standards of Success for IT Management

DOE has demonstrated consistent improvement against OMB IT management standards. Over the past two consecutive quarters (FY 2008 Q2 & Q3); DOE has been assessed by OMB as "Green" in all IT management areas.

Green Computing

The OCIO is an active participant and leader in the Department's Green Computing initiatives and has been a contributing member of the DOE award-winning Green Computing Team:

- The CIO led the Green Computing Team which received the 2008 DOE Award for Managerial Excellence.
- The DOE Green Computing Team won the first White House "Closing the Circle" award in 2007, which was presented in the Electronics Stewardship category. DOE also received recognition for implementing Energy Star efficiency procedures to save hundreds of thousands of kilowatt hours; and safely recycling more than 1.2 million pounds of end-of-life electronics over the past two years, including donations of hundreds of surplus computer workstations to New Orleans area schools.

Improved the DOE IT Capital Investment Control Process

The OCIO continually improves its IT capital planning and investment control process to ensure maximum benefit to the agency. Recent accomplishments include:

- Led expansion of enterprise software licensing activity, through which DOE is now benefiting from up an over 40% reduction in costs when purchasing software applications from nine DOE-wide contracts.
- Led continued substantial progress in improving DOE's Enterprise Architecture. Success was demonstrated in the FY 2008 Enterprise Architecture submission to OMB with DOE reporting $89 million dollars in cost savings and avoidance.

Leadership Challenges

As a staff office with responsibility for Department-wide IT, the OCIO must continuously work to reach out to program and staff offices to ensure that Departmental IT policy, standards, and goals are being met. Many of the issues within the OCIO area of responsibility are complex, cyber security in particular, and are not amenable to immediate resolution and require a constant, critically focused effort. Clear communication and ongoing oversight of key functions are fundamental requirements that enable the OCIO to support agency missions.

Cyber Security

The Office of Inspector General reports annually on the Department's management challenges. Cyber security has been reported on that list for several years. Protective activities are critical to ensuring that the systems and data remain secure and available, particularly in light of the increasingly sophisticated attacks on the Department's information technology resources. Because of the importance of IT systems to the Department's numerous projects and programs, maintaining effective cyber security is a critical challenge in the Department's overall security posture.

On July 15, 2008, the OCIO hosted Cyber Summit II to ensure that Departmental executive leadership are fully aware of cyber threats and to mobilize Departmental resources to implement the necessary controls to better protect the Department's information and information systems. The challenge is to keep the momentum of the Summit by completing actions arising from the discussions, as well as to establish and implement minimum baseline security controls and policy to more effectively combat the problem.

Establishment of DOE Computer Incident Response Capability (DOE - CIRC)

The Office of Inspector General indicated in a report issued January 2008 that current cyber incident management operations appeared duplicative and only partially effective. It recommended DOE integrate existing incident management capabilities, which include the Computer Incident Advisory Capability (CIAC) located at Lawrence Livermore National Laboratory, and NNSA's Information Assurance Response Center (IARC) located in Nevada, to form a single enterprise capability. In October 2008, the OCIO completed consolidation of these incident management functions to establish the integrated DOE-CIRC. This activity supports the government-wide Comprehensive National Cybersecurity Initiative, which requires a 24/7, enterprise-wide, incident management operation.

Key Strategies and Timing

The OCIO implements the Department's two key strategic IT goals of revitalizing Cyber Security across the Department and using information technology to improve mission accomplishment, at lowest cost. Key elements to implementing our strategies include: codifying our agency-wide policy on IT Management to ensure that IT resources are acquired and managed effectively throughout the Department consistent with legislative and other requirements; expansion of EITS to field locations; and compliance with Internet Protocol version 6 (IPv6).

Revitalizing Cyber Security

Strategies key to the continuous improvement of cyber security in the Department include

- On-going review, development, and release of improved minimum DOE-wide cyber security processes and controls;
- Continuous analysis of the increasingly sophisticated complex threats to our computer systems and networks;
- Implementation and continuous improvement of a DOE-wide enterprise incident detection and response capability;
- Application of a unified "defense-in-depth" cyber security architecture that also supports DOE's multiple diverse missions;
- Continued participation in the development and implementation of Presidential Directive on cyber security;
- Implementation of the Trusted Internet Connection (TIC) element of the Directive;

- Conduct annual DOE cyber security conference, individual program-specific cyber security workshops;
- Conduct regular cyber security awareness campaigns.

Revision to DOE Order 200.1A

The revision to DOE Order 200.1A, *Information Technology Management*, is in the final stages of approval to address new and changing IT management issues. The revised Order will put in place consistent and basic IT management functions/practices to ensure the IT that is acquired meets missions requirements at lowest practical costs. The revision should ultimately increase savings and enhance department productivity by establishing requirements for implementing IT management processes and outlining policies and procedures for effectively managing IT investments.

Expansion of EITS for all DOE Federal Employees

EITS provides a standards-based hardware and software, maintenance and support end-user computing environment. Customer-selected, tiered service levels are available that provide a dependable and predictable computer end-user environment. Approved and supported non-standard and custom software and configuration options are available (at an additional cost).

The majority of HQ program and staff offices are now serviced by EITS (approximately 5,000 HQ customers) and migration to the Field is currently underway.

Critical Events and Action Items

Over the next year the OCIO plans to accomplish several critical initiatives in support of the missions and functions of the organization.

3-Month Events

March 2009

INFORMATION MANAGEMENT CONFERENCE

In support of workforce improvement goals, the OCIO will host an Information Management Conference targeted at DOE federal and contractor staff with responsibility for information resources, IT project management, enterprise architecture, information security, records management, spectrum management, and geospatial information science.

The conference will be a key forum for collaboration, sharing best practices, and training across the DOE complex, and will provide a venue for staff from across the complex to come together to discuss issues and opportunities related to IT acquisition, implementation, operation, maintenance, and management.

12-Month Events

May 2009

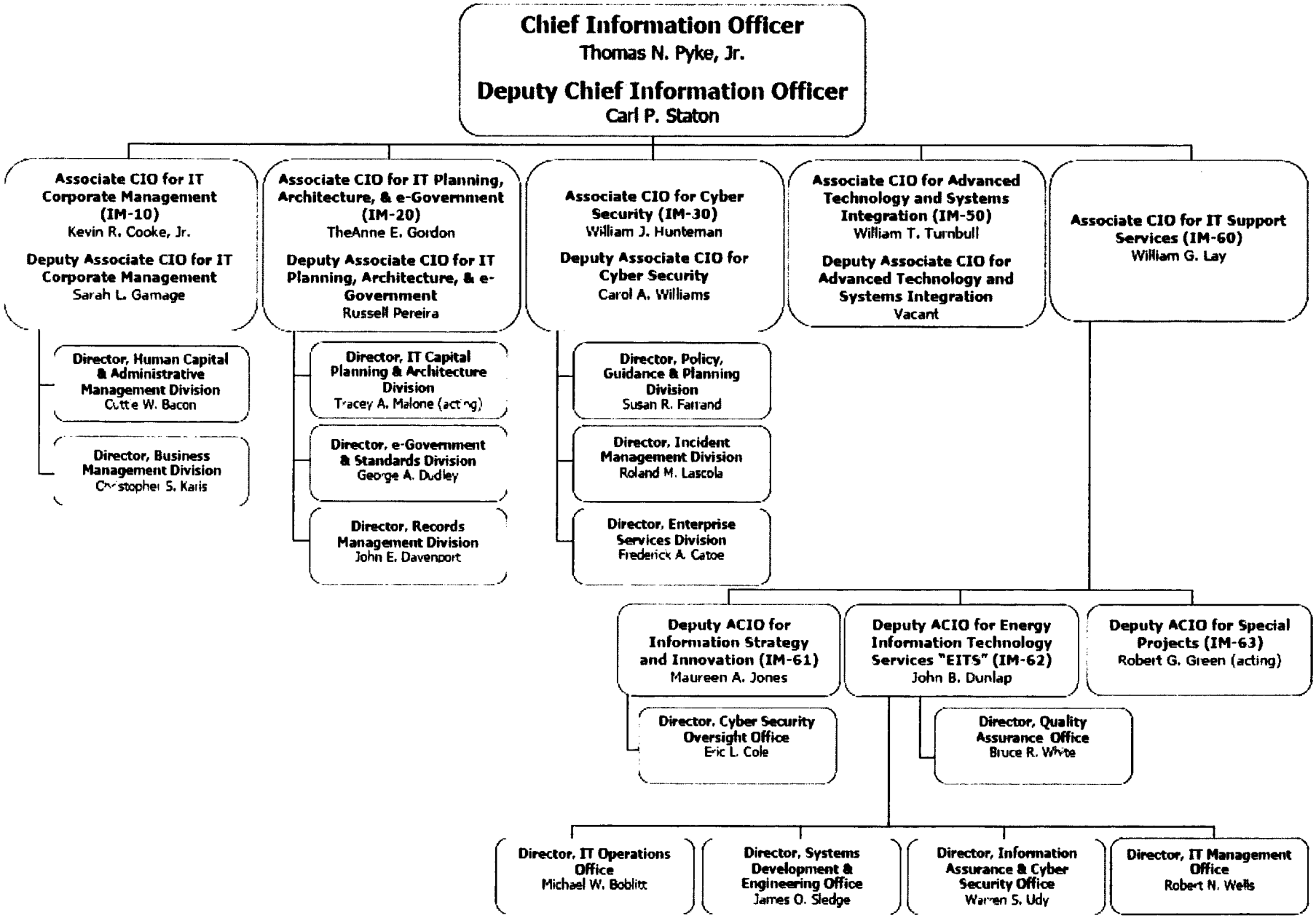
CYBER SECURITY CONFERENCE

The OCIO also hosts a Cyber Security Conference targeted to federal and contractor staff with responsibility for information assurance. This conference affords the opportunity for discussion and sharing ways to improve the Department's cyber security posture. The conference is scheduled to take place in Las Vegas, NV in May 2009.

Hot Issues

Hot issues will be covered under separate cover. The OCIO will be reporting on Cyber Security.

OCIO Organizational Structure



Congressional & Intergovernmental Affairs

Organizational Information:

Organization Name:
Congressional & Intergovernmental Affairs

Address:
1000 Independence Avenue, SW, Washington, DC 20585

Organization Phone Number:
202-586-5450

Organization Website:
http://www.ci.doe.gov

POC E-mail Address:
daniel.woomer@hq.doe.gov

Supporting the DOE Mission

Strategic Theme 5, Management Excellence: Managing for Excellence:

Strategic Goal 5.4 – Resources: Institutionalize a fully integrated resource management strategy that supports mission needs and postures the Department for continuous process improvement.

CI supports the Secretary and Departmental leadership in developing and implementing policy and assists program offices in carrying out the Department's missions and initiatives.

- CI articulates in a clear and timely manner the Department's policies and programs to members of Congress, State governors, local elected/appointed officials, Tribal officials, and national industry, environmental, and professional organizations.

- CI interacts with these constituencies on a regular basis to elicit their concerns and interests and assure their viewpoints are fully known to the Department's senior officials during policy deliberations.

- CI advises DOE program officials on the appropriate scope and schedule of public involvement activities to assure timely, effective stakeholder participation in the Department's decision-making processes.

CI represents and advocates for Departmental policies and positions at national and regional Intergovernmental, Tribal, industry, and environmental conferences and meetings.

Mission Statement

Promote Departmental policies, programs, and initiatives through liaison, communication, coordination, and interaction with Congress, State, local, and Tribal governments, other Federal agencies, stakeholders, and the general public.

Status

Budget ($000)
FY2009 Congressional Request: **$4,700**

Staff (as of 9/30/08):
Federal FTEs: **32**
Contractor FTEs: **0**

Facilities
One office in DOE Headquarters
Forrestal Building, Washington, DC

Performance measures:
PART rating: As an Administrative function, CI is not subject to PART.

FY08 3rd quarter Joule status: **Green**

History

1977 to 1989 – DOE is established, and the Congressional and intergovernmental affairs and public affairs functions are performed within a single Office of the Assistant Secretary for Intergovernmental and Institutional Relations, later retitled Congressional, Intergovernmental and Public Affairs (CP).

1989 – DOE Secretary Watkins directs the Under Secretary to assess the existing management structure of the Office of Congressional, Intergovernmental, and Public Affairs. As a result of this review, the Congressional and Intergovernmental functions are split from the Public Affairs function. Public Affairs (PA) is established as a separate office, headed by a director who reports to the Secretary of Energy. The Office of the Assistant Secretary for Congressional and Intergovernmental Affairs (CI) retains the consumer and public liaison functions until 1993, when they are transferred to the Office of Public Affairs.

1995 – The Office of Public Affairs is transferred back under a reconstituted Office of the Assistant Secretary for Congressional, Public and Intergovernmental Affairs (CP), following recommendations of the Strategic Alignment Implementation Group formed by Secretary O'Leary to improve management efficiency and resource utilization.

1997 – The Office of Congressional, Public, and Intergovernmental Affairs is again split into two separate organizations - the Office of the Assistant Secretary for Congressional and Intergovernmental Affairs (CI) and the Office of Public Affairs (PA). CI continues to be led by an Assistant Secretary, and PA by a director, with both reporting to the Secretary of DOE; however, all resource management and administrative functions continue to be performed by one shared Office of Resource Management. The consumer, public liaison, and public participation functions remain within CI.

2005 – Title V of the Energy Policy Act of 2005 establishes the DOE Office of Indian Energy Policy and Programs.

2006 – The CI and PA administrative functions are split, with each establishing a separate, independent resource management office.

2007 – The first Director of the Office of Indian Energy Policy and Programs is selected and serves in the dual capacity as DAS for Intergovernmental Affairs. DOE completes formation of an Office of Indian Energy Policy and Programs within the Office of the Assistant Secretary for Congressional and Intergovernmental Affairs.

Critical operating procedures

CI activities are organized around major constituency groups:
(1) Congressional
(2) Intergovernmental (States, local elected officials), Tribal, and External

(1) Congressional Activities:

- *Hearings* – CI manages all DOE Congressional hearings, including confirmation, budget, programmatic, and oversight hearings. The Department's authorizing committees are Senate Energy and Natural Resources, Senate Armed Services, House Science and Technology, House Armed Services, and House Energy and Commerce. Appropriations are provided through the House and Senate Appropriations Subcommittees on Energy and Water Development.

Authorization Hearings	FY 2007	FY 2008 (thru 5/31/08)
# of Hearings	52	34
Witnesses	71	38
Testimonies	72	37
Transcripts	40	18
Inserts for the Record	47	48
Q&As	808	699

Appropriation Hearings	FY 2007	FY 2008 (thru 5/31/08)
# of Hearings	9	8
Witnesses	16	18
Testimonies	16	18
Inserts for the Record	49	34
Q&As	504	252

- *Budget and Policy Articulation* – CI schedules and participates in meetings and briefings with members and committee staff to provide detailed explanations of the Department's program initiatives and budget requests, and maintains ongoing dialogue with key members and committee staff. CI also manages the Congressional and stakeholder elements of the Department's annual roll-out of the President's Budget and provides information to the Department's intergovernmental, tribal, and external constituencies.
- *Legislation* – CI monitors draft legislation of interest or potential impact to DOE and advises senior leadership in developing and implementing strategies to achieve the Department's policy goals and fulfill it missions.
- *Oversight and Investigations* – CI coordinates with the Office of General Counsel in managing the document production process in response to Congressional oversight and investigations requests.
- *Notifications* – CI notifies Congressional members of DOE announcements, initiatives, proposals, and grants which may affect their respective states, across the full range of DOE's energy, national security, environmental, and science and technology missions, and assures any appropriate follow-up is provided.

(2) Intergovernmental, External, and Tribal Activities:

- *Communications* – CI maintains ongoing communications with governors, state legislators, tribal, and local officials in 15 key states (CA, CO, GA, ID, KY, MO, NV, NM, NY, OH, OR, SC, TN, TX, and WA) on DOE policies and initiatives of interest or potential impact in these states. CI provides similar communication and liaison to non-governmental organizations, industry, and stakeholder groups, and maintains the Department's Key Stakeholder indices.
- *Intergovernmental Liaison* – CI interacts on a regular basis with Intergovernmental and Tribal associations, such as the National Governors Association, Regional Governors Associations, National Association of Attorneys General, National Congress of American Indians, National League of Cities, National Conference of State Legislatures, National Association of Counties, U.S. Conference of Mayors, Southern States Energy Board, National Association of State Energy Officials, etc., with the purpose of explaining DOE programs, policies, and initiatives and soliciting these groups' views, comments, and concerns.
- *Notifications* – As with members of Congress, CI notifies governors, state, local, and territorial officials, and Tribes in affected states of DOE announcements, initiatives, proposals, and grants, and assures appropriate follow-up.
- *Indian and Tribal Affairs* – Acting through the Director of Indian Energy Policy and Programs, CI has primary responsibility for: (1) advising and informing DOE senior officials

on the potential impacts of energy policy and program initiatives on Tribal interests and culture; (2) developing and enhancing working relationships with tribal leaders and organizations and entities working with tribal governments; (3) representing DOE with sovereign tribal governments and at tribal meetings and conferences; (4) recommending policies and procedures for on-going collaboration between DOE and tribes; (5) working with DOE program offices, other Federal agencies, and the Administration on Indian energy policy issues.

CI's Office of Indian Energy Policy and Programs works with the 560 federally recognized tribes, and the tribes' more than 250 reservations. The goal is to develop and sustain a trusting relationship built on mutual understanding and respect between the U.S. federal government and sovereign Tribal governments.

Organizational strengths and recent accomplishments

Strengths - CI maintains positive relations and ongoing dialogue with key members of Congress and staff in personal offices and committees of jurisdiction, as well as with key governors and Tribal representatives. This allows CI to provide Secretary and Principal Secretarial Officers (PSOs) with factual information and insight into key members' and governors' views and preferences.

CI works with Congressional staff to draft language and develop legislation supporting DOE missions and constituent interests, including States, Tribes, and the National Laboratories.

CI provides a corporate perspective and strategic expertise in advising the Secretary and PSOs on how best to advocate for their policies and advance their programs.

Recent Accomplishments –

(1) The Department has experienced no undue delays in confirmation of its nominees.

(2) The Department has garnered some significant year-over-year budget increases in a period of generally flat federal budgets.

(3) Several major energy bills have been debated and enacted in recent years (Energy Policy Act of 2005, America COMPETES, 2007, and Energy Independence and Security Act, 2007) and are now being implemented in DOE and other agencies.

Key Challenges –

(1) Manage confirmation process for new Administration officials in smooth and timely manner.

(2) Facilitate incoming Administration's FY 2010 budget formulation and presentation process, including key congressional member and stakeholder meetings, hearings, and public forums.

(3) Provide strategic advice on development and communication of new Administration's priorities and initiatives.

(4) Prepare Secretary and PSOs for Congressional hearings.

(5) Communicate new Administration's priorities and initiatives to governors, tribes, and external constituencies.

Key strategies and timing

CI maintains a series of DOE-centric data bases, including biographies of members of Congress and governors and stakeholder lists which are used to prepare officials for personal meetings and public events.

CI develops, in coordination with Secretary's office, an Outreach and Communications Strategy for incoming officials to members of Congress, governors, Tribes, and key stakeholder groups and opinion leaders.

CI manages development and coordination of Secretarial briefing process (books and oral preparation) for Congressional hearings.

3-month Critical Events and Action Items

January 2009 -
(1) Acclimate new CI leadership.

(2) Work with Secretary's office to finalize and begin implementing an Outreach and Communications Strategy with members of Congress and leaders of major constituent groups (e.g., industry, environmental, academic groups)

(3) Work with Secretary's office and CFO to revise and finalize a DOE FY 2010 Budget Request.

(4) Develop issue-specific Q&As, briefing and background information on key DOE and legislative issues.

February 2009 -
(1) Continue implementing Outreach and Communications Strategy and Budget formulation.

(2) Prepare nominees for confirmation hearings, including DOE program briefings and Congressional courtesy visits. Pertains to S1, S2, S3, S4, EE, OE, FE, NE, PI, CI, EM, SC, EIA, and NA, and includes direction and assembly of briefing materials.

(3) Manage Secretary's initial round of Congressional hearings.

(4) Develop initial set of legislative priorities and action plan.

(5) Advise and schedule appropriate Secretarial participation in "Big Seven" Intergovernmental Groups' Annual DC Meetings (occur in February and March)

March 2009 -

(1) Roll out FY 2010 DOE Budget Request.

(2) Manage confirmation process for all DOE nominees.

(3) Manage Program budget hearings for PSOs.

(4) Continue refining legislative priorities and action plan.

(5) Continue implementing Congressional Outreach and Communications Strategy as PSOs are confirmed.

12-month Critical Events and Action Items

(1) Continue Congressional communication and preparation of DOE officials for hearings, monitor proposed legislation which could impact DOE, and advocate DOE officials' views.

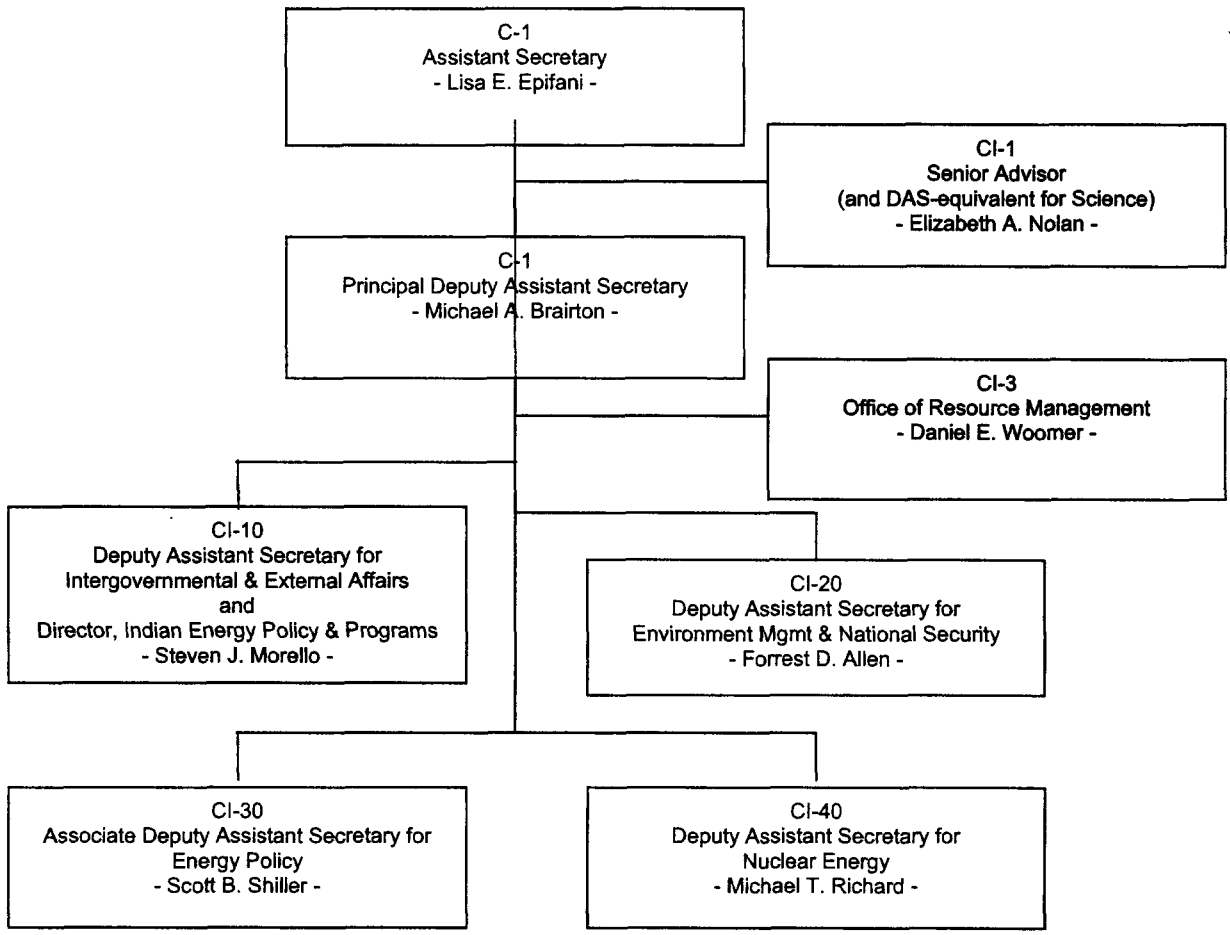
(2) Work with authorizing and appropriations committees on FY 2010 budget.

(3) Consult with appropriate committees of jurisdiction on any anticipated Departmental reorganizations, reprogrammings, or changes to major programs/initiatives.

(4) Build strong interpersonal relations between DOE leadership and key members of Congress, State and Tribal governors, and industry/environmental/ professional community leaders.

Current organizational chart with incumbent names and vacancies

CI is organized into functional units, each with responsibilities to address a specific constituency or provide a specific function.



Functional Responsibilities by Sub-organization
CI's organizational structure consists of four primary functional delineations:

CI-1 – Office of the Assistant Secretary comprises the Program's senior leadership, with overall responsibility for setting priorities and directing staff of the Office of Congressional and Intergovernmental Affairs and the Office of Indian Energy Affairs.

CI-3 – Resource Management provides all business and administrative function support for CI, including human resources, budget, finance, logistics, and security.

CI-10 – Intergovernmental and External Affairs/Indian Energy Affairs oversees relations and communication between DOE and State, local and tribal governments, including coordination of cross-Program outreach activities and monitoring of Congressional hearings and testimony, as appropriate.

CI-20, 30, 40 – Deputy Assistant Secretaries (DAS) are responsible for managing Congressional relations for their assigned Program areas; they are responsible both for interacting with Congressional members and staff and for advising the Secretary and PSOs on the views and interests of Members with respect to specific programs and legislation within their assigned areas. DASs are responsible for facilitating effective two-way communication between members of Congress and the Department's senior leadership. DAS program areas may be adjusted from time-to-time as Departmental priorities and/or needs change.

Office of Economic Impact and Diversity

Organization Information

Organization Name:
Office of Economic Impact and Diversity

Address:
1000 Independence Avenue, SW, Washington, DC 20585, Room 5B-110

Organization Phone Number:
202-586-8383

Organization Website:
http://diversity.doe.gov/

POC Email Address:
Annie.Whatley@hq.doe.gov

Supporting the DOE Mission

Management Excellence Strategic Goals

The Office of Economic Impact & Diversity supports the Department's Strategic Theme 5 – Management Excellence – primarily by assuring that there are clear roles and responsibilities and accountability of its staff as we work with program offices throughout the Department and with outside organizations, groups and individuals to 1) promote small business participation on all contracts at DOE and with DOE contractors, 2) include minority institutions in the numerous grant opportunities available at DOE, 3) increase funding for minority institutions and 4) expand the number and diversity of students in the student internship programs in order provide a diverse workforce pipeline for DOE.

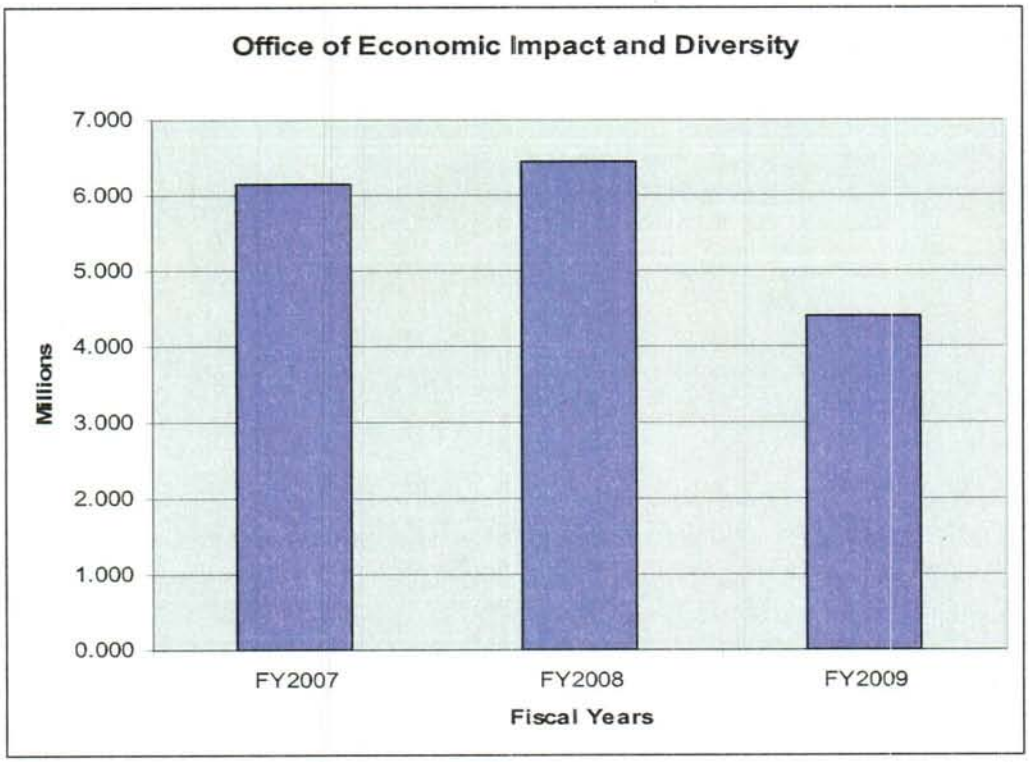
Mission Statement

The mission of ED is to identify the impact of energy policies on minorities, minority businesses and minority institutions; to promote equal opportunity in employment and contracting at DOE and DOE's major facility contractors; and to assure that small businesses receive a fair and equitable share of Departmental contracts and subcontracts.

Status

Budget:

The FY 2009 proposed budget



FY 2009 Congressional Request: $4,400,000 based on 20 FTEs, per proposed transfer of the Office of Civil Rights

People:

Estimated number of federal FTEs: 32
Estimated number of Contractor FTEs: 4
Estimated number of headquarters FTEs: 32
Estimated number of field site FTEs: Not applicable

Facilities:

No facilities owned or leased, housed at Headquarters, Forrestal Building

Performance:

FY 2007 PART measure status: Not applicable, Not a GPRA Unit
FY 2007 4th Quarter Joule Status: 3 Green

History

In 1993, the Office of Economic Impact and Diversity was established by bringing together the Office of Small & Disadvantaged Business Utilization, the Office of Civil Rights, and the Office of Minority Economic Impact. Additionally, two new offices - the Office of Employee Concerns and the Office of the National Ombudsman were added in the mid 90's based on specific events that occurred impacting DOE employees. In 2004, the office went through a reorganization eliminating the Office of the National Ombudsman (functions going to the Office of Small & Disadvantaged Business Utilization) and the Office of Employee Concerns (functions going to the Office of Civil Rights).

Critical Operating Procedures

The Office of Small & Disadvantaged Business works with both internal staff and external stakeholders (small businesses) to develop procedures to increase the participation of small and socio-economic businesses in the contracting activities of the Department. The Office of Minority Economic Impact works with both internal staff and external stakeholders (minority educational institutions) to develop procedures to increase the participation of minority educational institutions in the award of DOE grants, scholarships, and internships. These procedures involved outreach, goal-setting, tracking, training and reporting activities.

The Office of Civil Rights works with both internal staff and external stakeholders (DOE contractors) to educate and inform individuals about applicable the EEOC requirements and provides, counseling services, conducts training, and issues final agency decisions.

Recent Organizational Accomplishments and Strengths

Small Business Prime contract awards went from $902 million in FY 2004 to $1.4 billion in FY 2007. In FY 2007, the U.S. Small Business Administration issued its first ever Small Business Scorecard to all federal agencies. DOE received a "green" rating for reaching its small business achievements for FY 2006. In August of 2008, DOE received its second "green" rating for reaching its small business achievements in FY 2007.

In June of 2008, the Office of Small and Disadvantaged Business Utilization (OSDBU) successfully completed its 9th Annual Small Business Conference with over 1000 in attendance. The conference's Matchmaking Forum, which provided opportunities for small business participants to meet face-to-face with procurement representatives from DOE's large prime contractors and major corporations, resulted in more than 1500 matchmaking actions totaling $21 billion in contract opportunities available to attendees. The FY 2007 Secretarial Small Business Awards were presented by the Deputy Secretary.

The Office of Minority Economic Impact (OMEI) achieved 100% participation from the DOE program offices in funding for the Minority Students Summer Internship Program. The number of students interning has almost doubled over the past four years. The Office implemented an electronic system to assist OMEI in collecting data that can be accessed by all program offices for the purpose of recording dollars awarded and type of services funded in a timely and accurate

manner. This system assists in preparing and providing annual reports as required by Executive Orders for all minority institution programs.

The Office of Civil Rights (OCR) received less employee complaints – a testament to the training provided during the year – and reduced the time for processing complaints.

Leadership Challenges

- Transfer of Civil Rights function out of ED.
- Retention of Minority Banking Program.

Key Strategies and Timing

The FY 2009 Budget proposed the transfer of the Civil Rights and Diversity functions from ED to the Office of Hearings and Appeals and to the Office of Human Capital. Pending approval of the FY 2009 Budget, ED has detailed the functions and FTEs to these offices, effective October 14, 2008. The transfer will become effective upon approval of the FY 2009 budget.

Critical Events and Action Items

3-Month Events

- The functions in the Office of Civil Rights and Diversity (ED-4) are scheduled to be transferred from ED effective with the passage of the FY 2009 Budget. Due to the impending Continuing Resolution (CR), ED will begin the transfer process by detailing staff to both the Office of Hearings and Appeals and to the Office of Human Capital effective 10/12/08. The formal transfer may need to be completed within the first four months of the new administration.

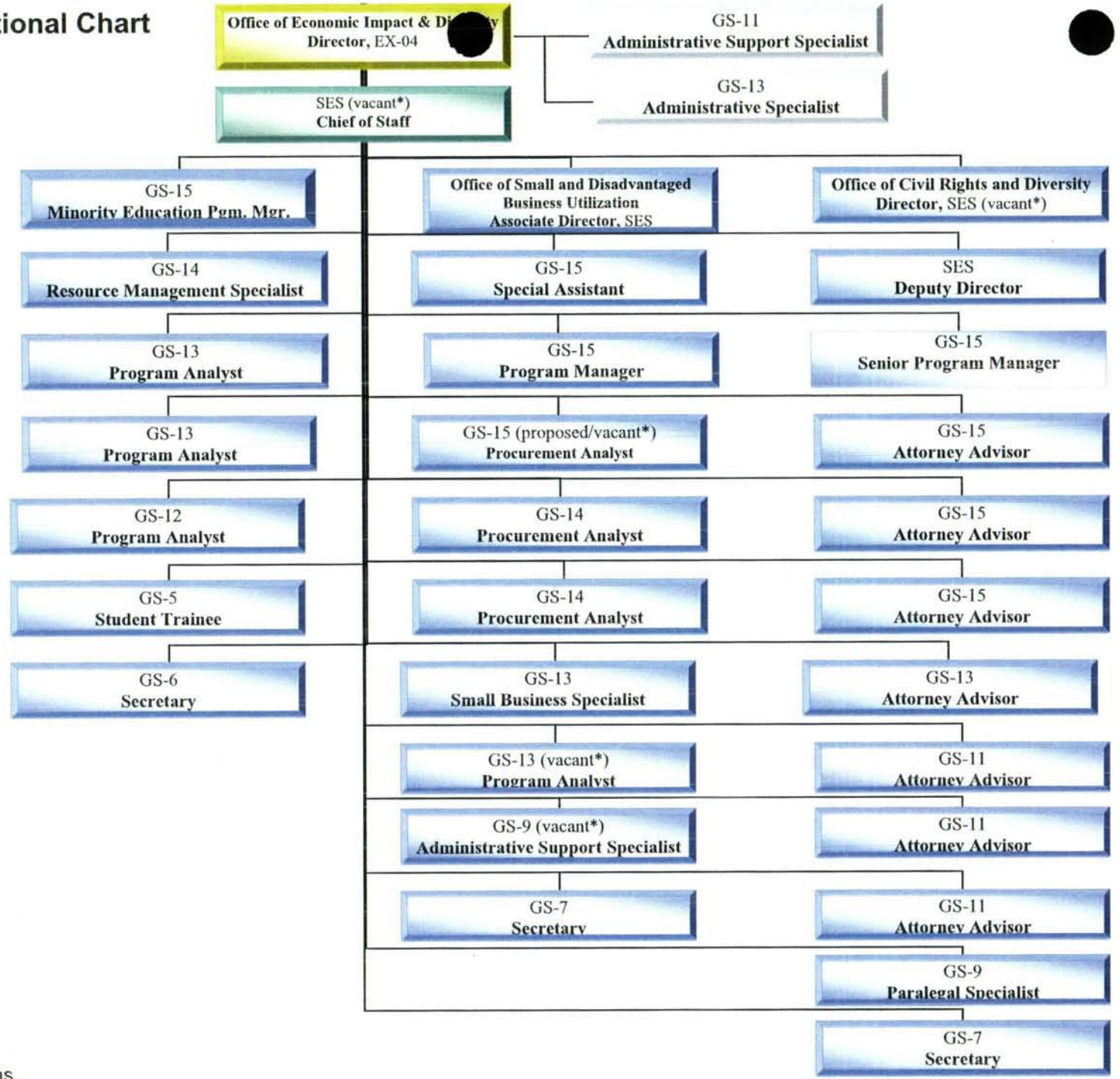
12-Month Events

None to report.

Hot Issues

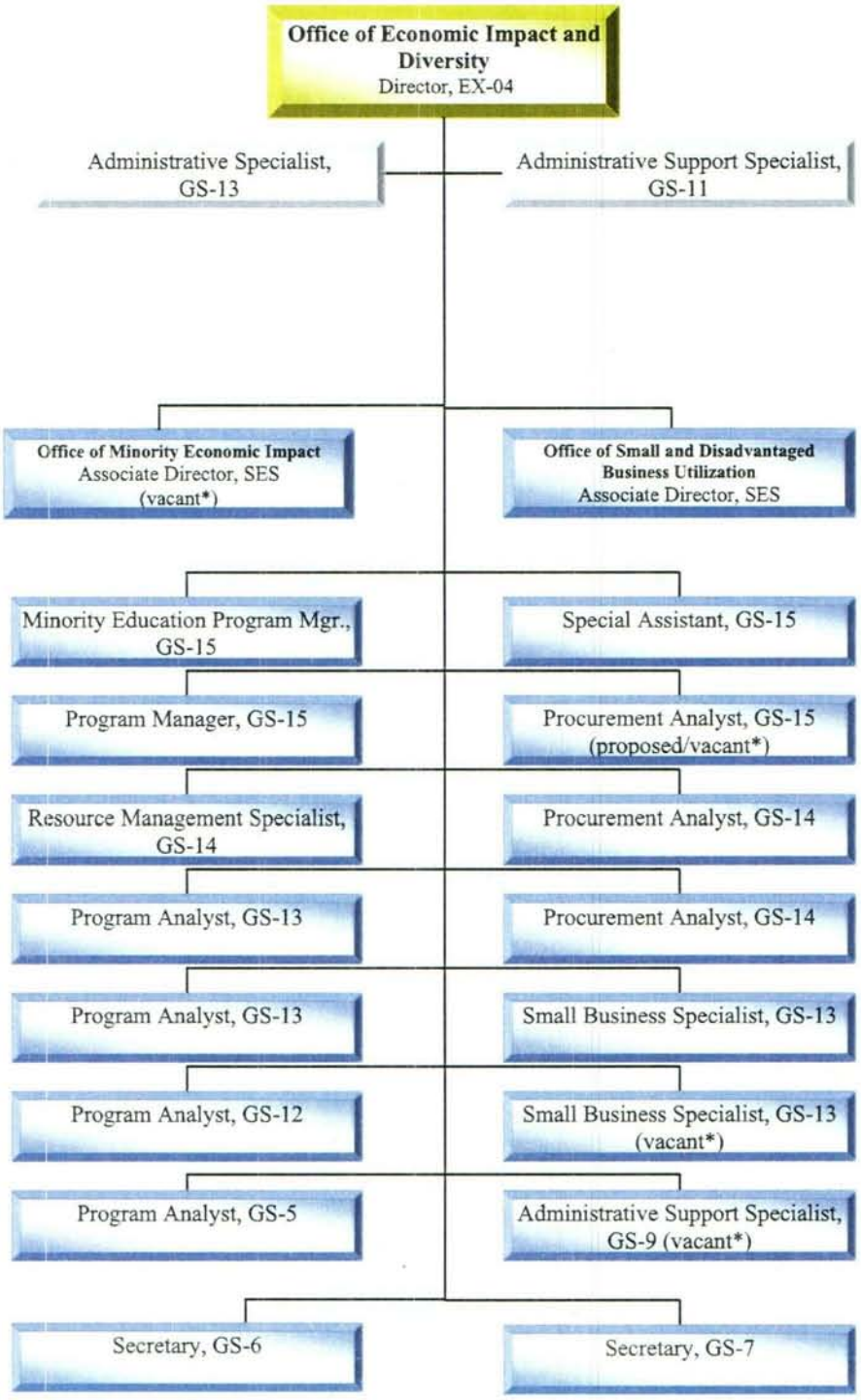
None to report.

Current Organizational Chart



*Vacant positions

Proposed Organizational Chart



Proposed Organizational Chart is based on 20 FTE per proposed transfer of the Civil Rights functions to the Office of Hearings and Appeals.

*Vacant positions

Office of the General Counsel

Organization Information

Organization Name:
Office of the General Counsel

Address:
1000 Independence Avenue, S.W., Washington, D.C. 20585

Organization Phone Number:
202-586-5281

Organization Website:
www.gc.energy.gov

POC E-mail Address:
Janet.Barsy@hq.doe.gov

Supporting the DOE Mission

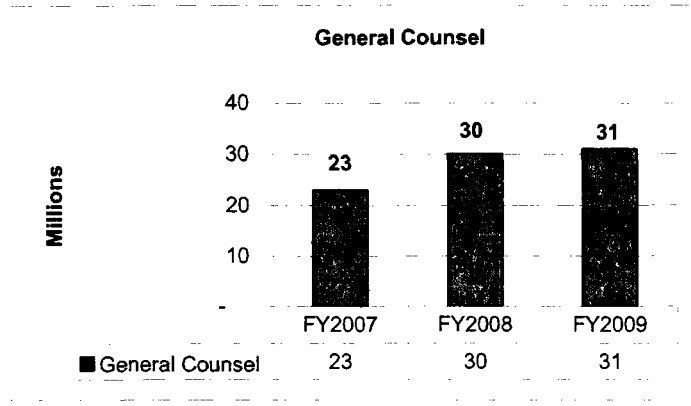
The Office of the General Counsel (GC) is responsible for providing comprehensive legal services to the Secretary, Deputy Secretary, and all Departmental elements, except the Federal Energy Regulatory Commission (FERC), and for effectively representing the Department as counsel before Federal, State, and other governmental agencies and courts. These services are intended to advance the missions and objectives of the Department through advice, negotiation, dispute resolution, rulemaking, legislation, and, when necessary, litigation. GC is organized so as to provide each Departmental element (Fossil Energy, Science, etc.) with "program counsel" specifically skilled in its unique issues. Separate elements of GC provide specialized legal expertise for issues that affect many program offices, such as procurement, fiscal, regulatory, and environmental law.

Mission Statement

GC is responsible for providing comprehensive legal services to the Secretary and the entire Department, except FERC. These services are intended to advance the missions and objectives of the Department through advice, negotiation, dispute resolution, rulemaking, legislation, and, when necessary, litigation, and to ensure that the Department operates in compliance with all pertinent laws and regulations.

Status

Budget:



FY2009 Congressional Request: $31,233,000

FY 2007 does not include funding for the Office of NEPA Policy and Compliance because that office was not included in appropriations for GC for that fiscal year.

The GC budget is derived from the "Departmental Administration" appropriation contained in the Energy and Water Development Appropriations Act. As required by law, additional funds are made available to GC from the Nuclear Waste Fund to pay for work done by GC in furtherance of activities under the Nuclear Waste Policy Act.

GC, through the Assistant General Counsel for Electricity and Power Marketing, intervenes before various state public service commissions and FERC in utility rate and service cases that affect utility costs borne by the Department. This intervention program has resulted in substantial cost savings to DOE operations and research laboratories. Since 1994, the interventions by GC have saved the Department approximately $70.2 million.

People:

Below are the numbers of federal and contractor FTEs funded through FY 2008:

Number of federal FTEs: 174	Number of headquarters FTEs: 170
Number of contractor FTEs: 3	Number of field site FTEs: 7

Facilities:

GC has no field facilities; however, some GC positions are located at field offices. Six are at the Yucca Mountain Project Office in Las Vegas, NV, and one works at the Golden Field Office in Golden, CO.

Performance:

GC submitted FY 2007 Performance Measures to the Office of Program Analysis and Evaluation. Effectiveness Measures and Efficiency Measures were submitted for making ethics training available for all DOE employees that are required to file financial disclosure reports, and to complete an initial review of all financial disclosure reports within 60 days of filing.

History

The position of the General Counsel is established as a Senate-confirmed Presidential appointment in the Department of Energy Organization Act, Public Law 95–91, Section 202(b).

GC Personnel

Headquarters

The Office of the General Counsel (Headquarters) is comprised of the Immediate Office of the General Counsel, four program area Deputy General Counsel supported by ten Assistant General Counsel (AGC), the Director of the Office of Conflict Prevention and Resolution, their staff attorneys and support staff, and the Office of NEPA Policy and Compliance. The functions and responsibilities of these offices are generally described below. Greater detail on the responsibilities of each office described below is available from GC.

Immediate Office of the General Counsel: General Counsel & Deputy General Counsel (GC-1)

The General Counsel is ultimately responsible for stating what the law is for guidance of all Departmental elements and officials. To do so, he or she directs, manages, and supervises all DOE activities conducted by GC. In this connection, general functions and responsibilities undertaken by the General Counsel include: establishing policies, issuing guidance, defining procedures and rendering decisions pertaining to the General Counsel's areas of responsibility, including but not limited to exercising the authorities set forth in the Secretary's *Memorandum For All Department Energy Employees* on "Functional Accountability" dated May 23, 2006; providing counsel to the Secretary and to senior DOE officials; insuring the provision of adequate legal support and services to DOE's program areas; representing DOE in legal matters, as required; and, exercising professional oversight of the Offices of the Chief Counsel and Chief Patent Counsel of each of the Field Offices.

Deputy General Counsel for Litigation (GC-30)

The Deputy General Counsel for Litigation, together with the AGC for Litigation (GC-31), directs, manages, and supervises the Department's activities and functions in litigation in which the Department is a party (which is almost all conducted by the Department of Justice) as well as its activities and functions with respect to the Department's contractors' litigation (which is conducted by contractor-retained counsel). A HOT Issue Paper entitled *Pending Significant Litigation Matters* may be found in Book Three.

Deputy General Counsel for Environment and Nuclear Programs (GC-50)

The Deputy General Counsel for Environment and Nuclear Programs directs, manages, and supervises the activities and functions assigned to the AGC for Environment (GC-51), the AGC for Civilian Nuclear Programs (GC-52), and, the AGC for International and National Security Programs (GC-53). These offices serve as program counsel for the Offices of Environmental Management (EM), Legacy Management (LM), Civilian Radioactive Waste Management (RW), Nuclear Energy (NE), Science (SC), Health, Safety and Security (HSS), Intelligence and Counterintelligence (IN), Policy & International Affairs (PI), and the Chief Information Officer (CIO).

Many of the major functions and responsibilities of these AGCs and their offices involve providing legal advice regarding: environmental protection, compliance with the National Environmental Policy Act and other applicable environmental protection laws, regulations, federal facility agreements and other requirements; interactions with the Defense Nuclear Facilities Safety Board; DOE programs to manage, store and dispose of nuclear waste and spent nuclear fuel, including matters relating to licensing and development of a repository at Yucca Mountain; DOE programs for nuclear energy fuel cycle activities; nuclear liability matters, including the Price-Anderson Act, indemnification under Public Law 85-804; DOE regulatory and NRC licensing authority under the Atomic Energy Act; agreements and initiatives relating to domestic science and technology cooperation; defense and nuclear nonproliferation programs, including negotiating and drafting international agreements as appropriate; security, intelligence and counterintelligence matters; international agreements relating to international science and technology cooperation, international trade, and investment activities; and other Departmental programs involving international cooperation.

Deputy General Counsel for Technology Transfer and Procurement (GC-60)

The Deputy General Counsel for Technology Transfer and Procurement directs, manages, and supervises the activities and functions assigned to the AGC for Procurement and Financial Assistance (GC-61) and the AGC for Technology Transfer and Intellectual Property (GC-62).

Many of the major functions and responsibilities of these AGC and their offices involve: providing legal advice regarding DOE programs and functions involving procurement, financial assistance and other transactions law, regulations, policies and activities; providing legal advice regarding source selection strategies and processes for major procurement actions throughout the DOE complex; managing and directing the defense of DOE procurement actions, including solicitations, competitive range decisions, and contract awards when such actions are protested to the Government Accountability Office; representing DOE in connection with contract disputes before the Civilian Board of Contract Appeals and providing assistance to the Department of Justice in connection with litigation relating to DOE contract cases; assisting in drafting, negotiating and reviewing DOE solicitation documents and contracts including procurement contracts, interagency agreements, funding opportunity announcements, grants, cooperative agreements, and technology investment agreements; providing legal advice regarding DOE intellectual property and technology transfer programs that include formulation of DOE's patent policy and representation DOE's interests in intellectual property and technology transfer

matters, including patents, trademarks, copyrights, trade secrets, and related matters; and, coordinating activities of field patent counsel regarding intellectual property and technology transfer matters.

Deputy General Counsel for Energy Policy (GC-70)

The Deputy General Counsel for Energy Policy directs, manages and supervises the activities and functions assigned to the AGC for Legislation and Regulatory Law (GC-71), the AGC for Fossil Energy and Energy Efficiency (GC-72), the AGC for Electricity and Power Marketing (GC-76), and the AGC for General Law (GC-77). These offices serve as program counsel to the Offices of Congressional and Intergovernmental Affairs (CI), Fossil Energy (FE), Energy Efficiency and Renewable Energy (EERE), Electricity Delivery and Energy Reliability (OE), Management (MA) (on non-procurement matters), Economic Impact and Diversity (ED), the Energy Information Administration (EIA), Chief Financial Officer (CFO), including the Loan Guarantee Program which is part of the Office of the CFO, and Human Capital Management (HC).

Many of the major functions and responsibilities of these AGC offices involve: providing for internal DOE review of all DOE legislative proposals and obtaining Office of Management and Budget (OMB) clearance of these proposals; acting as the DOE contact point with OMB on all non-budget legislative matters; participating in the analysis and formulation of DOE positions and comments on enrolled bills and other agencies' proposed regulations and testimony; providing legal advice on administrative law and Executive Orders applicable to rulemaking, including legal review of draft regulations; providing legal advice and counsel in connection with DOE's fossil energy programs, including the Strategic Petroleum Reserve, Naval Petroleum Reserves, clean coal research and demonstration programs, and issues arising in connection with DOE's role with respect to possible loan guarantees for construction of an Alaska Natural Gas Pipeline; providing legal advice and counsel in connection with DOE's Loan Guarantee Program; serving as DOE's Designated Agency Ethics Official (AGC for General Law) and managing the Department's ethics program for Federal employees; and providing legal services and review in connection with issues concerning the Freedom of Information Act (FOIA), the Privacy Act, the Federal Advisory Committee Act (FACA), property, equal opportunity, personnel and appropriations law, and DOE's organizational structure.

A paper entitled *GC's Role as Liaison with the Office of Management and Budget Concerning Executive Branch Testimony, Legislative Proposals, Significant Regulatory Actions and Significant Guidance Documents* is available from GC. This paper describes in detail GC's role as DOE's liaison with OMB for review of: (1) communications with the Congress, including testimony and legislative proposals of other Executive Branch agencies (Congressional testimony to be given by DOE officials is handled by the Office of Congressional and Intergovernmental Affairs), and (2) Significant Regulatory Actions and Significant Guidance Documents under Executive Order 12866, *Regulatory Planning and Review.*

Office of NEPA Policy and Compliance (GC-20)

The mission of the Office of NEPA Policy and Compliance (NEPA Office) is to assure that the program offices take the steps necessary as they carry out their missions to comply with the requirements of the National Environmental Policy Act (NEPA) and related laws and regulations requiring environmental review (*e.g.*, National Historic Preservation Act, Endangered Species Act and others) that are necessary prior to project and program implementation. The website for this office can be found at: http://www.gc.energy.gov/NEPA/. Under DOE NEPA regulations, DOE program and field offices are responsible for complying with NEPA, while the General Counsel is responsible for oversight of DOE NEPA compliance. The NEPA Office provides essential technical and policy support Department-wide for all DOE programs which must comply with NEPA prior to implementing proposed projects and programs, and therefore supports all DOE missions. Until October 6, 2006, the NEPA Office was part of the Office of Environment, Safety and Health, which was disestablished.

Key organization activities that support DOE missions include: performing independent assessments of DOE projects and programs, when necessary, to assure that NEPA requirements are met; recommending approval of environmental impact statements (EISs) and other NEPA documents, as appropriate, after conducting independent review to ensure both technical and legal adequacy (the latter in consultation with the AGC for Environment); advising programs on applicability of NEPA and other related environmental review requirements; providing technical support, on request, to program and field offices in resolving significant NEPA compliance issues with Federal, State, local agencies, and other stakeholders; and, working with NEPA Compliance Officers in program and field elements to provide training on NEPA and related environmental review requirements. Through meetings, training, guidance documents, support for DOE-wide NEPA contracting, and publication of *Lessons Learned Quarterly Reports* (www.gc.energy.gov/NEPA/lessons_learned.htm), this office helps ensure that program and field elements understand DOE expectations for NEPA process efficiency and effectiveness and have the necessary tools to improve performance.

Office of Conflict Prevention and Resolution (GC-12)

The Office of Conflict Prevention and Resolution (OCPR) is responsible for operating a program to increase the understanding and use of Alternative Dispute Resolution (ADR) throughout the Department and with its contractors, pursuant to the Administrative Dispute Resolution Act (ADRA), (Pub. L. 101-552). Although the ADRA focuses on issues already in controversy, the OCPR has expanded its focus to encourage program offices to analyze and anticipate potential conflicts and take action before conflict begins. Some of the major functions and responsibilities of this office also involve: coordinating the statutorily-required Technology Transfer Ombuds program at the contractor-operated national laboratories and facilities; operating a headquarters mediation program for work place disputes and coordinating referrals for mediators throughout the agency and with its contractors; and, advising HQ and field offices in the use of ADR to prevent and resolve disputes and cases in litigation, such as contract, environmental, intellectual property and whistleblower cases.

Field

The Department employs a complement of lawyers who work in the field, including Chief Counsel, Chief Patent Counsel, Power Marketing Administration General Counsel, and their staffs. There is a Chief Counsel at the majority of DOE field offices. Where there is no legal staff at a field office, those offices are serviced by Chief Counsel at other field offices or at Headquarters. The General Counsel is responsible for general professional supervision and oversight of the field office Chief Counsel and, through them, their legal staffs. The relationship between the General Counsel and Chief Counsel and Field Counsel is described by the authorities set forth in the Secretary's *Memorandum For All Department Energy Employees* on "Functional Accountability" dated May 23, 2006.

Chief Counsel

Chief Counsel are subject to a dual reporting relationship – they report to the Field Manager because they are part of the particular field office organization, and also are responsible professionally to the General Counsel. They also have day-to-day client relationships with the field managers and staff at the offices where they are located. The General Counsel ensures that the necessary professional consultation occurs with the respective Chief Counsel and NNSA Counsel through a variety of means, including regular conference calls conducted by the General Counsel with the Chief Counsel. The General Counsel formally contributes to the selection and evaluation of Chief Counsel.

Chief Patent Counsel

Chief Patent Counsel are also subject to a dual reporting relationship – they are responsible professionally to the AGC for Technology Transfer and Intellectual Property, pursuant to the guidance and direction of the General Counsel, yet report directly to a Chief Counsel. The AGC for Technology Transfer and Intellectual Property ensures that the necessary professional consultation occurs with the Chief Patent Counsel through a variety of means, including monthly conference calls with all the Chief Patent Counsel, and an annual Chief Patent Counsel meeting. Although not specified in Departmental guidance, both the AGC for Technical Transfer and Intellectual Property and the Chief Counsel have a role in the selection and evaluation of Chief Patent Counsel.

Power Marketing Administration General Counsel

Each of the four Power Marketing Administrations (PMA) has a General Counsel. PMA General Counsel also are subject to a dual reporting relationship – they are subject to the professional direction of the General Counsel and report directly to the Administrator of the PMA where they are located. The Deputy General Counsel for Energy Policy ensures that necessary elements of the program offices interact as appropriate with PMA General Counsel to ensure that the PMAs, components of the Department, receive adequate legal services where necessary and that appropriate professional consultation occurs.

Critical Operating Procedures

GC is the law department of a complex, nationwide enterprise. As such, it does not have written operating procedures that describe the substance of its general professional oversight. Operating procedures regarding approval of contractor litigation costs appear in the relevant contracts. Procedures regarding litigation and other cost exposures are specified by the Chief Financial Officer's independent auditors.

HOT Issues

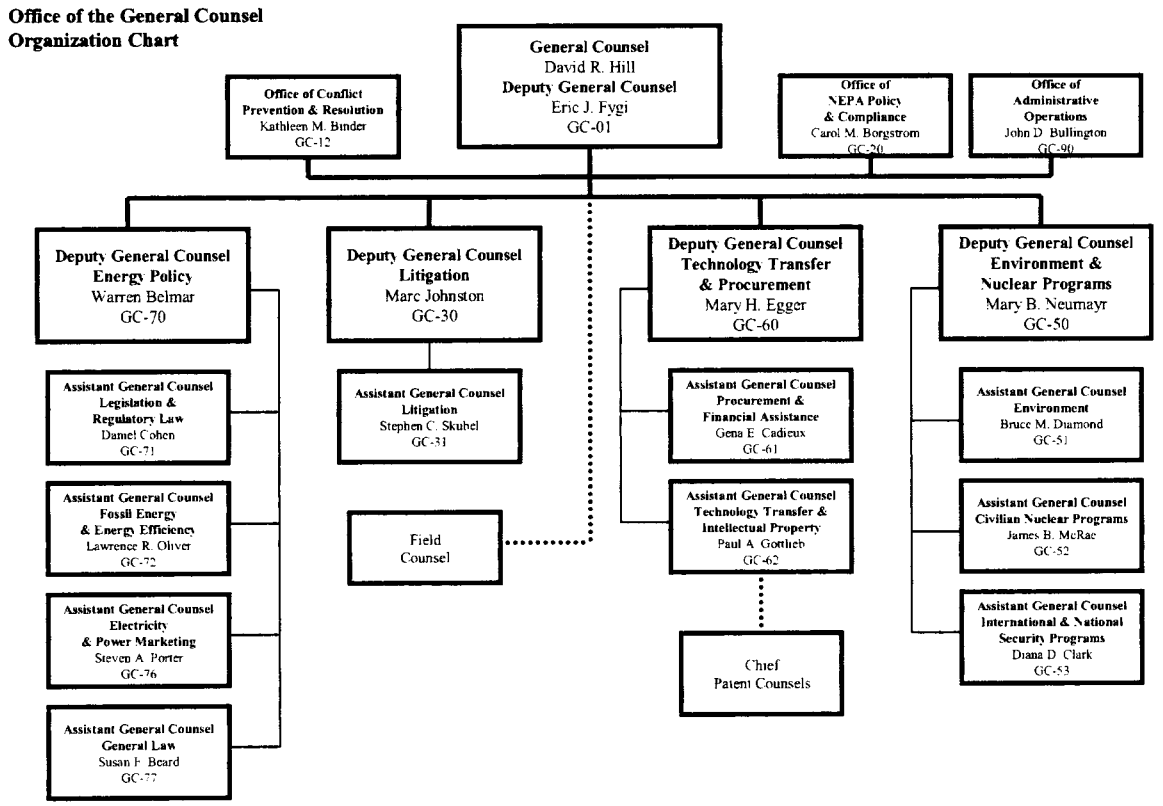
A paper entitled *Pending Significant Litigation Matters* may be found in Book Three.

Funding Profile

(dollars in thousands)

Office	FY2008 Current Appropriation	FY2009 Congressional Request
General Counsel	29,889	31,233

Current Organizational Chart



Office of Health, Safety and Security

Organization Information

Organization Name:

Office of Health, Safety and Security (HSS)

Address:

1000 Independence Avenue, S.W.
Suite 7G-040
Washington, D.C. 20585

Organization Phone Number:

301-903-3777

Organization Website:

http://www.hss.energy.gov/index.html

POC E-mail Address:

Stephen.Kirchhoff@hq.doe.gov

Supporting the DOE Mission

Strategic Theme 5 – Management Excellence
Strategic Goal 5.1 – Integrated Management

Working in partnership with DOE headquarters and site management, workers, and stakeholders, HSS maintains the expertise and provides the corporate-level leadership and strategic vision necessary to coordinate and integrate safety[1] and security[2] programs within the Department. HSS is committed to continuous improvement to strengthen the performance of the Department's safety and security programs.

Key activities include:

Policy - In coordination with line and headquarters organizations, HSS develops, promulgates, and maintains Departmental safety and security policies and regulations. HSS policy activities pertain to all aspects of DOE safety and security except aviation safety, managed by the Office of Management, and cyber security, managed by the Office of the Chief Information Officer.

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[1] Includes occupational, nuclear, and radiation safety, environmental, cultural and natural resources, quality assurance, and safety-related aspects of training, independent oversight and enforcement programs.

[2] Includes physical, personnel, and information security; nuclear materials accountability; security technology deployment; classification; and security-related aspects of training, independent oversight and enforcement programs.

Assistance – HSS:

- Assists Departmental elements in implementing internal safety and security policies as well as other federal, state, and local safety and security requirements;
- Manages corporate level safety and security programs and data management systems used to analyze performance and meet domestic and international reporting requirements;
- Manages the Government-wide program to classify and declassify nuclear weapons-related technology, and implements requirements for the protection of national security information in the Department's custody;
- Oversees domestic and international (with the governments of Japan, Marshall Islands, Spain, and Russia) health studies to determine worker and public health effects associated with Departmental operations, U.S. nuclear testing activities of the 1940s and 1950s, and other nuclear-related events;
- Provides necessary historical information to support claims filed by DOE federal and contractor (including former) employees in support of the Energy Employees Occupational Illness Compensation Program Act implemented by the Department of Labor;
- Manages medical surveillance programs for current and former workers to improve working conditions related to hazardous environments;
- Provides coordination for the Department's efforts to resolve issues raised by the Defense Nuclear Facilities Safety Board; and
- Manages security operations at DOE Headquarters facilities in the National Capital Area, including protective force operations, technical surveillance countermeasure programs, and executive protection services.

Training - Through the National Training Center (NTC), HSS provides safety and security training and professional development programs at the NTC campus in Albuquerque, NM, via online training programs, and through mobile training teams.

Independent Oversight - HSS conducts performance-oriented independent oversight appraisals of facility, site-specific, and programmatic activities to provide the Secretary and Deputy Secretary, senior and line management, and other stakeholders with evaluations of the adequacy of DOE policies and the effectiveness of line management's performance related to safeguards and security; cyber security; emergency management; environment, safety, and health; and other critical areas directed by the Secretary.

HSS conducts independent oversight of all aspects of Departmental programs except Naval Nuclear Propulsion Program, aviation safety (independent oversight conducted by the Office of Management), Bonneville Power Administration (various aspects as defined in DOE Delegation Order No. 00-033.00A), and water impoundment and dam structural integrity (independent oversight conducted by the Federal Energy Regulatory Commission via a memorandum of agreement).

Enforcement - HSS promotes vigilance and overall improvement in the Department's nuclear safety, worker safety and health, and classified information security programs through implementation and management of statutorily required enforcement programs.

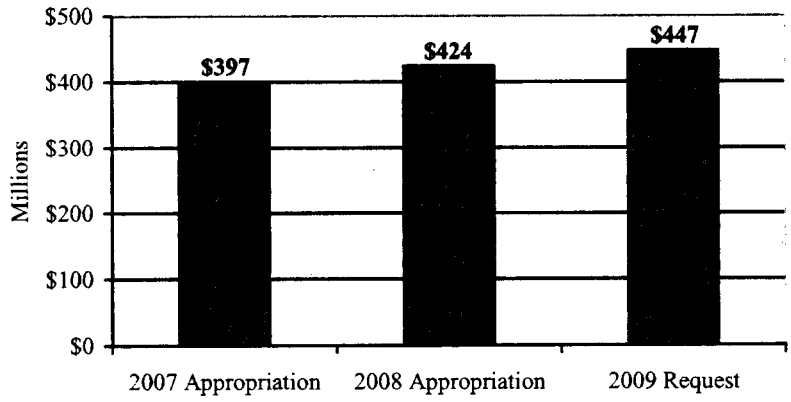
Mission Statement

The Office of Health, Safety and Security (HSS) is DOE's central organization responsible for health, safety, environment, and security; providing corporate-level leadership and strategic vision to coordinate and integrate these programs. HSS is responsible for policy development and technical assistance; safety analysis; corporate safety and security programs; education and training; DOE-wide independent oversight; and enforcement. The Chief Health, Safety and Security Officer advises the Secretary and Deputy Secretary on all matters related to health, safety, and security across the DOE complex.

Status

Funding

Other Defense Activities
(includes several programs)



FY2009 Congressional Request: $446,868,000

Staffing

	Federal	Contract	Total by Site
Field Personnel			
Hawaii	1	0	1
NTC	12	110	122
Total, Field	13	110	123
Headquarters Personnel			
Protective Force	0	275	275
Other HQ	373	265	638
Total, HQ	373	540	913
Total by Category	**386**	**650**	
Grand Total			**1036**

Facilities

HSS does not have landlord responsibilities for any DOE facilities. The majority of HSS operations are conducted at DOE Headquarters in the National Capital Area. HSS does operate the National Training Center located on Kirtland Air Force Base, in Albuquerque, NM.

Performance

HSS, as a DOE staff office, is not required to participate in the PART process.

History

HSS was created in October 2006 to strengthen the Department's safety and security performance following a review of these functions within DOE and the various DOE Program Offices that had a role in advising the Secretary and Deputy Secretary on the Department's safety and security posture. The decision to form HSS was based on the determination that a major organizational change was necessary to focus key responsibilities, ensure accountability, and integrate the corporate-level functions of safety and security policy, assistance, training, oversight and enforcement.

The creation of HSS integrated safety and security functions in an organizational structure better suited to address cross-cutting issues; increase collaboration and sharing of technical expertise; and increase accountability for safety and security responsibilities. Since its creation, HSS has enhanced the effectiveness and efficiency of DOE safety and security programs by implementing initiatives that provide the Department with more effective and consistent management of these programs vital for the Department to achieve its mission.

Critical Operating Procedures

HSS critical operating procedures, including the HSS Integrated Work Management System (IWMS) description, standard operating practices (SOPs), office-specific protocols, missions, and functions, and other HSS program documents can all be accessed from the HSS web site at: http://www.hss.energy.gov/index.html.

The IWMS description illustrates the integrated approach for performing HSS's major functions (i.e., policy, assistance, training, enforcement, oversight, and management) and describes the mechanisms used to accomplish these functions. The IWMS description also contains the HSS Functions, Responsibilities, and Authorities (FRA) matrix and the HSS Quality Assurance Program (QAP) description. The FRA matrix identifies the offices within HSS having primary and supporting responsibilities for specific functions as delegated by the Chief Health, Safety and Security Officer. The QAP description crosswalks the methods and mechanisms used by HSS to meet the requirements of DOE Order 414.1C, *Quality Assurance*, and DOE Notice 203.1, *Software Quality Assurance.*

HSS maintains SOPs for major functions as quality assurance mechanisms to ensure efficient, effective, and uniform implementation of: 1) HSS functions related to DOE safety and security programs; 2) national and Departmental laws, regulations, policies and requirements applicable to HSS activities; and 3) internal processes related to HSS communications and work flow. Individual offices within HSS also maintain office-specific SOPs and protocols.

Recent Organizational Accomplishments and Strengths

HSS has integrated safety and security functions to more effectively address crosscutting Departmental issues, to increase collaboration and sharing of technical expertise, and to increase accountability for safety and security responsibilities. Functional alignment of responsibilities within HSS minimizes overlap in reporting responsibilities; provides consistency in policy and guidance development and technical assistance; and increases the effectiveness of communications concerning safety and security programs.

HSS is recognized by the Department's leadership team, current and former members of DOE's workforce, other U.S. Departments and Agencies, Congress, the Defense Nuclear Facilities Safety Board, and within the international community as an organization striving for excellence in safety and security performance. Recent accomplishments and strengths include:

- **Outreach Efforts** - HSS has implemented an aggressive outreach program by conducting focus group meetings with DOE program offices, worker trade unions, professional associations, and other stakeholders to establish and strengthen lines of communication, seek feedback, and identify areas of interest and concern. A new outreach website was brought online in July 2008 to provide an information clearinghouse for individuals or organizations that seek information on outreach efforts but are not interested in HSS operational information. The website is located at: http://www.hssoutreach.doe.gov/.
- **Training and Professional Development** – HSS, through the National Training Center (NTC), has implemented a wide array of training and professional development programs to address Departmental safety and security operational and human capital initiatives. In 2007, the NTC initiated hands-on, performance-based training utilizing the Integrated Safety and

Security Training and Evaluation Complex, designed to replicate Departmental operating environments. The NTC has also implemented various safety and security integrated training programs geared toward mid- and senior-level managers such as the Nuclear Executive Leadership Training, designed to improve the ability of leadership within the Department's defense nuclear complex. Other programs implemented over the past two years include the: Tactical Response Force Level I and II Training, Protective Force Safety Fundamentals, Leadership and Management Development, and Senior Technical Safety Manager Institute.

- **Safety and Security Requirements** - HSS has initiated an aggressive effort to develop and revise Departmental safety and security directives to ensure a safer environment for Departmental workers and the public, provide more efficient and effective security for national assets, and meet commitments to stakeholders such as Congress and the Defense Nuclear Facilities Safety Board. HSS is in the process of completing a review of all security requirements and has initiated a review of all safety requirements. The objective of these reviews is to identify and validate the basis of each requirement and to ensure the requirements are performance-based, meaningful, clear, and concise without being overly prescriptive or redundant. This initiative also involves providing assistance to Departmental elements in the implementation of new and revised policy requirements.
- **Safety in Design** – In early 2008 HSS issued DOE Standard 1189, *Integration of Safety into the Design Process* and amended DOE O 413, *Program and Project Management for the Acquisition of Capital Assets*, to ensure the identification of hazards early in the design process for new or major modifications to DOE Hazard Category 1, 2, and 3 nuclear facilities and the use of an integrated team approach to design safety into the facility in a way that provides adequate protection for the public, workers, and the environment. HSS continues to work with the DOE program and field elements to develop implementation training for affected organizations. HSS also continues to work with the Office of Management to develop guidance documents consistent with the revised Order and new standard.
- **Safety Indicators** - HSS established a set of specific safety indicators applicable to the majority of DOE contractor operations. HSS collects safety data through various reporting mechanisms, analyzes the data, and provides the results to senior Departmental managers every two to three months. The information is used to focus management attention on actual or emerging issues with the goal of preventing serious events that could negatively impact the Department's ability to accomplish its mission. Using these indicators, HSS, in cooperation with the Under Secretaries, is developing safety goals to be presented to the Deputy Secretary for incorporation into contractor and federal operations.
- **Worker Safety and Health Program** - In 2007, HSS led the Department in the implementation of 10 C.F.R. Part 851, *Worker Safety and Health Program*, which governs the conduct of contractor health and safety programs at DOE sites. The rule made compliance with health and safety requirements mandatory as opposed to negotiated through contract mechanisms; and authorized DOE to enforce the rule using civil penalties or award fee reductions. HSS developed guidance and published a website containing the rule, guidance documents, frequently asked questions, and legal rulings. In addition, HSS policy, assistance, and enforcement organizations conducted workshops, provided presentations, and held monthly meetings with DOE, contractor, and worker organizations explaining the new requirements. HSS also assisted DOE field organization management in the review and approval of contractor written health and safety program descriptions required by the rule.

- **Former Worker Program** - HSS published a status report on the Former Worker Medical Surveillance Program in January 2008 to inform the DOE former and current workforce, Congress, and the public of the efforts being undertaken on behalf of those individuals who may have been exposed to harmful conditions as a result of working for DOE. HSS, in cooperation with the grantee service providers, has initiated a program review to ensure the Department can continue to support the conduct of at least 10,000 former worker medical screenings annually for the next few years.
- **International Health Activities** - HSS renegotiated the agreement between DOE and Spain's Ministry of Education and Science to terminate in FY 2009 the Department's 41 years of financial obligations for the environmental studies associated with the accidental release of nuclear material at Palomares. HSS also strengthened the Department's relationships with Japan, Russia, and the Marshall Islands to better manage DOE-funded health programs conducted in partnership with those governments.
- **Environmental Stewardship** - HSS, in collaboration with DOE program and site offices, was a key player in helping the Department achieve a "green" rating in status and progress for elements of the Office of Management and Budget's *Environmental Stewardship Scorecard.* HSS was also instrumental in the submittal of 28 DOE nominations for the 2007 White House *Closing-the-Circle* Awards. HSS nominees won four awards and received three honorable mentions out of the 17 winners and 13 honorable mentions awarded to the pool of 200 nominees submitted by federal government agencies.
- **Graded Security Protection Strategy** - HSS continues to provide security expertise, guidance, and tools to assist field and Headquarters elements in planning cost effective site protection strategies, enhancing site safeguards and security systems, and assessing security vulnerabilities. With HSS leadership, the Department recently issued its Graded Security Protection (GSP) Policy which officially replaced the 2005 Design Basis Threat (DBT) Policy as the Department's long-term, performance-based security planning metric. By fully incorporating the principles of risk management, the Department successfully collaborated on developing a more balanced and sustainable security plan reflecting current intelligence and a better understanding of the current threat. HSS subject matter experts are currently assisting field and Headquarters elements with implementing the new GSP Policy. In addition, HSS recently merged security incident reporting functions into the Safeguards and Security Information Management System (SSIMS) database, thereby providing a comprehensive management tool that tracks and maintains an up-to-date picture of the security posture of the DOE complex.
- **Security Technology Deployment** - In 2007 and 2008 HSS coordinated its safety and security experts to assist in the full-scale deployment of new security technology systems at three major DOE facilities and the partial deployment of security technologies at six other sites. The results of the evaluation of these deployed systems are expected to benefit all Departmental sites by identifying security technologies that can increase the effectiveness and efficiency of protection systems without significant increases in manpower.
- **Personnel Security** - HSS established the Office of Departmental Personnel Security to provide sufficient management attention and leadership at the Departmental level and to ensure consistent implementation of personnel security requirements. Additionally, HSS amended applicable DOE worker safety and personnel security requirements to strengthen

fitness for duty and workforce reliability standards as they relate to illegal substance abuse; and resulting in DOE implementing a more stringent drug testing policy for potential applicants and current federal and contractor employees.

- **HSPD-12 Implementation** - With HSS leadership, the Department continues its effort to implement the requirements of Homeland Security Presidential Directive 12 (HSPD-12) and transition the Department's existing physical and logical access control systems to HSPD-12 compliant systems. HSS has taken the lead role in establishing Departmental policy and work practices for required background investigations and has programmatic lead for the implementation and issuance of HSPD-12 compliant identification cards within the Department. As part of the integrated implementation effort, the Office of the Chief Information Officer is developing a Departmental plan for the implementation of logical access controls to information technology systems using HSPD-12 compliant credentials; and the three major programmatic elements (NNSA, Energy, and Science) continue to work with various programmatic and administrative elements to develop physical security access control upgrade plans that meet HSPD-12 access control requirements.
- **Independent Oversight** - HSS continues to conduct comprehensive independent oversight appraisals of DOE performance in the areas of safeguards and security; cyber security; emergency management; and environment, safety, and health. In 2007 and 2008, HSS conducted 38 site / facility comprehensive programmatic inspections, and several crosscutting program reviews pertaining to Personnel Security Clearance, Technical Surveillance Countermeasures, Information Security, Workplace Exposure Monitoring, Implementation of Integrated Safety Management, Construction Safety and Health, and Nano Technology. At the request of the Department of Commerce, HSS conducted a safety program review of the National Institute of Standards and Technology laboratory located in Boulder, CO, in response to a recent radiological contamination incident.
- **Cyber Security Capabilities** - Through its Independent Oversight activities, HSS has developed a cadre of technical experts, established two cyber security testing facilities, and developed remote testing platforms to conduct announced and unannounced (red team) vulnerability testing of DOE computer network systems via the Internet to evaluate internal and external network protection measures and defense-in-depth strategies. Announced testing provides a comprehensive picture of the range of vulnerabilities that DOE sites face, along with the effectiveness of essential management processes. Red team testing mimics adversarial attacks to identify network vulnerabilities that could be exploited, and evaluates the effectiveness of firewalls, intrusion detection and system monitoring capabilities, and other aspects of network security. HSS works closely with the Office of the Chief Information Officer in a unique relationship that supports that office in fulfilling its overall responsibility for cyber security within the Department.
- **Expanded Enforcement Programs** - In 2007 and 2008, HSS integrated the classified information security and worker health and safety enforcement programs with the established nuclear safety (Price Anderson Amendments Act) enforcement program processes. DOE enforcement programs promote safer and more secure operations by penalizing poor performance in these areas. Results of these integration efforts include the highly publicized notices of violation against the former and current Los Alamos National Laboratory contractors for classified information security violations and against the Hanford Site Tank Farm contractor for nuclear safety violations.

Leadership Challenges

Although the Department is continually striving to improve the efficiency and effectiveness of its programs and operations, there are some specific areas that merit a higher level of focus and attention. These areas often require long-term strategies for ensuring stable operations and represent the most daunting Leadership Challenges the Department faces in accomplishing its mission.

A. Safety and Health

Ensuring the safety and health of the Department's workers is one of the top priorities in accomplishing our challenging scientific and national security missions. Safety performance metrics continue to indicate the Department is heading in the right direction; however, DOE recognizes that constant vigilance and active involvement in safety planning and execution are needed to ensure that such trends are maintained.

To address this challenge, HSS partners with the Department's line organizations to continuously improve overall safety performance by integrating efforts in the areas of policy, technical assistance, analysis, training, oversight, and enforcement to provide line organizations the tools, guidance, feedback, and assistance needed to continuously improve overall safety performance. HSS continues to enhance the effectiveness and efficiency of safety programs across the DOE complex by providing periodic safety indicator analysis to senior Departmental managers to focus attention on prevention of serious events that could negatively impact the Department's mission performance. HSS also fosters improvements in safety programs through rigorous oversight and enforcement programs as well as training and professional development through the National Training Center. Recent efforts, such as the development of DOE Standard 1189, *Integration of Safety into the Design Process*, ensures the integration of safety into the design and construction of new nuclear facilities and the modification of existing facilities.

B. Security

Security challenges continue to evolve since the events of September 11, 2001 and the ensuing International War on Terrorism. The need for continued improvements in homeland defense capabilities, highlighted by threats of terrorism and weapons of mass destruction, create new and complex security issues that must be effectively addressed to ensure the protection of critical national security assets, energy resources, and associated infrastructures. To keep pace with evolving threat conditions, the Department must continuously assess, adapt, and strengthen its security posture.

To address this challenge, the Department has moved aggressively over the past several years to improve security at its facilities. In May 2004, the Department launched a set of sweeping security initiatives to improve the protection postures at the Department's nationwide network of laboratories and facilities, particularly those housing weapons-grade nuclear materials. Subsequent changes to the Design Basis Threat (renamed the Graded Security Protection) Policy have driven additional security upgrades. Continuing progress in the implementation of these initiatives and upgrades ensures the Department has a clear and viable security strategy for the foreseeable future. The most recent activities have focused on implementing the necessary improvements to meet the current Graded Security Protection Policy by updating vulnerability

assessments; evaluating, testing and deploying cost effective security technologies; implementing the elite protective force model; and consolidating and improving special nuclear material storage facilities. Continuous efforts to monitor ongoing threat analyses enable the Department to further adapt and enhance facility protective measures when conditions dictate the need to do so.

The Department is employing an integrated approach to coordinate site mission, site operations, security policy, security technologies, and the elite protective force concept to provide a more robust security posture at a lower overall cost. To address potential insider threats and vulnerabilities, HSS established the Office of Departmental Personnel Security to better ensure effective program implementation. HSS has worked with the Offices of Human Capital, General Counsel and Procurement to strengthen drug testing requirements for candidates for DOE security clearances and existing federal and contractor employees who hold security clearances. Additionally, HSS security oversight and enforcement programs continue to provide needed impetus to foster improvement in both federal and contractor operations.

Key Strategies and Timing

The following activities are planned by HSS in FY 2009 to ensure its commitment to the Department and the Nation to further strengthen the Department's safety and security posture.

1. Continue to improve the quality, timeliness, and effectiveness of safety and security policies and requirements.
2. Enhance safety program effectiveness based on priorities developed from operating experience, health studies and surveillance data, independent oversight results, enforcement activities, and stakeholder feedback.
3. Improve federal expertise in line management oversight of field operations and contractor self-assessment programs through training and education programs and through continued emphasis on these programs during independent oversight reviews.
4. Improve issues management processes and practices to more effectively support continuous improvement processes and help prevent recurrences of adverse events.
5. Improve the interface processes between safety and security programs and practices to enable more robust, efficient, effective postures that identified concerns.
6. Continue to lead and coordinate Departmental efforts to provide cost effective solutions for implementing the Design Basis Threat / Graded Security Protection Policy and associated security enhancements by evaluating and deploying security technologies.
7. Strengthen the management and performance of the Former Worker Medical Screening and Energy Employees Occupational Illness Compensation Program Act programs.
8. Continue ongoing efforts to enhance the effectiveness of independent oversight and enforcement activities.

Critical Events and Action Items

3-month events

Thoroughly brief the new leadership team to ensure a complete understanding of the significance and importance of the Department's safety and security programs to the DOE workforce, and the critical role they play in the safe operation of DOE facilities and the protection of national security assets, energy resources, and infrastructure for which the Department is responsible.

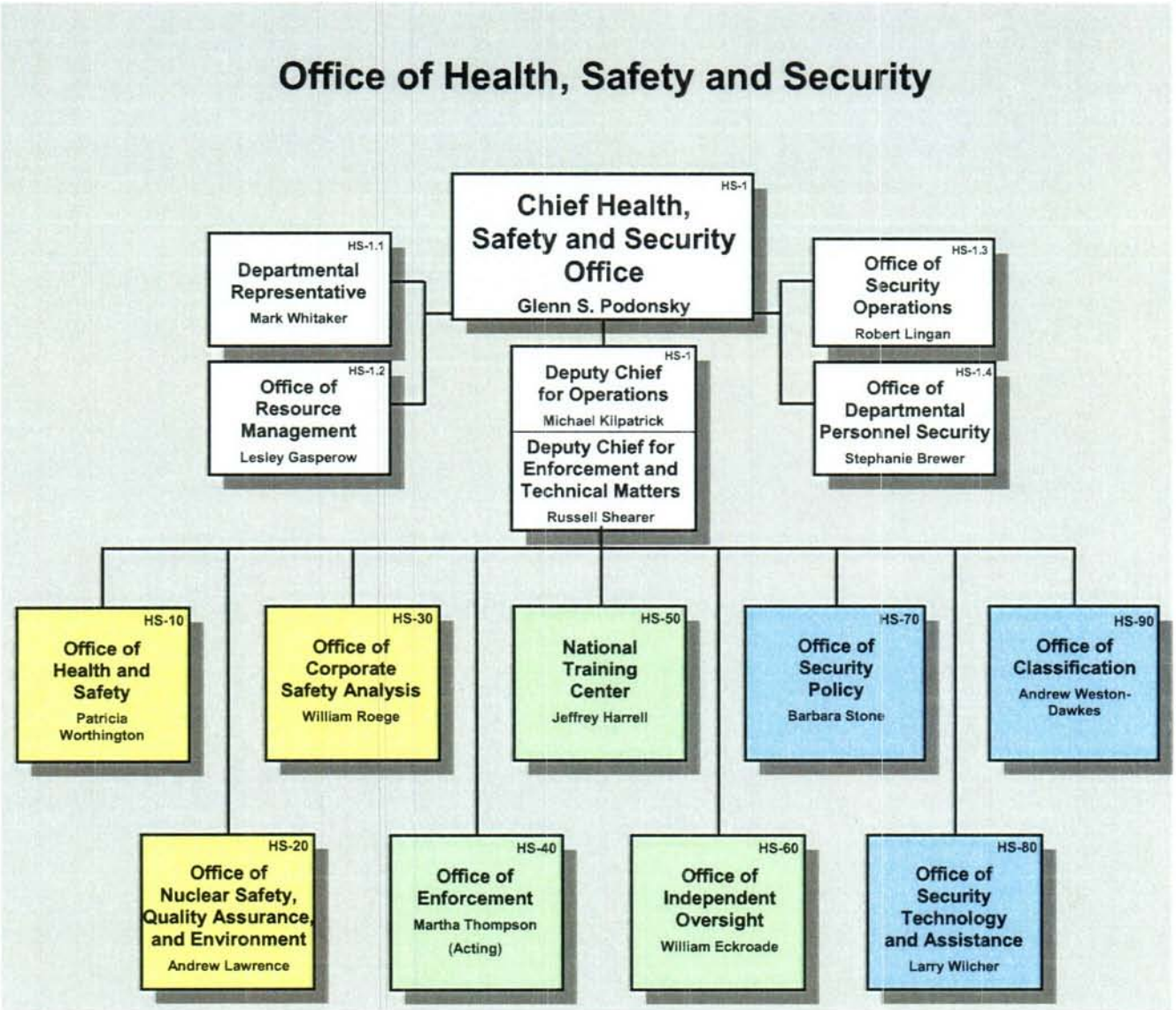
12-month events

Ensure the new leadership team fully understands and utilizes the skills and capabilities of HSS in meeting the safety and security needs of the Department.

Hot Issues

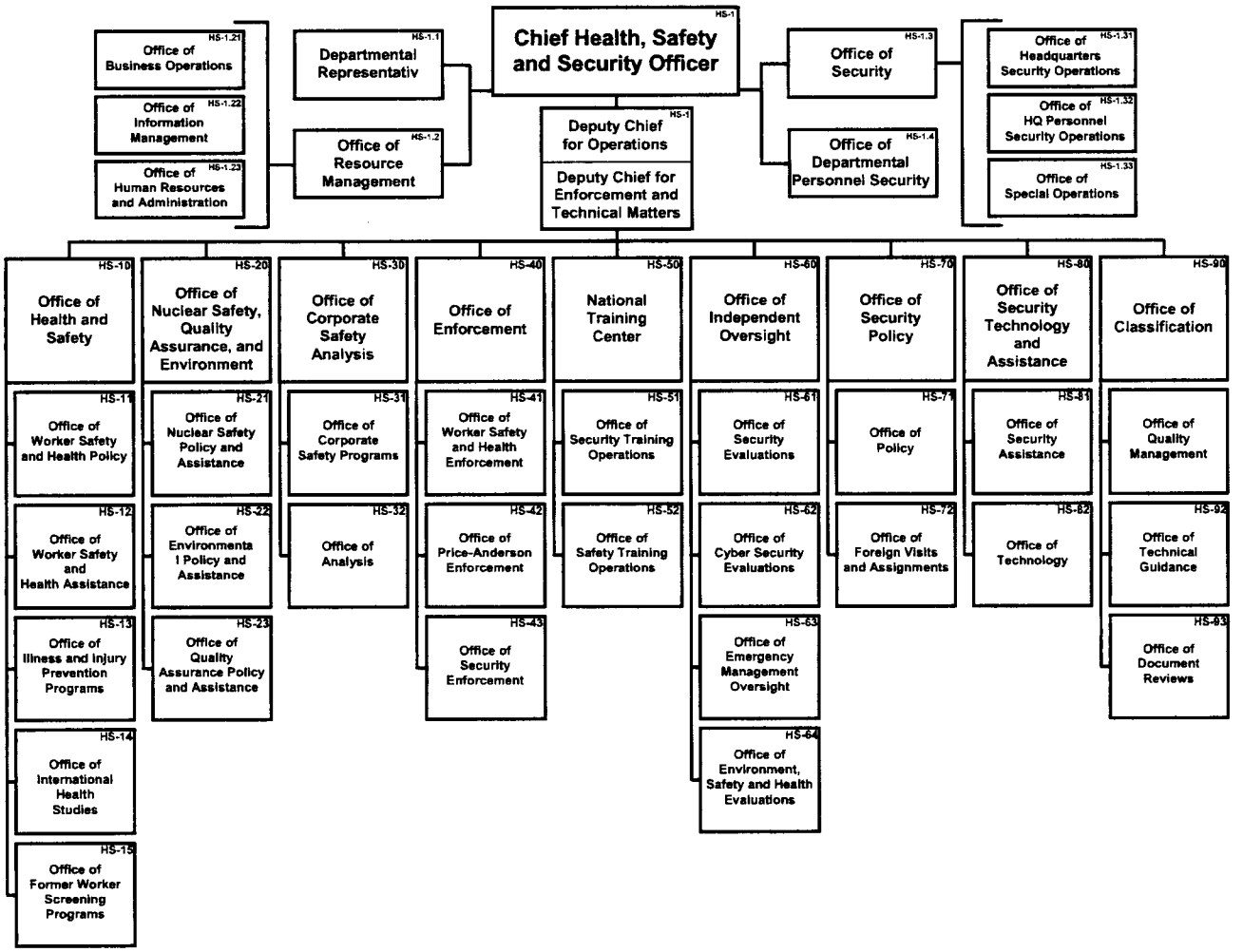
None.

Current Organizational Chart



Expanded Organizational Chart

Office of Health, Safety and Security



Office of Hearings and Appeals

Organization Information

Organization Name:
Office of Hearings and Appeals

Address:
1000 Independence Ave, SW, HG/950 L'Enfant Plaza, Washington, DC 20585

Organization Phone Number:
(202) 287-1566

Organization Website:
http://www.oha.doe.gov

POC E-mail Address:
fred.brown@hq.doe.gov

Supporting the DOE Mission

Strategic Theme 1 – Energy Security
Strategic Theme 2 – Nuclear Security

Key Activities
The Office of Hearings and Appeals (OHA) promotes Energy Security and Nuclear Security through its role in conducting hearings and issuing decisions under 10 CFR Parts 710 and 712. Part 710 proceedings involve eligibility of individuals to hold a DOE security clearance, while Part 712 governs eligibility for the human reliability program. Both of these programs determine who may handle classified matter or special nuclear material, or have access to nuclear facilities. Under 10 CFR Part 708, OHA investigates complaints, conducts hearings and considers appeals filed by contractor employees ("whistleblowers") who allegedly suffer reprisal as a result of making a protected disclosure (e.g. reporting a matter related to public health and safety).

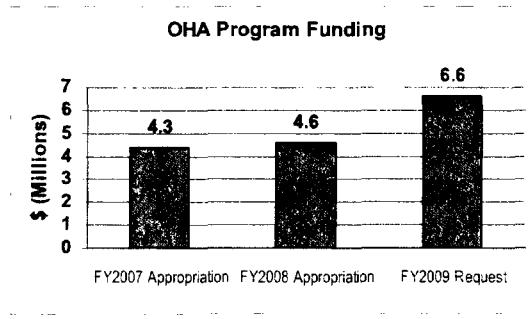
Mission Statement

OHA is the quasi-judicial arm of DOE for conducting hearings and issuing initial Departmental decisions with respect to adjudicative proceedings which the Secretary has delegated to OHA. Specifically, OHA conducts security clearance eligibility and whistleblower hearings, and adjudicates appeals of Freedom of Information Act (FOIA) and other determinations reached by DOE officials. In addition, OHA rules upon applications for exception and petitions for special redress filed by firms seeking relief from generally applicable requirements of DOE regulations.

Status

Budget:

FY '09 Congressional Request: $6,603,000*



* The FY '09 budget requests reflects the transfer of the Office of Civil Rights and Diversity to OHA, beginning in FY '09; see "Leadership Challenges" below.

People:

Estimated number of federal FTEs: 22
Estimated number of contractor FTEs: 1
Estimated number of headquarters FTEs: 23
Estimated number of field site FTEs: 0

Facilities:

OHA does not own any facilities; it is housed at Headquarters Bulding, 950 L'Enfant Plaza

Performance measures:

PART rating: N/A, Not a GPRA Unit
FY07 PART measure status: N/A, Not a GPRA Unit
FY07 4th quarter Joule status: 2 Green, 0 Yellow, 0 Red

History

OHA was established by DOE Order 1100.3, effective March 30, 1978, and has had broad-ranging subject matter jurisdiction over its 30-year history. Initially, OHA was primarily responsible for adjudicating Applications for Exception and issuing final Remedial Orders in connection with the Mandatory Petroleum Price and Allocation Regulations (in effect until 1981). In 1987, OHA began refunding approximately $1.2 billion in overcharges to eligible recipients, collected from firms that violated DOE price controls, pursuant to the Petroleum Overcharge and Restitution Act of 1986. OHA conducted refund proceedings on a rolling basis in 1987, 1989, 1995, and 2004 (ending in January 2008). In 1992, OHA acquired jurisdiction under 10 CFR Part 708 to conduct hearings and issue initial agency decisions on contractor employee ("whistleblower") complaints, regarding whether a DOE contractor has retaliated against an employee for making a protected disclosure (e.g. relating to public health and safety).

In 1994, OHA acquired jurisdiction to conduct hearings and issue decisions under 10 CFR Part 710, regarding whether a contractor or DOE employee's access authorization (security clearance) should be denied or revoked. In 1999, Part 708 was revised to also give OHA authority to conduct investigations of "whistleblower" complaints. During FY 2008, nearly two-thirds of OHA's adjudications have been security clearance eligibility decisions under Part 710. The remainder of OHA's cases have been: 1) "whistleblower" cases filed under Part 708, 2) Freedom of Information Act appeals, 10 CFR 1004.1, 3) Applications for exceptions from DOE regulations, e.g., the consumer product efficiency standards (10 CFR Part 430), and 4) other miscellaneous proceedings.

Critical Operating Procedures

In its day-to-day operations, OHA performs the functions necessary for rendering decisions in cases brought before the Office. The critical operating procedures governing the conduct of OHA adjudications are generally set forth in regulations contained in Title 10 of the Code of Federal Regulations. These procedures vary, depending on the type of case involved. The regulatory provisions governing the most frequently-conducted proceedings by OHA are: (1) 10 CFR Part 710 (Criteria and Procedures for Determining Eligibility for Access to Classified Matter or Special Nuclear Material), (2) 10 CFR Part 708 (DOE Contractor Employee Protection Program), (3) 10 CFR Part 712 (Human Reliability Program), and (4) 10 CFR Part 1004 (appeals filed under the Freedom of Information Act, 5 U.S.C. § 552). In addition, OHA procedural regulations, 10 CFR Part 1003, set forth standard rules of practice pursuant to which OHA considers Applications for Exceptions (Subpart B), Appeals (Subpart C), Applications for Stays (Subpart D), Requests for Modification or Rescission (Subpart E), Requests for Conferences and Hearings (Subpart F) and Petitions involving Private Grievances and Requests for Redress (Subpart G). Finally, OHA has developed internal operating procedures for use by OHA Hearing Officers, in adjudicating security clearance cases under Part 710. These procedures are undergoing final refinement for issuance as a comprehensive OHA Part 710 procedures manual. OHA is in the initial stages of developing a similar manual for use by OHA investigators and Hearing Officers in adjudicating "whistleblower" complaints filed under Part 708, as well as DOE's FOIA process.

Organizational Strengths and Recent Accomplishments

In FY 2008, OHA realigned an office structure in place since the 1970's, resulting in a significant improvement in operational efficiency. In March 2008, OHA reduced from eight to two the number of division/office heads reporting directly to the OHA Director. This reorganization better positioned OHA to absorb the Office of Civil Rights, which is scheduled to merge with OHA beginning in FY 2009 (see "Leadership Challenges" below). In addition, during FY 2008, OHA continued to improve the timeliness for issuing decisions, decreased the pending case inventory to the lowest level in the past several years, and improved the overall quality and consistency of the decisions issued by Hearing Officers.

In January 2008, after more than twenty years, OHA brought the DOE Crude Oil Refund Program to a successful completion. The Crude Oil Refund Program was initiated in the mid-1980's to distribute refunds of overcharge monies collected by DOE from firms that violated

1973-1981 price controls on the sale of crude oil and refined petroleum products. Because resolution of enforcement actions continued to make available additional monies for distribution, refunds were paid out to eligible purchasers of refined petroleum products on a rolling basis, in several rounds (beginning in 1987, 1989, 1995, and 2004). In total, over the duration of the program, OHA distributed nearly $1.2 billion in refunds to more than 130,000 applicants.

Leadership Challenges

A proposal has been approved to transfer the Department's civil rights functions currently performed by the Office of Civil Rights and Diversity (OCR) to OHA, beginning in FY 2009. OCR's civil rights functions include the federal Equal Employment Opportunity (EEO) Program, the Employee Concerns Program (ECP), and the Federal Financial Assistance (FFA) Program. As such, OCR performs a law enforcement neutral function for the Department, and will be appropriately aligned with OHA which currently engages in similar law enforcement neutral functions for DOE. For example, as described above, OHA is responsible for the contractor whistleblower complaint process (10 CFR Part 708). This function will be merged with the federal employee whistleblower complaint process (currently housed in OCR) to form one comprehensive, integrated whistleblower process for federal employees and contractors, resulting in a more streamlined, efficient, and productive process. Similarly, OHA conducts security fact-finding hearings, a function similar to EEO investigations conducted by OCR as part of its civil rights EEO complaint processing program. Title VI of the Civil Rights Act of 1964, as amended, prohibits discrimination on the basis of race, color, sex or national origin in programs or activities receiving federal financial assistance. In accordance with Title VI, the Office will investigate complaints of discrimination received from program beneficiaries of DOE financial assistance provided to an institution, organization or state or local government. The Department's Title VI regulations are set out at 10 C.F.R. Part 1040.

The proposal to transfer OCR's civil rights functions to OHA was approved in October 2007. It was made in coordination with, and with the concurrence of, the Office of Human Capital Management, the Office of the General Counsel, the Office of the Chief Financial Officer, and other relevant DOE entities. As discussed above, the transfer of function is based on sound business principles and promotes Departmental efficiency. Nonetheless, it is anticipated that a seamless merger of OCR's civil rights functions with OHA's existing jurisdictional responsibilities will present leadership challenges.

Key Strategies and Timing

OHA will implement advances in technology to enhance and improve the way in which the Office conducts its decision-making processes, while continuing to perform its overriding mission to issue quality decisions on behalf of the Department in a timely manner. In November 2007, OHA authorized the use of video teleconferencing by an OHA Hearing Officer to conduct a DOE personnel security hearing. This marked the first instance in which OHA conducted a hearing using this medium. Since that time, OHA has engaged in discussions with the DOE Office of Security Operations, to consider the possibility of greater use of video teleconferencing to conduct personnel security hearings. OHA is in the process of planning the renovation of its present library to install a state-of-the-art video teleconferencing system. This project is

expected to be completed by mid FY 2009. In addition, OHA has undertaken an initiative to implement a paperless filing system. OHA already receives some submissions electronically and transmits security decisions by e-mail. However, during FY 2009, OHA will consult with other agencies and vendors to explore means to substantially increase paperless filing and storage of cases. OHA has earmarked $2 million of its FY 2009 budget for E-government initiatives.

Critical Events and Action Items

3-month events

No critical events expected.

12-month events

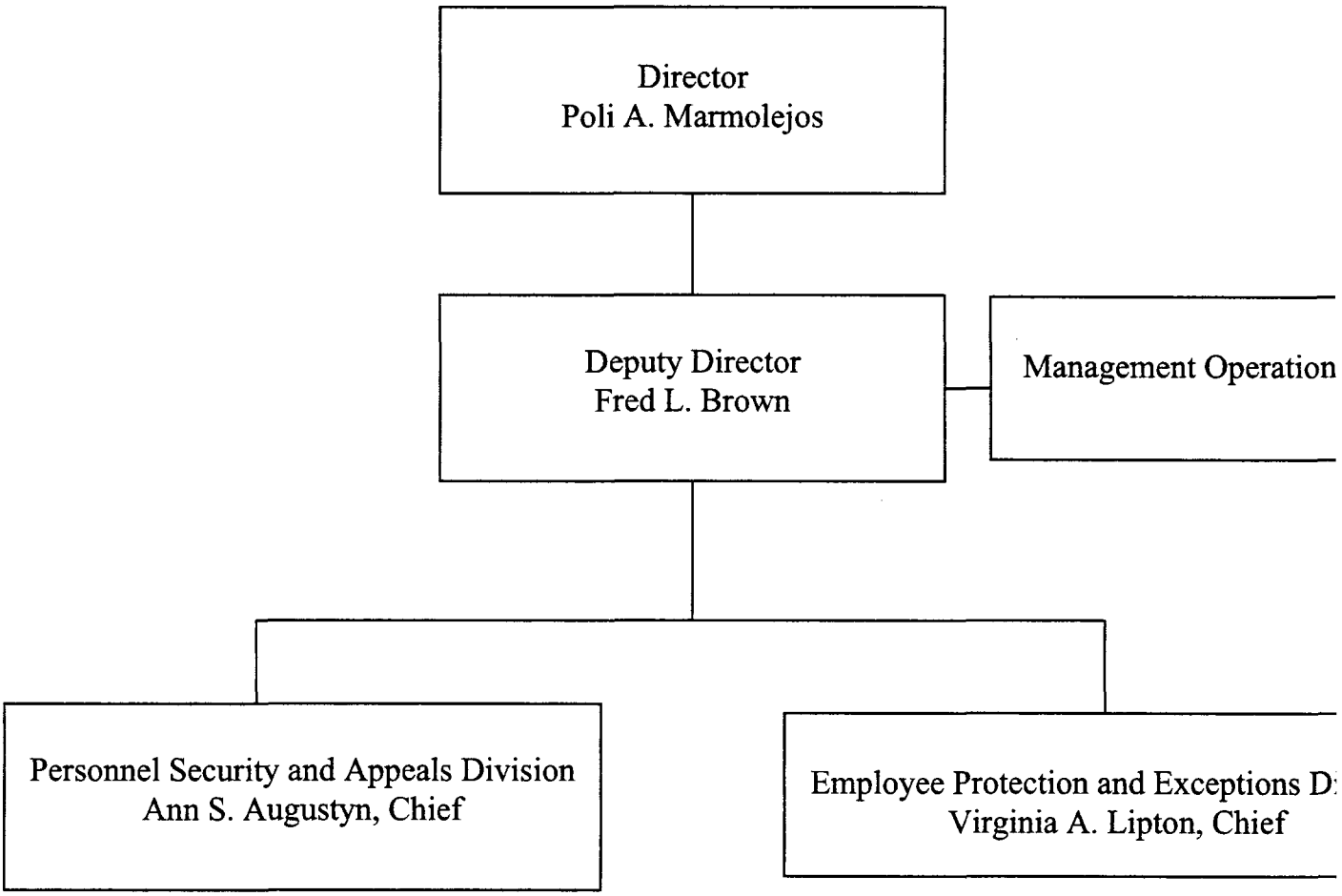
No critical events expected.

Hot Topic Issues

No "Hot Topic Issues" to report.

Current organizational chart with incumbent names and vacancies

Office of Hearings and Appeals



Office of Human Capital Management

Organization Information

Organization Name:

Office of Human Capital Management (HC)

Address:

Room 4E-084; 1000 Independence Avenue SW, Washington, DC 20585

Organization Phone Number:

202-586-1234

Organization Website:

http://humancapital.doe.gov/

POC E-mail Address:

Rita.Franklin@hq.doe.gov

Supporting the DOE Mission

Strategic Theme 5 – Management Excellence

Strategic Goal 5.2 – Human Capital

- Implement programs and processes that will enable the Department to quickly recruit, develop, and retain a qualified, diverse workforce through an integrated workforce planning system.
- Create a Department-wide performance culture focused on individual and organizational accountability toward the achievement of DOE's programmatic goals and priorities.

Mission Statement

In support of the DOE mission:

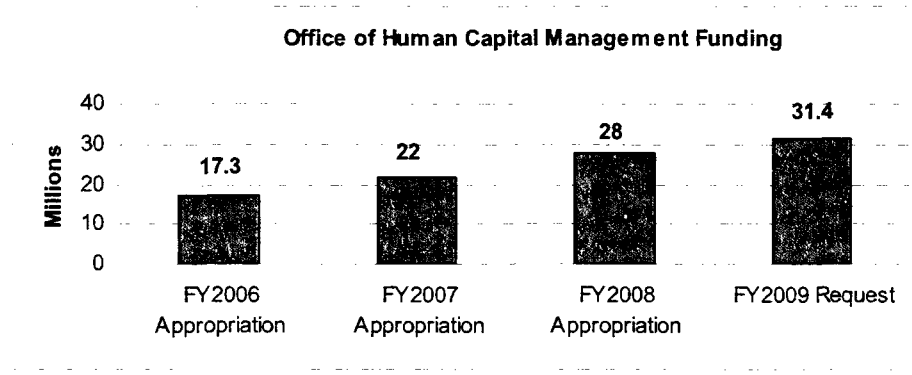
- Provide leadership to the DOE on the impact and use of policies, proposals, programs, technology, and partnership agreements/relationships related to all aspects of human capital management.
- Attract, acquire, develop, and maintain a diverse and highly qualified DOE workforce.

Vision Statement

Work through collaborative partnerships to provide quality, responsive, innovative HC services and proactive problem identification and resolution to attract, develop, motivate, and retain a high performing workforce.

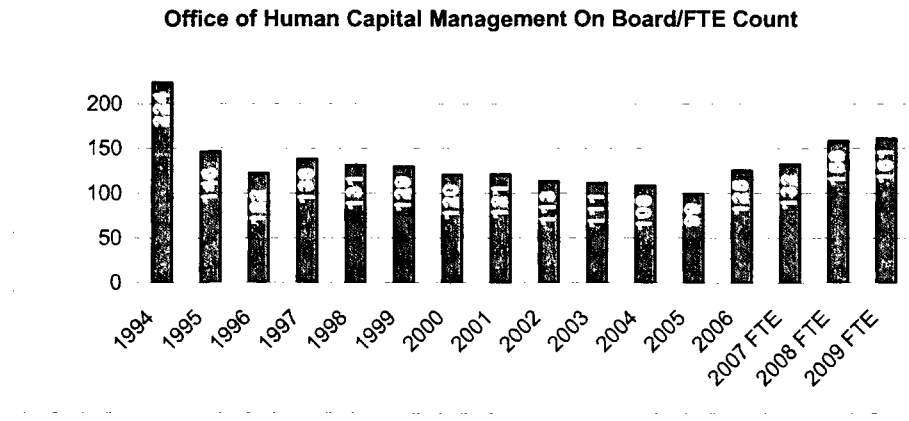
Status

Budget:



FY2009 Congressional Request: $31,436,000

People:



* For FTE Allocation - HC became a First-Tier Organization in FY2006.

Estimated number of federal FTEs: 158

Estimated number of contractor FTEs: 16

Estimated number of headquarters FTEs: 158*

Estimated number of field site FTEs: 0

* Includes 21 HQ FTEs with duty stations in Albuquerque, Chicago, Richland, Oak Ridge, and Idaho

Facilities:

N/A

Performance:

PART rating: N/A

FY07 PART measure status: N/A

FY07 4th quarter Joule status: 2 Green, 0 Yellow, 0 Red

History

The Office of Human Capital Management (HC) (formerly known as the Office of Human Resources Management) is responsible for the recruitment, retention and development of a highly skilled and diverse workforce. This office, headed by the Chief Human Capital Officer, Deputy Chief Human Capital Officer and Director of Human Capital Management, provides leadership and counsel to senior leadership and line management on the impact and use of policies, proposals, programs, and technology related to all aspects of human capital management. Additionally, the organization provides personnel operations support to headquarters' program and staff offices and Department-wide HR-related policy guidance and employee development policy and programs.

The *Chief Human Capital Officers Act of 2002* (Act) requires the heads of 24 Executive departments and agencies to appoint or designate Chief Human Capital Officers (CHCOs). The DOE CHCO is responsible for the strategic alignment of the Department's workforce to its mission, and for maintaining and effectively directing its human resources management policies and programs. The CHCO serves to advise and assist the head of the agency and other agency officials in carrying out the Department's responsibilities for, selecting, developing, training, and managing a high-quality, productive workforce in accordance with the merit system principles. (S)he also serves as chief policy advisor on all human capital management issues.

In 2005, the Secretary and Deputy Secretary determined that the CHCO should report directly to the Deputy Secretary. As a result, HC became a direct-reporting organization in FY2006. Prior to this, the human resources office was part of larger management and administration organizations that contained administrative, procurement, and, for a time, financial management functions.

Critical Operating Procedures

HC is responsible for a number of mission essential support functions. Below is a listing of several critical HC operating systems and procedures relevant to day-to-day operations.

- Corporate Human Resource Information Systems: system that houses all personnel-related information relating to DOE federal employees. This system is used to generate and maintain personnel records and provide employee access to personal information and routine transactions.
- HR Services (Recruitment): full range of personnel and human resources programs and services pertaining to GS, Senior Executive Service (SES), excepted service positions, Senior Level positions, experts, consultants, and Wage Grades, including position classification, internal and external vacancy announcements, pay administration, and personnel records management. Coordinates recruitment and Executive Resources Board approvals for career SES. Ensure compliance with applicable statutory and regulatory requirements.
- Entrance-On-Duty and Exit Procedures: ensure new employees comply with employment suitability and security requirements. Entails full orientation program for new employees and an exit interview and clearance process for departing employees.
- Service for non-career appointments: facilitate appointment process for all political appointments (e.g., Presidential Appointments with Senate confirmation (PAS), non-career Senior Executive Service (SES), and Schedule C).
- Employee and Labor Relations: supports all Headquarters organizations and employees by providing information, advice and assistance on leave and attendance programs, performance management, and disciplinary issues. Assists management in fulfilling its collective bargaining obligations. Serves as Departmental liaison for labor relations at DOE sites.
- Employee Assistance Program: assists HQ employees on a confidential basis with a wide variety of personal issues: such as financial, emotional, family, job, stress, and substance abuse.
- Employment Benefits Program: full range of information, resources and services relating to federal employee benefits programs; family friendly programs; flexiplace; and career planning. Provides support for the health and life insurance programs, Thrift Savings Plan, annual and sick leave, Flexible Spending Accounts, and Transit Subsidy (SEET). Provides a full range of retirement planning and processing, estimates of annuity calculations, health insurance Temporary Continuation of Coverage, and unemployment counseling services.
- HQ Accommodations Program: works with DOE managers, employees and visitors to provide information and assistance related to persons with disabilities, as well as those with temporary medical needs.

- Occupational Health Clinics: employee medical determination and analysis in support of personnel actions; medical surveillance, including participation in the newly chartered programs of beryllium exposure and worker protection; emergency and clinical care; allergy clinics; immunizations and medical determinations for international travel and overseas reassignments.
- Training and Development: formulation of Departmental training plan. Conducts training needs assessments, implements required trainings, operates online learning center.

Recent Organizational Accomplishments and Strengths

HC is committed to advancing the management excellence of the Department. Notable accomplishments include the implementation of the Enterprise Training Services Most Efficient Organization; creating the DOE Corporate Intern Program; implementing the SES Candidate Development Program; developing enhanced Performance Management and Workforce Planning systems and tools; improving the hiring process; and creating the Secretary's Award Program.

Implementation of the Enterprise Training Services (ETS) Most Efficient Organization (MEO) represented a formidable challenge. The result of an A-76 competition won by the Department, the MEO implementation involved creating a new organization to consolidate and manage the training functions of the Department. The functions previously performed by over 100 employees are now targeted for just 59 positions. The success of this organization is critical to improving the learning culture within DOE and enhancing the Department's capability to develop its workforce and address skill and competency gaps, as well as meet applicable statutory training requirements. The MEO is now fully implemented and the centralized and standardized training support services represent a quality improvement over past service delivery models. It produced the first Organizational Training Plan for the Department in 2008 and is currently preparing the FY2009 edition based upon the second annual complex-wide Training Needs Assessment.

HC is also working to enhance the performance culture of the Department. During the past three years, HC led the implementation of new performance management systems for all employees -- executive, managerial and non-managerial. The new systems emphasize a shift from task-based performance evaluation to results-based performance accountability for organizations and individuals. Earlier in 2008, the most recent Performance Appraisal Assessment Tool (PAAT) documented that 87% of performance plans contain transparent links to organizational mission goals and nearly 70% contain credible, results-based measures. This represents a significant improvement over the 2007 assessment.

The HC office has implemented several strategies to invigorate the Department's recruitment and outreach programs to combat the issues posed by an aging workforce and increased competition for highly qualified job candidates. DOE developed the Hispanic Youth Symposium in 2004 and

launched a pilot with 64 students from the Washington, DC metropolitan area. Since that time, DOE has worked with the Hispanic College Fund and grown the program a total of eight symposia across the country with attendance of over 1,500 students. The result is an effective means of identifying and courting students for internships and permanent jobs starting in high school. More recently, HC created the "DO Energy" recruitment brand as a corporate marketing tool.

The DOE Corporate Career Intern System is a phased approach designed to enhance the recruitment and placement of entry-level personnel in the agency. The recently implemented approach is already paying dividends. It is bringing increased coordination and resource consolidation to the over 100 existing intern programs scattered across the Department. In the fall of 2008, HC in conjunction with several program and staff offices welcomed the first class of 17 corporate interns into DOE. Recruitment will begin soon for the 2009 intern class.

Leadership Challenges

DOE employs approximately 14,000 federal employees. The Department faces an ongoing challenge of creating and implementing innovative human capital management strategies to maintain a workforce with the right people and skills. Since 1995, the Department has experienced a 30 percent reduction in the size of its workforce and the average employee age has increased to just less than 49 years. Nearly 20 percent of the workforce, and 26 percent of DOE's scientists and engineers, will be retirement-eligible by the end of 2008. We expect approximately 2,000 employees to retire by the end of 2012. This figure, combined with normal attrition, indicates that DOE will need to hire over 5,000 new employees in the next four years just to maintain current workforce levels.

Key Strategies and Timing

The Department's focus on the strategic management of human capital is evidenced by the addition of Management Excellence to the Strategic Plan; and the revision of DOE's Human Capital Management Strategic Plan. In 2008, the Department implemented workforce planning techniques. HC continues to work with other DOE offices to pilot new planning and simulation tools to further assist in the development of consistent workforce plans across DOE.

HC continues to work to ensure success and progress in the area of recruiting, developing and retaining a valuable workforce of executives, leaders and managers. We meet our commitments associated with the President's Management Agenda and report quarterly on progress against the Office of Personnel Management's (OPM) Human Capital Standards. The *Leadership and Management Plan to Succeed* is designed to ensure the DOE has a continuous supply of internal and external candidates for leadership positions by:

- implementing a plan consistent with the Human Capital Assessment and Accountability Framework;
- linking succession management to strategic objectives and performance goals;
- insuring the development of talent;
- measuring the talent against a competency-centric model; and
- providing DOE with flexibilities for acquiring and retaining talent.

Human Capital leadership will continue to focus attention, leadership and resources on corporate recruitment to develop a pipeline for employment in the areas of Science, Technology, Engineering, and Math. This will require developing a single DOE organizational workforce plan in the budget process and holding program and staff offices responsible for the strategic management of human capital. In this process, each program office will develop its own recruitment strategy that addresses specific skill needs and gaps. These unique organizational recruitment strategies will be supported by the overall DOE corporate strategy with specific occupations and competencies identified. The Corporate Recruitment Strategy identifies measurable goals, outlines specific roles, responsibilities and activities that are key to the success of this strategy for each program office, as well as the Department as a whole.

The Department has developed strategies to ensure all people have the opportunity to become employees of our multifaceted organization. Since 2002, DOE has experienced a tripling of its representation of Native Americans, a near doubling of Asian American representation rates, and a 20% increase in the representation rate of minorities overall in our workforce. The representation of woman and minorities in the GS-11 to GS-15 levels is nearly double the rates found in the rest of the federal government.

The Department is also implementing a comprehensive enterprise talent management system to ensure a competent workforce through a more integrated approach to employee development.

Review by National Academy of Public Administration (NAPA)

- The House and Senate Appropriations Subcommittees on Energy and Water Development have directed the Department to contract with NAPA to undertake a management review of the Offices of Procurement, Human Capital Management and the Chief Financial Officer.
- The NAPA review began in May 2008 and final results are expected in late spring 2009. Intermediate observations will be shared with the Department throughout the process.

Critical Events and Action Items

3-month events

March 2009

SES CDP Selection: The Deputy Secretary in his ERB chair role will be asked to approve/endorse the final recommended selections. This is a required (by regulation) component of the SES-CDP.

April 2009

Continue Secretary's Awards Program [Announce 2009 program]

12-month events

Secretary's Honor Awards Ceremony hosted by the Secretary of Energy

DOE Scholarship Program: HC will be submitting in FY-2009 their FY-2011 budget requesting funding to implement a DOE Scholarship Program that will result in a pipeline of future talent for the Department in areas in which there is a talent shortage in the labor market. Applicants will be assessed and selected whereupon they will receive tuition benefits and a stipend. Scholars will conduct summer internships at DOE and will be expected to work at DOE after graduation for a minimum of four years.

Hot Issues

Workforce Planning

HC is implementing a new workforce planning model to collect and analyze workforce data and produce reports to project attrition and future needs and align these requirements with our budget. Armed with this workforce information, we can target recruitment to specific universities for scientific and technical skills, and to achieve a diverse workforce. Expansion of the Workforce Planning Model to all Headquarters elements during 2009 and cascade to field organizations in 2010 will require senior leadership support.

Recruitment

The Department of Energy employs approximately 14,000 federal personnel in many occupations. Through a systematic analysis, HC worked with Program and Staff Offices to identify workforce gaps and projected future needs in mission critical areas. There are several occupations, essential to mission success, facing potential staffing gaps in the near term of 2-5 years out. These 'mission critical occupations' include: Project Directors; Electrical Engineers; Nuclear Engineers; Human Resource Specialists; and Contract Specialists.

Innovative recruitment and retention strategies are needed to address these potential shortages and meet all of the hiring needs of the agency.

- A plan to rehire annuitants in the acquisition field, a DOE mission critical occupation, was developed by the HC in coordination with the Chief Acquisition Officer, and the Acquisition Career Manager based upon guidance from OMB and OPM. This plan has been submitted to the OPM and is pending their approval.

- Complete a comprehensive review of organizational utilization of recruitment incentives in preparation for updating DOE directives and guidance once OPM issues its final regulations on recruitment incentives.

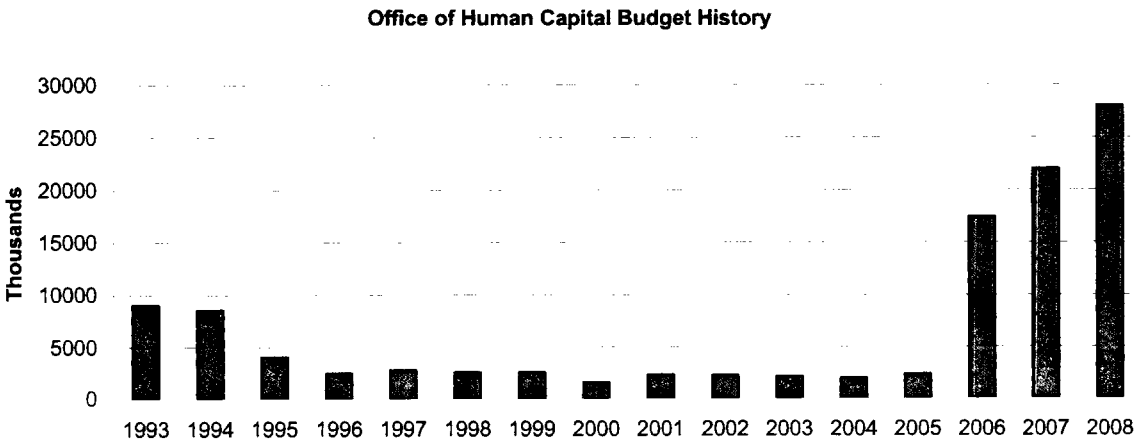
- Expand efforts to "brand" the Department with the National Laboratories, large programs such as the Office of Science, and the Departments highly visible and successful programs such as the Energy Star Program, the Solar Decathlon, and the National Science Bowl.

- Implement a comprehensive enterprise talent management system to ensure a competent workforce through a more integrated approach to employee development.

- Implement the Career Patterns Initiative - a new approach for bringing the next generation of employees into federal government positions. The focus on Career Patterns recognizes that employer-employee relationships will increasingly vary across many dimensions and considers such determinants as: Time in career (early, middle, late, returning annuitants); Mobility (among agencies, between public and private sectors); Permanence (seasonal/intermittent, long-term, revolving, temporary, students); Mission-focus (program-based, project managers); and Flexible arrangements (detached from office, job sharers, non-traditional time of day, part-time, irregular schedule).

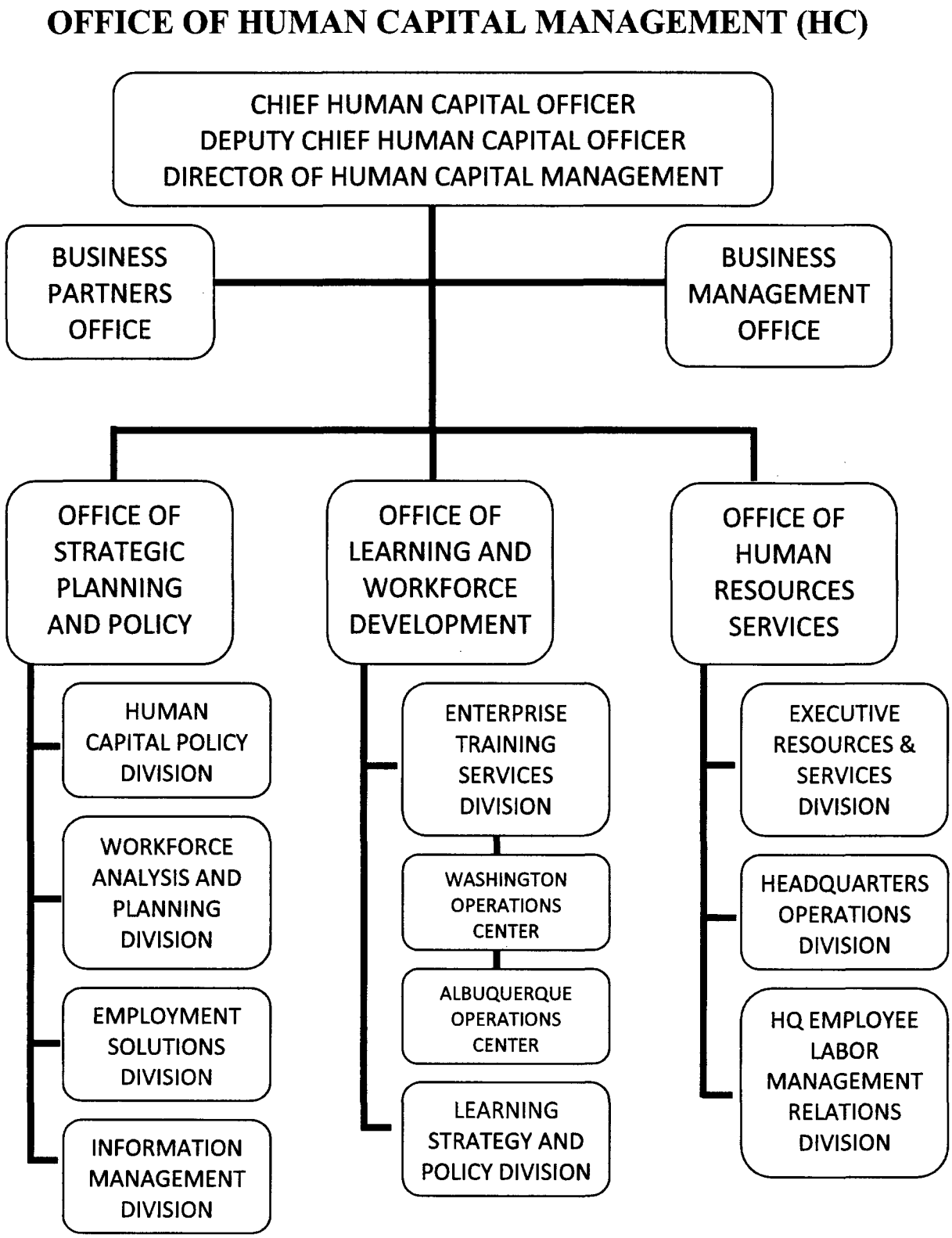
Funding Profile

Office or Program Area	FY2008 Current Appropriation	FY2009 Congressional Request
Office of Human Capital Management	27,986	31,436



The Office of Human Capital Management became a 1st tier organization in FY2006. As a result, this represented the first time that salary and benefit budget is reflected in budget history.

Current Organizational Chart



Office of Intelligence and Counterintelligence

Organization Information

Organization Name:
Office of Intelligence and Counterintelligence (IN)

Address:
1000 Independence Ave., SW
Washington, DC 20585

Organization Phone Number:
202-586-2610

Organization Website:
http://energy.gov/nationalsecurity/intelligence_counterterrorism.htm

POC E-mail Address:
susan.frey@in.doe.gov

Supporting the DOE Mission

Strategic Theme 1 – Energy Security
- Strategic Goal 1.1 – Energy Diversity
- Strategic Goal 1.2 – Environmental Impacts of Energy

Strategic Theme 2 – Nuclear Security
- Strategic Goal 2.1 – Nuclear Deterrent
- Strategic Goal 2.2 – Weapons of Mass Destruction

Strategic Theme 3 – Scientific Discovery and Innovation
- Strategic Goal 3.1 – Scientific Breakthroughs
- Strategic Goal 3.2 – Foundations of Science

Strategic Theme 5 – Management Excellence
- Strategic Goal 5.1 – Integrated Management
- Strategic Goal 5.2 – Human Capital
- Strategic Goal 5.3 – Infrastructure
- Strategic Goal 5.4 – Resources

The Office of Intelligence and Counterintelligence supports the national security mission of the Department and provides the Secretary, the Secretary's staff, and other DOE policymakers with timely, technical intelligence analysis on all aspects of foreign nuclear weapons, nuclear materials and energy issues worldwide. The Office also helps protect the Department's assets from foreign penetration.

The Office is in the third year of its three-year strategic plan that focuses on infrastructure and resource issues. The first year focused on consolidating the various foreign intelligence and counterintelligence organizations within DOE and NNSA into one integrated intelligence Office. The second year focused on increasing resources to support enhanced mission requirements. The third year has focused on infrastructure: upgrading work spaces to create a common working environment to better integrate office functions and missions that includes creating a new integrated intelligence network at the highest classification level for the entire DOE intelligence complex.

Mission Statement

The Office of Intelligence and Counterintelligence informs U.S. national security policy by collecting and analyzing information in the fields of nuclear terrorism, counterintelligence, cyber threats, nuclear proliferation, strategic surprise, and energy and environmental security.

DOE's nationwide complex of laboratories and plants is a vital resource for addressing national security challenges, both within DOE and beyond. DOE's intelligence network specializes in longer-term, strategic perspectives on some of the most challenging issues facing the U.S. today. Our distinctive trademark is the combination of that strategic horizon with the ability to leverage DOE's technological excellence, and a commitment to challenge analytic conventions, work hard problems, and anticipate the future.

Status

Budget (FY 2008):
The Office budget is classified. Please see the classified Annex for budget table.

People (estimated as of 9/30/08) (Official Use Only(OUO)):

Federal HQ employees:	183
Federal Field employees:	7
Detailees from other Federal agencies:	12
Support Service Contractor HQ employees:	183
Support Service Contractor Field employees:	211
M&O Contractor HQ employees:	14
Total:	617

Facilities:
At the current time, the Office does not manage any facilities. However, in FY 2010, the Office will oversee the National Secure Manufacturing Center at Kansas City Plant.

Performance:
The Office performance measures are classified and can be found in the classified Annex.

History

Overview:

The intelligence component of the Department of Energy includes four headquarters components: the Directorate of Intelligence, responsible for intelligence analysis and technology development in support of the U.S. national security policy community; the Directorate of Counterintelligence, which protects the DOE complex from malicious penetration by foreign intelligence collectors; the Directorate of Management, which provides infrastructure support services; and the Directorate of Energy and Environmental Security, which uses a multilateral, cross-disciplinary, public-private approach to analysis, focusing on second- and third-order effects of current energy and environmental related developments. It uses non-traditional international collaboration as its core. IN's Director is DOE's Senior Intelligence Officer, and represents DOE within the intelligence community.

DOE's intelligence infrastructure also includes 31 field intelligence organizations. These entities, too, are represented within the intelligence community by the Director of IN. Also of note is the Office of Nonproliferation Research and Development in DOE's National Nuclear Security Administration. This office, though not a member of the intelligence community, funds intelligence-related technology development at DOE's national laboratories and sites.

IN is both an integral part of the Department of Energy and a member of the U.S. intelligence community. IN provides strategic leadership for DOE's intelligence capabilities, addressing the needs of the Secretary of Energy, and also of the Director of National Intelligence. IN and its subordinate components in the field are the only intelligence elements at the Department of Energy and the National Nuclear Security Administration.

As the Department's Senior Intelligence Officer, IN's Director is responsible Department-wide for implementation of and compliance with all intelligence directives, orders, and policies. This includes:

- Protecting all intelligence information, sources, and methods;
- Approving specific intelligence and intelligence-related activities;
- Accrediting and inspecting all sensitive compartmented information (SCI) facilities and information systems;
- Adjudicating all access to SCI;
- Approving intelligence-related Work of Others;
- Identifying restrictions on the collection, retention, and dissemination of intelligence information; and
- Overseeing and reporting on intelligence matters.

Origins of DOE's Intelligence Program:

DOE's intelligence activities originated in 1943 at Los Alamos National Laboratory and continued in 1947 with the establishment of the Atomic Energy Commission (AEC). Although the AEC's intelligence division originally served to funnel intelligence from other agencies to the AEC, once the Soviet Union developed nuclear weapons, AEC's expertise began to be tapped for analysis of foreign nuclear programs.

In the mid-1970s, the AEC's intelligence organization migrated to the AEC successor organization, the Energy Research and Development Administration (ERDA). At the same time, another intelligence organization was created to support the new Federal Energy Administration (FEA). While ERDA inherited the AEC's nuclear intelligence responsibilities, the Federal Energy Administration's intelligence office focused on political and economic analysis concerning world energy supply and demand.

In 1977, the creation of DOE united the intelligence missions and functions of FEA and ERDA into one agency. While those functions were split between two assistant secretaries, as the Department coalesced, the intelligence components came together under the Assistant Secretary for International Affairs. By 1982, the easing of the energy crisis and the rebuilding of the U.S. military led to the move of virtually all intelligence responsibilities and personnel to the Assistant Secretary for Defense Programs.

In 1989-90, the ending of the Cold War and the onset of the Persian Gulf War prompted a new focus for intelligence at DOE. Reflecting the increased priority placed on intelligence by the new Secretary, an Office of Intelligence was created to provide a policy-independent organization and direct channel for intelligence to the Secretary. With additional personnel and resources, that office broadened its activities to include direct support to other government agencies and international organizations. Counterintelligence responsibilities were assigned to this office for the first time.

In the early 1990s, nuclear proliferation intelligence remained a DOE intelligence priority, while economic competitiveness and science and technology intelligence emerged as new DOE intelligence areas. Meanwhile, the Department was downsizing and realigning in response to Presidential mandates, and in 1994, the Secretary subsumed the Department's intelligence office under the Director of Nonproliferation and National Security (NN). While under NN, in 1995 the Office of Intelligence acquired a technology applications charter.

By the late 1990s, DOE concluded that counterintelligence required greater focus and resources, while foreign intelligence needed independent standing within the Department. Presidential Decision Directive-61 was signed in March 1998, mandating that DOE's foreign and counter-intelligence functions be restored to a direct reporting relationship to the Secretary of Energy. The Office of Intelligence was re-created to include DOE's entire foreign intelligence portfolio – ranging from intelligence analysis in core technical areas, to operational support, technical development, and intelligence oversight and security.

In March 2006, the Secretary consolidated the Department's intelligence functions into one organization: the Office of Intelligence and Counterintelligence (IN). Then, in October 2007, the counterintelligence function of the National Nuclear Security Administration, the Office of Defense Nuclear Counterintelligence, was merged into the Office in order to consolidate all intelligence activities, whether DOE or NNSA, into one organization. This has enabled greater integration of foreign and counter-intelligence activities across the national complex at a time when the intelligence community is also integrating counterintelligence activities into traditional foreign intelligence areas. Today, the Director of IN serves as DOE's Senior Intelligence Officer and represents DOE at senior levels in the Intelligence Community.

Critical operating procedures

The primary procedure used by the Office of Intelligence and Counterintelligence is documented in the Department of Energy Procedures for Intelligence Activities. This was written in 1992 and approved by the Attorney General under Executive Order 12333. There are four supplements, the latest published in 1995.

In addition, the Counterintelligence Directorate also has a procedures guide, titled the Professional Guide (or ProGuide).

Organizational recent accomplishments and strengths

The IN organization is increasingly being seen as a major participant in the intelligence community. The organization is focused on the unique areas of expertise where we add value: all things nuclear; energy; science and technology; cyber threat; and counterintelligence. The following is a summary of FY 2008 accomplishments and strengths:

- Participated in several public and closed hearings on nuclear terrorism and global climate change
- Published 10 Presidential-level papers
- Held two Cyber Summits bringing together the Deputy Secretary and Under Secretaries, key Lab Directors, Directors of appropriate Program Offices, and cyber program experts to establish Departmental strategies and a path forward for an integrated cyber security/threat effort
- Established a Career Trainee/Intern Program within the Office and hired the first class of trainees
- Established new international liaisons
- Established a new collection and reporting program that includes all laboratories and plants reporting
- In order to create a consolidated classified computer network that operates at the highest intelligence community classification level for all Office personnel at HQ and the field, ensured that Sensitive Compartmented Information Facility (SCIF) space is available for all employees. This included upgrading existing space and creating new space, as appropriate.

- Created and vetted a concept for an international virtual Energy and Environmental Security community able to harness and integrate expertise from outside of the intelligence community
- Sponsored and documented three international energy and environmental security conferences involving nearly 200 participants representing more than 25 nations and several DOE laboratories
- Sustained a growing energy and environmental security collaborative online space that is characterized by high levels of international participation
- Realized a 50% increase in counterintelligence and foreign intelligence collection and reporting
- Realized a 40% increase in counterintelligence investigations and prosecutions of export laws, fraud and espionage violations. These sensitive and compartmented investigations demonstrate the pressing foreign intelligence threat to our laboratories and sites
- Additional accomplishments are provided in the classified Annex

Leadership challenges

There are several leadership challenges for the Office in the next year. These include:

- Opportunities to lay the foundations of trust and confidence-building internationally in the areas of "all things nuclear" and energy and environmental security
- The ability to grow a new energy and environmental security organization in a non-institutional space and to create a "firewall" to protect it from classic intelligence preoccupations
- To further develop a national, centrally-driven counterintelligence program
- To build on historical counterintelligence successes and improve where required to become more effective against the sophisticated, evolving foreign intelligence threat
- The counterintelligence program must be able to effectively coordinate, assess, and respond to raw intelligence, provide timely guidance, and share the results within the DOE complex as well as the intelligence community. Our foreign adversaries utilize a range of intelligence-gathering techniques against multiple sites, approaching each target using varying methodologies. Our response must match the threat.
- Additional leadership challenges are provided in the classified Annex.

Key strategies and timing

- The Office of Intelligence and Counterintelligence is just completing a three-year strategic plan to consolidate all intelligence functions in one Office; increase budget and staffing to support increased missions; and implement a split location office model, including a move to a new location as well as continuing to reside in the Forrestal building, that will better house the expanded staff while continuing to support all internal and external customers.
- The Office is still in the process of creating an office-wide brand, especially in the areas of collection, reporting and production, but has made great strides in this effort. All HQ and field sites were required to increase reporting by the end of the fiscal year. That has been accomplished.

- The next step is to improve the quality of Office products and "up the ante" of our participation in intelligence community activities. The Office has been identified by the Office of the Director of National Intelligence as the appropriate lead agency in generating a National Intelligence Estimate on National Security and Energy Security. This is a major undertaking requiring collaboration throughout the intelligence community.
- DOE plays a pivotal role in the security posture of the U.S. as the lead agency for energy security, nuclear security and proliferation intelligence, as well as a premier mission enabler through scientific innovation.
- DOE/IN serves as the Program Manager for the national Nuclear Materials Information Program (NMIP), focused on providing integrated, all-source information on nuclear materials worldwide.
- The Energy and Environmental Security directorate will focus on the emergence of critical issues platforms to support a globally networked strategic intelligence capability. The online architecture of a "beta" prototype version is projected to go live in Fall 2008. Also included will be planning and implementation of several critical issues networks, as well as the identification and engagement of related international energy and environmental security efforts worldwide.
- Update the Counterintelligence Program Order that will expire in December, refocusing counterintelligence responsibilities across the DOE complex to use a model of central, HQ-driven direction with decentralized field execution.
- Additional key strategies are provided in the classified Annex.

Critical events and action items

3-month events

- Hold Energy and Environmental Security Critical Issues Summit (tentatively in December 2008, U.S. Army War College)
- Additional events are provided in the classified Annex

12-month events

- Convene the Edinburgh Energy and Environmental Security Summit (tentatively in Scotland, July 2009)
- Host a university and DOE multi-laboratory Energy and Environmental Security consortium event (tentatively in September 2009)
- Beginning in FY 2009, the Intelligence Program will execute the first phase of a multi-year transformation initiative, taking a mission-based approach focused on becoming the center of excellence for Energy Intelligence to include:
    - Provide superior nuclear, energy and technical analysis to the intelligence community and national decision makers
    - Lead the intelligence community through advanced applied science and technology innovation and technology tools development
    - Sustain and enhance human capital and infrastructure investments
    - Implement new organizational design to streamline current assets and prepare for significant future growth

- Assume increased program management of the DOE Foreign Intelligence Elements within the national Laboratories and sites in the field
- Additional events are provided in the classified Annex.

Hot Topic Issues

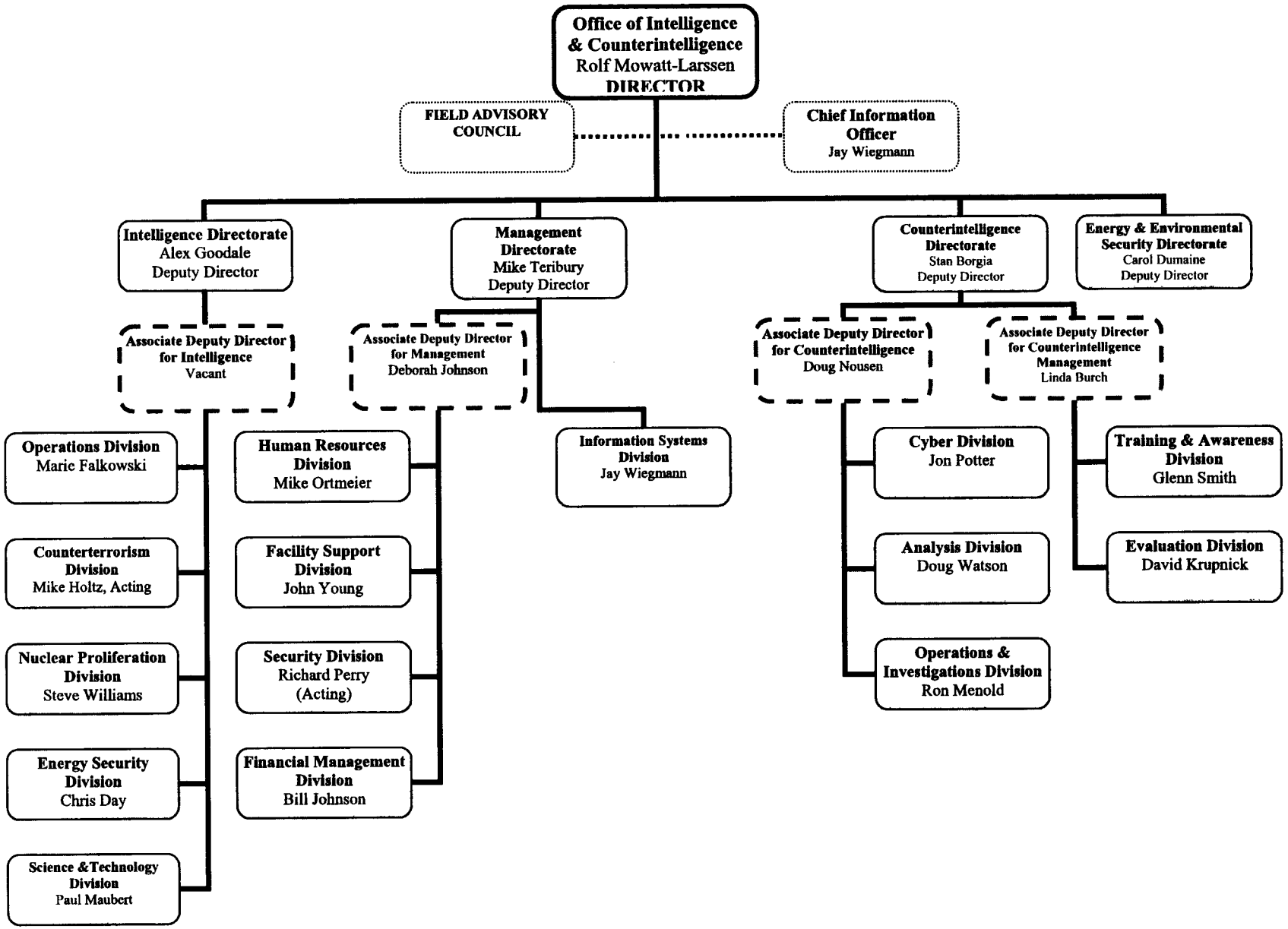
The Office has one Hot Topic issue:

- Energy and Environmental Security (attached)

Funding profile

The Office budget is classified. Please see the classified Annex for the funding profile.

Current organizational chart


Office of Intelligence & Counterintelligence
Rolf Mowatt-Larssen
DIRECTOR
FIELD ADVISORY COUNCIL
Chief Information Officer
Jay Wiegmann
Intelligence Directorate
Alex Goodale
Deputy Director
Management Directorate
Mike Teribury
Deputy Director
Counterintelligence Directorate
Stan Borgia
Deputy Director
Energy & Environmental Security Directorate
Carol Dumaine
Deputy Director
Associate Deputy Director for Intelligence
Vacant
Associate Deputy Director for Management
Deborah Johnson
Associate Deputy Director for Counterintelligence
Doug Nousen
Associate Deputy Director for Counterintelligence Management
Linda Burch
Operations Division
Marie Falkowski
Counterterrorism Division
Mike Holtz, Acting
Nuclear Proliferation Division
Steve Williams
Energy Security Division
Chris Day
Science &Technology Division
Paul Maubert
Human Resources Division
Mike Ortmeier
Facility Support Division
John Young
Security Division
Richard Perry
(Acting)
Financial Management Division
Bill Johnson
Information Systems Division
Jay Wiegmann
Cyber Division
Jon Potter
Analysis Division
Doug Watson
Operations & Investigations Division
Ron Menold
Training & Awareness Division
Glenn Smith
Evaluation Division
David Krupnick

Office of Inspector General

Organization Information

Organization Name:
Office of Inspector General

Address:
1000 Independence Ave, SW, Room 5D-039, Washington, DC 20585

Organization Phone Number:
202-586-4393

Organization Website:
http://www.ig.energy.gov/

POC E-mail Address:
linda.snider@hq.doe.gov

Supporting the DOE Mission

Operating under its own strategic plan, the Office of Inspector General supports the goals, objectives, and strategies of the Department. The work of the Office of Inspector General focuses on the vital areas outlined in the Department's strategic plan, with key emphasis on the most significant management challenges identified on a yearly basis. The Office of Inspector General further supports the mission of the Department by:

- Providing the Secretary with an impartial set of "eyes and ears" to evaluate management practices;
- Acting as fact-finders in high profile, controversial matters;
- Apprehending those attempting to defraud the Government and the people of the United States; and
- Ensuring that the taxpayers have a "seat at the table" when decisions are made as to how their money is spent.

As such, the Office of Inspector General's Strategic Goal is to operate a robust review program and provide timely performance information and recommendations to improve the Department's programs and operations.

Mission Statement

To promote the effective, efficient, and economical operation of the Department of Energy's programs, through audits, investigations, inspections, and other reviews to detect and prevent waste, fraud, abuse, and violations of law.

Status

Budget

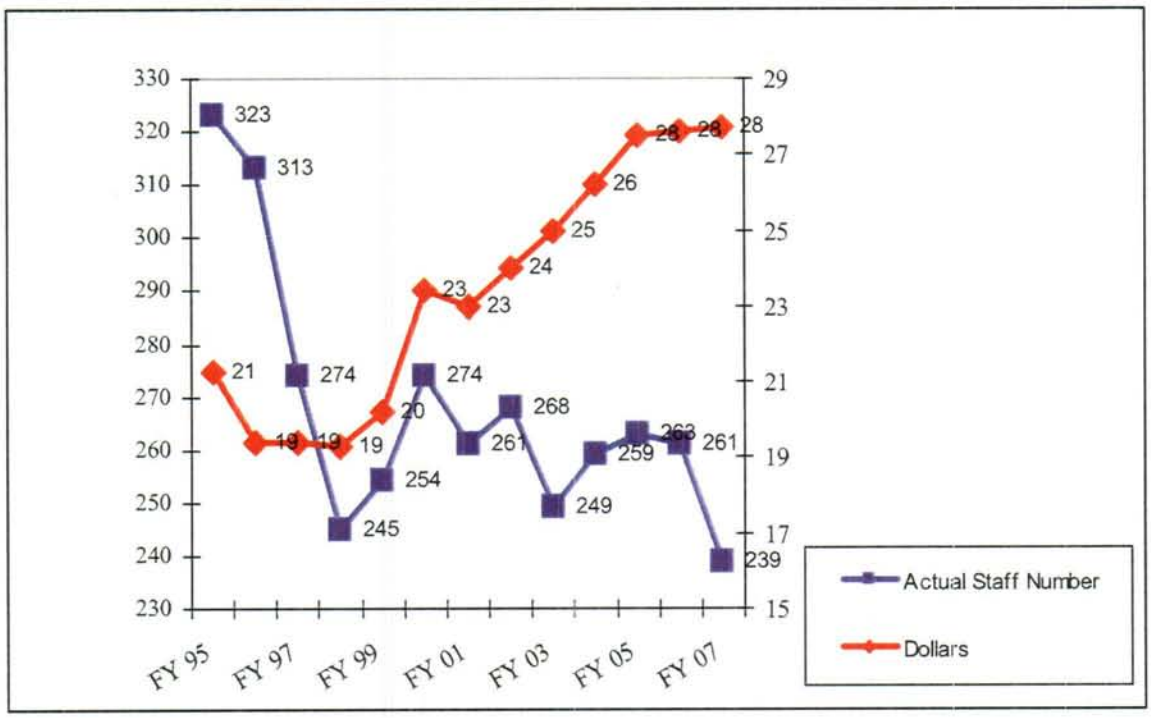
FY 2009 Congressional Request: $51,927,000

Staff

Current number of Federal FTEs: 239
FY 2009 Target: 279

Estimated number of headquarters FTEs: 44
Estimated number of field site FTEs: 195

Comparison of the Department's Budget with Office of Inspector General Staff



Performance

Joule Performance Status: Green

Effectiveness Measure: Complete the Department's consolidated financial statement audit to determine whether the financial statements are free from material misstatement.

- Met Milestone: The Department's FY 2007 consolidated financial statement audit was completed on November 9, 2007. The report number is OAS-FS-08-02.

Efficiency Measure: Conduct reviews related to: (1) the President's Management Agenda initiatives; (2) the Secretary's Mission Priorities; and (3) Office of Inspector General Management Challenges.

- Exceeded Milestone: The Office of Inspector General conducted reviews that resulted in the issuance of 26 reports during the 1st Quarter, 23 reports during the 2nd Quarter, and 15 reports during the 3rd Quarter.

History

As mandated by the Inspector General Act of 1978, as amended, the Office of Inspector General promotes the effective operation of the Department of Energy. The Office of Inspector General consists of the immediate office of the Inspector General and the following components:

The *Office of Audit Services* provides internal and contracted audit activities for Department programs and operations. The Office strives to provide reliable, credible, financial, and performance information to senior management, the Congress, and the taxpayer.

The *Office of Inspections and Special Inquiries* conducts performance and allegation-based inspections as well as special inquiries in response to concerns raised by Congress, senior Department management, and others. The Office also manages the Office of Inspector General Hotline and Management Referral System.

The *Office of Investigations* conducts investigations into alleged violations of law that impact Department programs, operations, facilities, and personnel. Priority is given to investigations of suspected violations of criminal and civil statutes as well as serious administrative conduct.

The *Office of Resource Management* provides administrative and management support to the Office of Inspector General. It also formulates and executes the Office of Inspector General budget and is responsible for all human resource activities, information technology, strategic planning, performance reporting, and property management.

Critical Operating Procedures

The Office of Inspector General, which operates independently under the Inspector General Act of 1978, has the following responsibilities and functions:

- Conduct audits, investigations, and inspections to prevent and detect fraud and abuse in Department, National Nuclear Security Administration, and Federal Energy Regulatory Commission programs and operations;
- Keep the Secretary of Energy informed of findings concerning fraud and other serious problems, abuses, and deficiencies relating to the administration of Department programs and operations;
- Develop recommendations to remedy these problems;
- Receive and investigate complaints from employees regarding mismanagement, abuse of authority, danger to public health and safety, or violations of law, rules, or regulations; and

- Conduct, supervise and coordinate relationships between the Department and other Federal, state, and local agencies concerning the identification and prosecution of criminal and civil violations of law.

Organizational Strengths and Recent Accomplishments

The Office of Inspector General engages in a combination of performance and financial reviews. These reviews include programmatic reviews, annual financial statement audits, cyber security and intelligence reviews, and the cyclical review of management and operating costs of the Department's numerous contractors. In addition, the Office of Inspector General also conducts specialized reviews in response to Congressional requests as well as those made by the Secretary of Energy. In recent years, for example, the Office of Inspector General has completed reviews requested by Congress on a variety of issues, including security at the Los Alamos National Laboratory, legal services associated with the Yucca Mountain Project, unimplemented Office of Inspector General recommendations, the influence of the National Coal Council, and the Department's newly established Loan Guarantee Program.

In addition, the Office of Inspector General also completes a Semiannual Report to Congress, which highlights our audit, inspection, and investigative activities that support the commitment to promote effective and efficient operations of the Department. This report also includes a variety of statistics related to our work. Below are statistics compiled on a semiannual basis for the last five years.

- Number of Reports: 524
- Monetary Savings: $1,705,908,746
- Hotline Complaints: 6,739
- Investigative Recoveries: $113,571,034
- Criminal Convictions: 118
- Suspensions and Debarments: 159

Office of Inspector General Semiannual Reports to Congress can be found at:
http://www.ig.energy.gov/semiannual.htm

Leadership Challenges

A primary challenge facing the Office of Inspector General relates to risk assessment. A primary aspect of our work involves examining Department programs and procedures through audits and inspections. In doing so, much of this work is dictated by risk assessments as they evolve within the Department from year to year. These assessments become the driver for developing plans for our audits and inspections.

Along these lines, on an annual basis, the Office of Inspector General identifies what it considers to be the most significant management challenges facing the Department. Now codified as part of the *Reports Consolidation Act of 2000*, this effort assesses the agency's progress in addressing previously identified challenges and considers emerging issues facing the Department. The management challenges outlined in this report constitute a major factor in setting internal OIG priorities as it evaluates Department programs and operations.

Representing risks inherent to the Department's complex operations as well as those related to management processes, these challenges are, for the most part, not amenable to immediate resolution and must, therefore, be addressed through a concentrated, persistent effort over time. For FY 2008, the Office of Inspector General identified the following seven management challenges:

- Contract Management
- Cyber Security
- Environmental Cleanup
- Human Capital Management
- Project Management
- Safeguards and Security
- Stockpile Stewardship

In addition to identifying these management challenges, we have also developed a "watch list," which consists of significant issues that do not meet the threshold of being classified as management challenges, yet warrant continued attention by Department management. For FY 2008, the watch list consisted of the following operational and programmatic functions: Infrastructure Modernization and Worker and Community Safety.

By aggressively addressing these challenges, the Department can enhance program efficiency and effectiveness; reduce or eliminate operational deficiencies; decrease fraud, waste, and abuse; and achieve substantial monetary savings.

The full version of the latest Management Challenges report can be found at:
http://www.ig.energy.gov/documents/IG-0782.pdf

Critical Events and Action Items

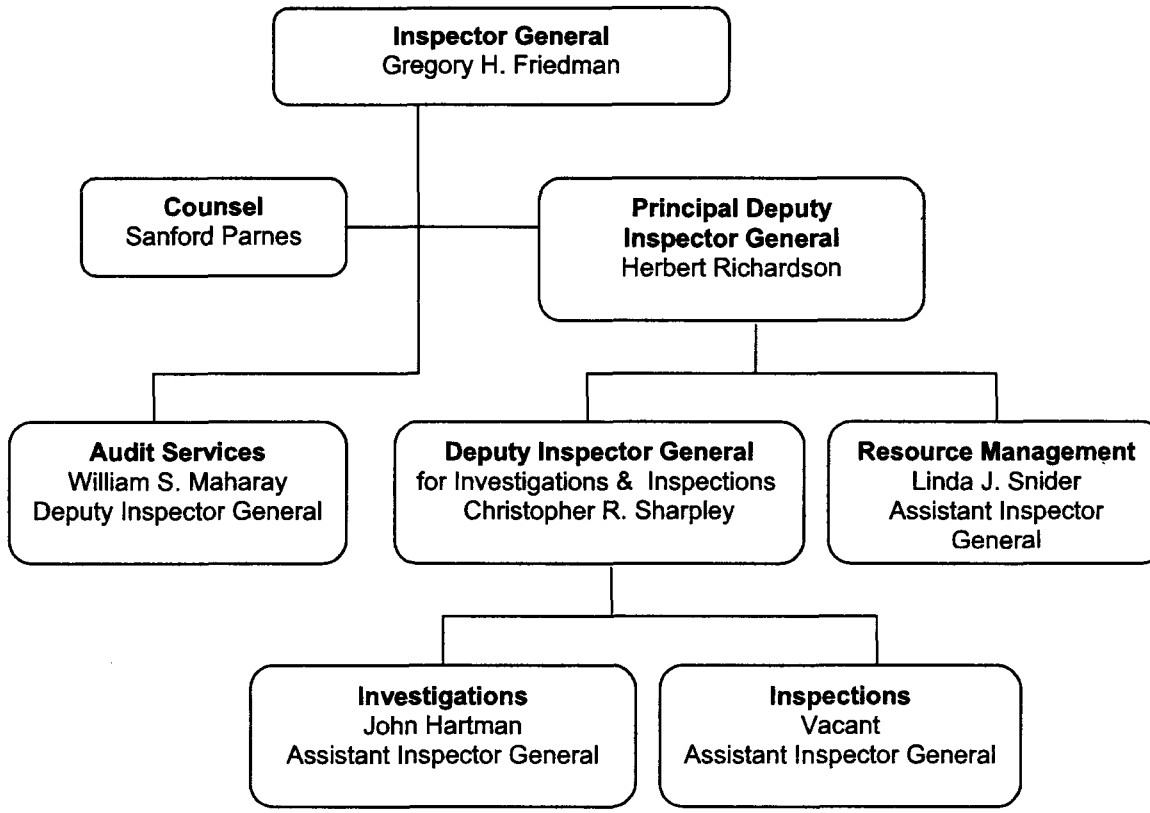
12-Month Events

- April 2009: Issue semiannual report
- November 2009: Issue opinion on Department's consolidated financial statements
- December 2009: Issue Management Challenges Report

Funding profile (dollars in thousands)

Office or Program Area	FY2008 Current Appropriation	FY2009 Congressional Request
Office of Inspector General	46,057	51,927

Organization Chart



Office of Management

Organization Information

Organization Name:

Office of Management

Address:

Suite 4A-107, Forrestal

Organization Phone Number:

202-586-2550

Organization Website:

http://management.energy.gov

POC E-mail Address:

laurie.morman@hq.doe.gov

Supporting the DOE Mission

Strategic Theme 5 – Management Excellence

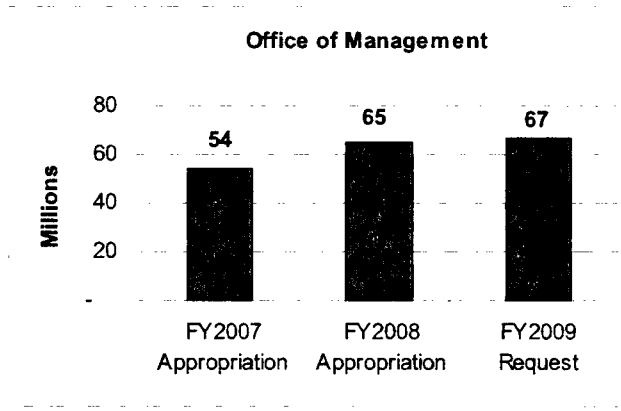
The Office of Management's (MA) primary functions include policy development and oversight for the Department's $260 billion project management portfolio, approximately $25 billion in annual procurement obligations, $85 billion real property inventory and $74 million aviation fleet. MA also provides procurement services to DOE headquarters organizations. Administrative functions include the management of headquarters facilities, executive correspondence control, Secretarial scheduling and advance, management of Departmental directives, and the delivery of other services critical to the Department. Staff in MA also fulfill the responsibilities of the Chief Freedom of Information Act Officer, Senior Agency Official for Privacy, Chief Acquisition Officer, the Department's Senior Procurement Executive, Senior Real Property Officer, and Advisory Committee Management Officer.

Mission Statement

The Office of Management supports accomplishment of the Department of Energy's mission by providing centralized policy direction and oversight for the full range of management, procurement, and administrative services.

Status

Budget:



FY2009 Congressional Request: $67,000,000

People:

As of 9/30/08:

Estimated number of federal FTEs: 240 (on board)

Estimated number of contractor FTEs: 258*

Estimated number of headquarters FTEs: 239

Estimated number of field site FTEs: 1

*Majority include custodial staff, facilities maintenance, and other tradespersons who support the HQ facility.

Facilities:

The Office of Management has employees located in three Headquarters facilities including the Forrestal Building, the Germantown Building and the 950 L'Enfant Plaza Building.

Performance:

FY07 4th quarter Joule status: 4 green, 0 yellow, 0 red

History

The Office of Management was established October 1, 2005, as the result of a Departmental reorganization which split the former Office of Management, Budget and Evaluation into three separate entities. Some of the functional areas that make up the Office of Management have

been in existence since the Department was established, while others have been created to address specific Departmental challenges. The Offices of Administration, Procurement and Assistance Management, Executive Secretariat, Scheduling and Advance, and Information Resources have existed in some form since the Department of Energy was created in 1977. Others, including the Offices of Aviation Management and Engineering and Construction Management, were created to develop Department-wide policies and provide cross-cutting oversight in the areas of aviation, project management, and real property.

MA major components

Office of Engineering and Construction Management

The mission of the Office of Engineering and Construction Management (OECM) is to support the successful completion of the Department of Energy's capital asset and environmental clean-up projects and the sound management of the Department's Real Property portfolio through policy, guidance and oversight.

Recent Accomplishments and Strengths

- ✓ Established a structured, disciplined process to manage the Department's multi-billion dollar project portfolio. This process ensures that projects support the Department's mission; fulfill a clearly articulated need; are properly planned; have sound cost-estimates; and are monitored for adherence to cost, schedule and performance targets. It also ensures the involvement of the Department's senior officials in decision-making on major projects from start to finish. As of September 30, 2008, approximately 80 percent of the Department's capital asset projects completed during the last three years were within 10 percent of estimates on cost, schedule and scope.

- ✓ Ensured that executives, program managers, and project directors are all held accountable for project performance. Beginning in FY 2004, federal project director performance plans were amended to include explicit standards for meeting cost, schedule and performance targets.

- ✓ Established a rigorous professional development program to provide project directors with the experience, training and knowledge needed to competently manage complex projects. To date, OECM has certified 261 Federal Project Directors and 85 percent of projects are led by a certified Federal Project Director.

- ✓ Launched an initiative to certify that contractor earned value management (EVM) systems for measuring project performance meet nationally recognized standards To date, 78 percent of contractors' EVM systems have been certified for capital asset projects and 50 percent for environmental clean-up projects.

- ✓ Initiated a comprehensive, long-term effort to improve project and contract management and ultimately be removed from the Government Accountability Office's (GAO) High Risk List for long-standing challenges involving project and

contract management. As part of this initiative, OECM led a Department-wide Root Cause Analysis, recently published a Corrective Action Plan (CAP) and is coordinating implementation of the CAP across the Department and its multi-billion dollar project portfolio.

Leadership Challenges

- The Department's performance in managing its projects and contracts has been cited by GAO as a high risk area since 1990. GAO has also identified real property management as high risk for the entire Federal government.

- The DOE Inspector General has noted that the Department needs to improve its discipline and structure for approving and controlling program and baseline changes to projects as well as the Department-wide approach for certifying Federal Project Directors at pre-determined skill levels to ensure competent management oversight of resources.

Key Strategies and Timing

- Implement the Root Cause Analysis and Corrective Action Plan for improving contract and project management. (Completion dates range from 10/1/2008 – 9/30/2011)

- Complete EVMS certifications and establish an EVMS surveillance process to ensure consistent use of EVM systems. (Completion dates for capital asset projects 9/30/2009 and environmental clean-up projects 9/30/2010)

- Enhance the process for reviewing the cost, schedule and scope baselines for capital asset and environmental clean-up projects. (Completion 9/30/2009)

- At a minimum, request full funding for projects with costs under $20 million in the FY 2011 budget, with costs under $35 million in the FY 2012 budget and under $50 million for the FY 2013 budget.

- Improve front-end planning for projects, especially ensuring project requirements are adequately defined before the cost, schedule and scope baseline is established. (Completion dates range from 11/30/2008 – 9/30/2011.)
- Enhance the Federal contract and project management workforce by developing and implementing a comprehensive plan to recruit, develop and retain the optimum contract and project management federal workforce. (Completion 12/31/2008)

Critical Events and Action Items

12-month events

- Continue implementation of Root Cause Analysis/Corrective Action Plan working to secure DOE's eventual removal from the GAO High Risk List.

Office of Procurement and Assistance Management

The mission of the Office of Procurement and Assistance Management (OPAM) is to ensure the development and implementation of Department of Energy-wide policies, procedures, programs, and management systems pertaining to procurement and financial assistance, personal property management, and related activities and to provide procurement services to Headquarters elements.

Recent Accomplishments and Strengths

- ✓ Successfully oversaw and managed contractual obligations for FY 2007, consisting of over 16,578 transactions (individual contract awards, modifications and financial assistance over $3,000) by approximately 400 contracting and procurement specialists department-wide as part of the functional accountability role of the department's Senior Procurement Executive. The Department's total procurement obligations for FY 2007 totaled $25.7 billion, including $19.5 billion for major facilities contracts, $3.7 billion for other contracts, $2.2 billion for financial assistance, and $300 million for interagency agreements.

- ✓ During FY2008, provided business/acquisition planning support and HQ clearance for all major acquisitions, including all competitions for the Department's National Laboratories, environmental clean-up work, and major Departmental initiatives. Examples include competitions for the National Renewable Energy Laboratory, the Hanford Tank Farm Operations, and the Brookhaven National Sync Light Source.

- ✓ Competed 85 percent of all contracts (highest of all cabinet-level agencies)

- ✓ Successfully implemented the Performance-Based Acquisition (PBA) methodology, as demonstrated by the incorporation of PBA into 86.4% of all contract-eligible obligations, one of the highest in the federal government.

- ✓ Conducted a comprehensive property management workforce study to: (1) assess recruitment, training, and succession planning; (2) assess staffing levels and organizational configuration across the complex; and (3) implement recommended improvements.

- ✓ Conducted a DOE complex-wide contractor human resource (CHR) functional risk assessment with findings and recommendations on (1) CHR recruitment, training, succession planning; (2) staffing levels and organizational configuration by program and field offices.

Leadership Challenges

- Improvements are needed in the oversight of contractors managing and operating the Department's facilities. Specific oversight challenges have been identified at environmental cleanup sites and laboratories conducting national security and scientific activities. Adequate oversight is needed to ensure that contractor operations are effective and efficient and that contractors have the appropriate workforce size and skill mix.

- DOE is the largest civilian contracting agency in the federal government and spends approximately 90 percent of its annual budget on contracts to operate its scientific laboratories, engineering and production facilities and environmental restoration sites. A June 2006 GAO report on DOE cited concerns involving delays in awarding contracts and the need for a systematic method to share lessons learned from contract awards.

Key Strategies and Timing

- Establish a Procurement Management Review Program to improve field acquisition performance and implementation of OMB Circular A-123, Management Controls. (Reviews begin in November 2008)

- Implement strategies to improve the efficiency and timeliness of the Department's major acquisitions. (Completion 9/30/2009)

- Review by National Academy of Public Administration (NAPA)

    - The House and Senate Appropriations Subcommittees on Energy and Water Development have directed the Department to contract with NAPA to undertake a management review of the Offices of Procurement, Human Capital Management and the Chief Financial Officer.
    - The NAPA review began in May 2008 and final results are expected in late spring 2009. Intermediate observations will be shared with the Department throughout the process.

- Implementation of a new procurement management system. (Completion 9/30/2010)

Critical Events

3-month event

- Advanced Mixed Waste Treatment Plant (Competition – FY09/2Q)

12-month events

- Portsmouth Gaseous Diffusion Plant D&D (Competition – FY09/Q3)
- Paducah Infrastructure and Remediation (Competition – FY09/Q3)

- Princeton Plasma Physics Laboratory (Competition – FY09/Q3)
- Savannah River Security Services (Competition – FY09/Q4)
- Depleted Uranium Hexaflouride 6 (DUF6) Operations (Competition – FY09/Q4)
- Brookhaven National Laboratory (Competition – FY09/Q4)
- Portsmouth Facility Support Services (Competition – FY10/Q2)

Office of Administration

The mission of the Office of Administration is to provide to Headquarters employees the most expeditious and efficient services in a safe and healthy environment and to achieve the highest possible customer satisfaction in accordance with Federal Management Regulations.

Recent Accomplishments and Strengths

- ✓ Installed a Photo Voltaic Solar Array at Forrestal Facility. In joint collaboration with the Office of Energy Efficiency and Renewable Energy, the Office of Administration installed a solar array on the roof of the Forrestal building. The array is a 205 kilowatt system which consists of 890 solar panels and will supply the Forrestal building with about 200 megawatt hours of electricity each year. The project highlights solar energy technologies.

- ✓ Earned the EPA 2007 Energy Star for the Forrestal Facility. The Forrestal building is now one of two federally-owned and operated office buildings in Washington, D.C. to have earned the ENERGY STAR® distinction and joins DOE's other headquarters facility in Germantown, MD which earned the ENERGY STAR® certification in 2002.

- ✓ Made significant energy-savings improvements to the Forrestal facility. Examples include:
  - o Consolidated local area network rooms into central computer areas, thereby reducing computer equipment air-conditioning requirements;
  - o Installed and optimized automated heating, ventilation and air conditioning control systems for better indoor temperature control; and,
  - o Installed energy efficient lighting such as low-watt fluorescent lamps, compact fluorescents, and LED lights to update lighting in many areas across the building including: all office spaces, the cafeteria, the main lobby, elevator cars, janitorial closets, emergency exit signs, and outdoor lighting.

- ✓ Implemented the "DOE Alert" system for reliable continuity of operations communication. During an emergency, real-time emergency information can be sent via the DOE Alert system to all DOE Headquarters employees' email addresses, cell phones, blackberries, and any other wireless devices.

- ✓ Completed the Forrestal Lobby Visitor's Center. The new DOE Headquarters Visitor's Center showcases some of the most important achievements of the Department.

- ✓ Added three (3) additional Alternative Fuel Vehicles to the Headquarters Fleet. In support of the Headquarters goal to reduce the use of petroleum-based fuels, the Department acquired three alternative fuel powered vehicles.

Leadership Challenge

- Reducing DOE Headquarters energy use by 30 percent by 2015, or 3 percent per annum, as required by Executive Order 13423 is a major challenge, especially since significant energy savings initiatives were implemented prior to the 2003 baseline.

Critical Events and Action Items

12-month events

- Transform the Forrestal's small auditorium into a Press room. When completed, the Press room will be equipped with state-of-the-art AV and communication devices, lighting, sound, and video screens for teleconferencing and multimedia displays. (Completion 8/30/2009)

- Continue the five-year project to provide sprinklers and additional fire alarm upgrades for the entire Forrestal Building. To date, the entire South and West Buildings have been completed. Work on the 7th Floor of the North building is underway. Affected building occupants will be required to move to office space located in close-by swing space for a 12-week period. (Completion 8/2010)

- Install a pressurization system with filters to remove toxic chemicals for occupants of the Forrestal Child Development Center and Central Alarm Station in the event of a chemical incident. Stairwells in the South building have already been equipped to provide a safe haven for employees. (Completion 12/31/2009)

- Achieve a 30% reduction in energy use at Headquarters primarily through an Energy Savings Performance Contract (ESPC).

Office of Information Resources

The mission of the Office of Information Resources is to develop and oversee implementation of policies and procedures for processing directives, Freedom of Information Act requests (FOIA) and Privacy Act requests.

Recent Accomplishments and Strengths

- ✓ Reduced backlog of FOIA requests by 30 percent since 2006. The Department receives approximately 3,500 requests per year. Currently, the backlog includes 366 requests.

- ✓ Established policies for safeguarding personally identifiable information and a process for protecting individuals in the event of a breach.

- ✓ Developed and began implementing a plan to more rigorously administer the Privacy Act, including strategies for reducing the use of Social Security numbers and encrypting sensitive personal information.

- ✓ Implemented improvements to the system used to establish, communicate and institutionalize policies, requirements, and procedures for Departmental elements and contractors.

Key Strategies and Timing

- Implement provisions of the Open Government Act of 2007 which requires, for example, that agencies provide the public with real-time information on the status of their FOIA requests. (Completion 12/2008)

- Deploy a new FOIA tracking system to centrally monitor the processing of FOIA requests, provide the public with information on the status of FOIA requests, and facilitate the generation of reports on FOIA activities. (Completion 7/2009)

- Streamline the process used to establish, communicate and institutionalize Departmental policies, requirements and procedures. (Completion 7/2009)

Office of Aviation Management

The Office of Aviation Management's mission is to establish aviation policies, aviation program oversight, and program management that ensure the delivery of effective, efficient, secure and safe aviation services to support accomplishment of the Department's programmatic goals and objectives. The Department's aviation fleet includes 24 aircraft valued at $74.4 million.

Recent Accomplishments and Strengths

- ✓ Achieved 99.3 percent audit compliance to aviation standards by Departmental programs (15% improvement over 4 years).

Key Strategies and Timing

- Complete Phase III of the Comprehensive Aviation Program Study, including a 20-year life cycle cost analysis, alternatives for providing service, and a cost-benefit analysis, to enable fleet planning for the next ten years. (Completion 6/2009)

Office of Executive Secretariat

The mission of the Office of Executive Secretariat is to provide direct support to the Secretary, Deputy Secretary, Under Secretaries, and the Heads of Departmental Elements to ensure timely and coordinated responses to correspondence, Congressionally-mandated reports, and legislative requirements. The Secretariat uses its electronic document tracking and reporting systems to monitor the flow of critical documents and executive commitments, to gather statistical data, and to share pertinent information with Departmental principals.

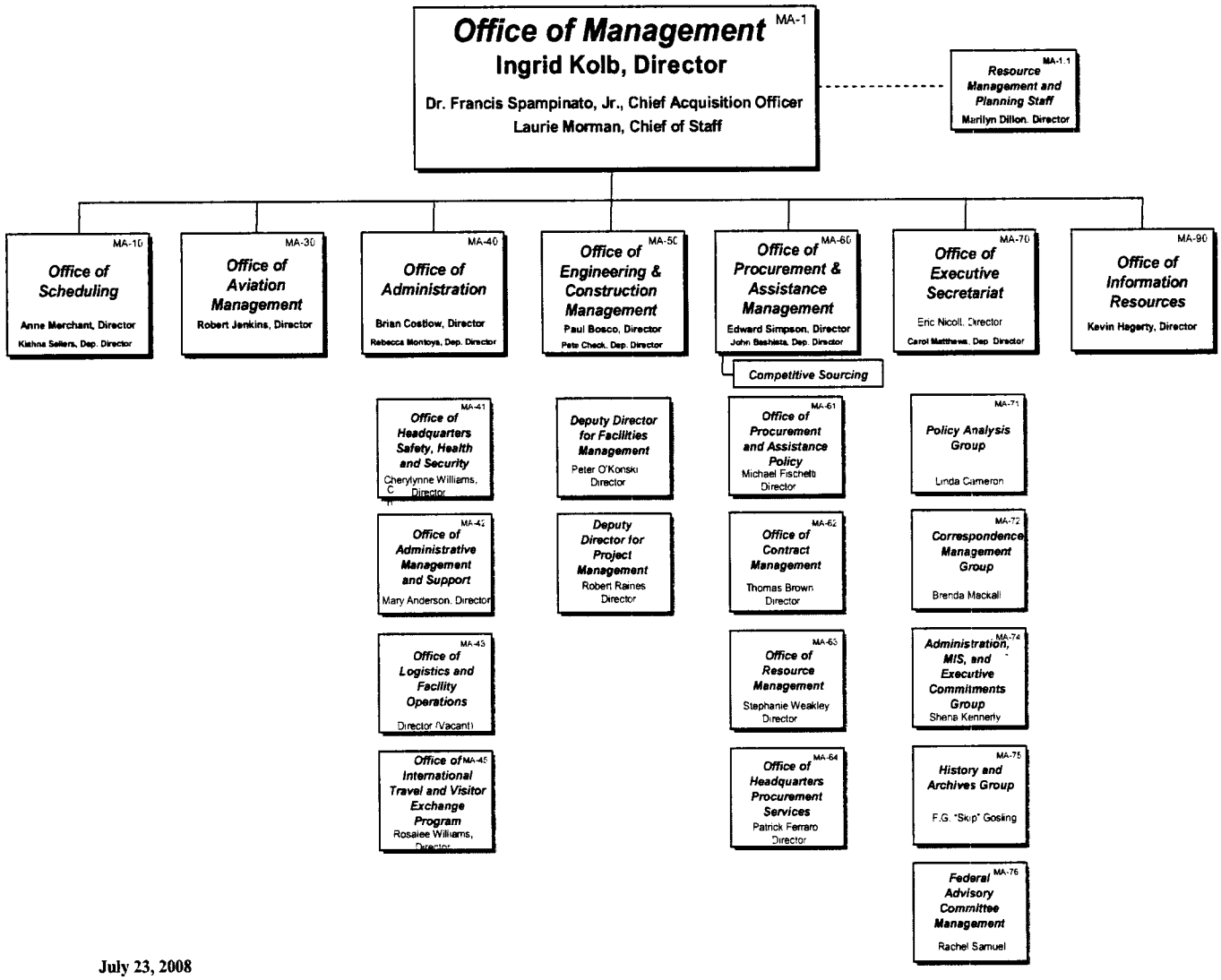
Office of Scheduling

The mission of the Office of Scheduling is to manage the official calendar for the Secretary of Energy and to provide support for all official travel by the Secretary and Deputy Secretary of Energy, both foreign and domestic.

Hot Issue

Issues Regarding DOE Reimbursement of Contractor Employee Benefits

Current Organization



July 23, 2008

Office of Policy and International Affairs

Organization Information

Organization Name:
Office of Policy and International Affairs

Address:
1000 Independence Avenue, S.W., Room 7C-016

Organization Phone Number:
202-586-8660

Organization Website:
www.pi.energy.gov

POC E-mail Address:
Florence.Kupferer@hq.doe.gov

Supporting the DOE Mission

Strategic Theme 1 – Energy Security
Strategic Goal 1.1 – Energy Diversity
Strategic Goal 1.2 – Environmental Impacts of Energy
Strategic Goal 1.4 – Energy Productivity

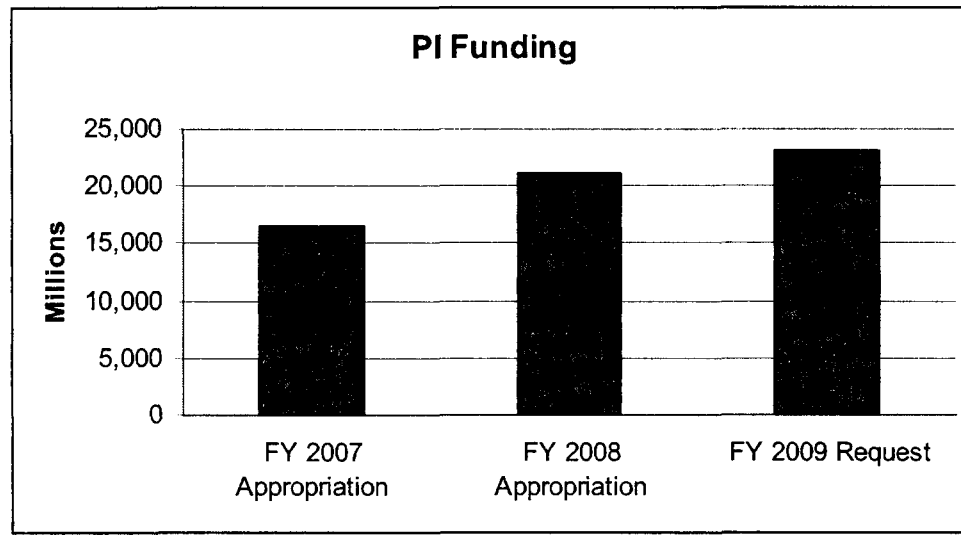
Mission Statement

The Office of Policy and International Affairs (PI) delivers advice to the Department's leadership on existing and prospective energy-related policies, based on integrated and well-founded data and analysis. PI has primary responsibility for the Department's international energy activities including international emergency management, national security, and international cooperation in science and technology.

Status

Budget:

FY2009 Congressional Request: $23,000,000



People:

Estimated number of federal FTEs: 120
Estimated number of contractor FTEs: 0
Estimated number of headquarters FTEs: 120
Estimated number of field site FTEs: 0

Facilities:

Not applicable

Performance:

FY08 3rd quarter Joule status: 4 Green, 0 Yellow, 0 Red

History

Since the Department of Energy Organization Act established the Department in October 1977, there has been an active international affairs (IA) program in DOE headed by an Assistant Secretary. Over the years, this program has existed as a stand-alone office, in combination with energy emergency preparedness, and in the 1990's the Department's policy and strategic planning was included. The IA functions have largely remained the same and include international energy policy; lead in DOE's bilateral and multilateral cooperation with other

nations and organizations; and promotion of policy and regulatory reforms in foreign countries that will remove barriers and open energy markets for U.S. firms abroad.

While the Policy Office has generally focused on the development and oversight of energy policy, it has also had an important role in guiding the Department's strategic planning efforts, domestic science and technology policy, energy-related environmental policies, energy emergency planning and national security policy functions.

In FY 1999, the Office was split again, creating a separate Office of the Assistant Secretary for International Affairs and the Director, Office of Policy. Strategic planning functions were transferred to the Office of the Controller.

In July 2001, the two offices were remerged to become the Office of Policy and International Affairs. In 2002, the Climate Change Technology Program was created by the President and became a part of the Office of Policy and International Affairs. Subsequently authorized by the Energy Policy Act of 2005, this program is charged with coordinating and prioritizing the Government's portfolio of investments in climate-related technology research, development, demonstration, and deployment.

Critical Operating Procedures

The International Commitments Management Process (ICMP), under PI supervision, tracks all of the Department's international commitments.

Recent Organizational Accomplishments and Strengths

PI provides Departmental leadership strategies to implement the National Energy Policy. PI represents the Department and the United States Government in interagency processes, intergovernmental forums, and bilateral and multilateral proceedings that address matters relating to the development and implementation of national and international energy policies, strategies and objectives. The Policy Office in PI analyzed the capability of the U.S. and other countries to supply the biofuels required by the Energy Independence and Security Act of 2007, the feasible fuel economy requirements that could be set under the Act, and developed energy policy proposals to reduce oil imports. The Policy Office collaborated with the Office of International Energy Policy and the Office of International Energy Collaboration on energy-related issues involving China, Brazil, Iraq, and the International Energy Agency; and improved energy modeling capabilities, especially the capability to analyze the electric power sector in the US.

PI also has primary responsibility for coordinating the efforts of diverse elements in the Department to ensure a unified voice in our policy and international affairs. PI works closely with organizational elements within the Department, other Federal agencies, national and international organizations and institutions and the private sector to coordinate and align national energy policy, and international energy agreements. PI coordinates DOE initiatives on climate change technology, greenhouse gas reduction reporting, and clean energy technology exports. For example:

-PI has performed extensive modeling to assess the possible long-term energy, economic, and climate implications of various greenhouse gas (GHG) mitigation options and analyzed the barriers to the commercialization and deployment of advanced climate change-related technologies and practices, and developed policy options to address them.

-PI also manages Climate VISION, a voluntary emissions reduction program engaging major industrial sector consortia. PI organized the development and release of the program's 2007 progress report and is currently coordinating a significant upgrade to the Climate VISION website. PI leads the Department's participation in international climate change activities and supported the U.S. government's position in negotiations related to the United Nations Framework Convention on Climate Change, for which PI serves as the lead U.S. negotiator on matters related to technology transfer.

-PI is instrumental in the development of focused efforts to address international climate change issues, as exemplified by our participation in the Asia Pacific Partnership (APP) and the "Major Economies" process. The APP engages seven governments (Australia, Canada, China, India, Japan, Republic of Korea, and the U.S.) representing over half of the world's GHG emissions and economic production, private enterprises, and other stakeholders to develop sustainable approaches to climate change mitigation technology deployment. PI also supports international energy market development activities as they relate to more effectively deploying clean energy technology. This includes providing expertise on energy financing and outreach to companies, financial institutions, and non-governmental organizations involved in exporting clean technology or investing in cleaner technology in the developing world.

-PI also coordinates DOE's energy relations with other Federal, state and local departments and agencies. The Assistant Secretary coordinates and manages DOE cooperation with the governments of other nations, directly and through international organizations. The Assistant Secretary for PI also negotiates and manages a variety of bilateral and multilateral agreements with other countries and international agencies for cooperation in research and development and for energy, environmental, and technology cooperation. For example:

-PI has supported the work of the governments of the North American Energy Working Group (NAEWG), comprised of Mexico, Canada and the U.S., which recently signed a trilateral Agreement for Cooperation in Energy Science and Technology to reduce barriers to the deployment of clean energy technology; align energy efficiency standards in key products and standby power consumption; develop a biofuels outlook for North America; and enhance vehicle fuel efficiency and streamline markets for liquefied natural gas.

-Over the past two years, PI has established a relationship with U.S. Southern Command (SouthCom) to promote energy security through joint exercises focusing on regional energy supplies as well as critical infrastructure protection. PI is working to extend our collaborative relationship with SouthCom to US Northern Command (NorthCom), whose area of responsibility includes the United States, Canada and Mexico.

-PI has also supported the development of a close energy relationship between the United States and China, including advancement of bilateral energy cooperation through Memorandums of Understanding on Biofuels and Industrial Energy Efficiency Cooperation, the International Energy Agency, and our annual U.S.-China Energy Policy Dialogue.

-PI has also supported cooperation with Japan, which is a leading research and development cooperative partner of the U.S. as well as an important ally in numerous multilateral forums on energy policy issues. The success of our close bilateral relationship has served to advance the engagement of key emerging economies, including those participating in the Global Nuclear Energy Partnership and the Five-Country Energy Ministerial.

Leadership Challenges

A central management challenge will be to ensure that highly skilled professionals will continue to staff the organization. An important element of this challenge will be to provide career mobility, training and associated support to the junior staff. In addition, promoting diversity within PI is critical to ensuring that limited staff resources can effectively support U.S. and Departmental policy goals in the coming years.

Virtually all regions of the world present energy-related policy challenges. In the Middle East, Iraq remains central to the future functioning of global oil and gas markets given the immense size of its reserve base, opportunity to a generally rapid increase in production, and location. Saudi Arabia production-level decisions and willingness (or not) to discount prices in the short term are central factors in addressing the challenge of exceptionally high crude oil prices.

Bilateral relations with Russia in nuclear matters are better than those in the hydrocarbon sector, which does not meet international norms and practices. Eurasia represents one of the last frontiers of conventional oil and gas production. U.S. policy over the last decade has consistently advocated increased oil and gas production and international arrangements for easing the transportation options to bring that production to the major markets. Eurasia's existing infrastructure and transportation policies will pose a challenge to bring those countries' oil and gas products to market in a more competitive manner.

Africa, in general, and Nigeria in particular, require greater U.S. energy-related engagement. Nigeria is an important contributor in the global supply of oil and gas. How to effectively engage the Nigerian government bilaterally on terms acceptable to both governments and assist Nigeria to provide the market with a more secure supply of oil and natural gas is a major question for both governments.

China's energy procurement policies and dramatic increase in energy demand affect not only the U.S., but also global efforts to achieve energy security and meet climate change challenges. China's key challenges include lack of effective energy-focused institutions and rapidly growing energy workforce demands, as well as poor provincial implementations of Beijing's energy policies. The challenges impede the Chinese government's ability to realize the full potential of international market-based energy collaboration. In addition, China's lack of accurate and

transparent energy and CO2 pollution data creates an environment of uncertainty for progress under ongoing bilateral and multilateral negotiations.

Key Strategies and Timing

Some promising technologies and practices, such as carbon capture with geologic storage, are decades away from widespread deployment and require significant investments to lower their risks, reduce their costs, and accelerate their development. Supporting policies and measures must be formulated to address deployment-related liability, regulatory, and other concerns.

Critical Events and Action Items

3-month events

February 2009

US-African Energy Cooperation meeting in Nairobi, Kenya

March 2009

Turkish International Oil and Gas Conference and Showcase, Ankara, Turkey, March 10-12, 2009

April 2009

Georgian International Oil, Gas, Energy and Infrastructure Conference and Showcase, Tbilisi, Georgia, April 2-3, 2009

12-month events

Caspian International Oil, Gas, Energy and Infrastructure Conference and Showcase, Baku, Azerbaijan, June 2-5, 2009

13th Annual Renaissance Capital Investment Conference, Moscow, Russia, June 2009

African Growth and Opportunity Act Forum, July 2009

15th Conference of the Parties, the culmination of the United Nations Framework Convention on Climate Change negotiations, Copenhagen, December 2009

US-Kazakhstan Energy Partnership Meetings, Astana, Kazakhstan, latter part of 2009

US-Russia Energy Working Group, Moscow, Russia, latter part of 2009

5th US-China Strategic Economic Dialogue, China, TBD

4th US-China Energy Policy Dialogue, China, TBD

US-Pakistan High-Level Meeting, Washington, DC, TBD

USTDA Vietnam Nuclear Orientation Mission to the US

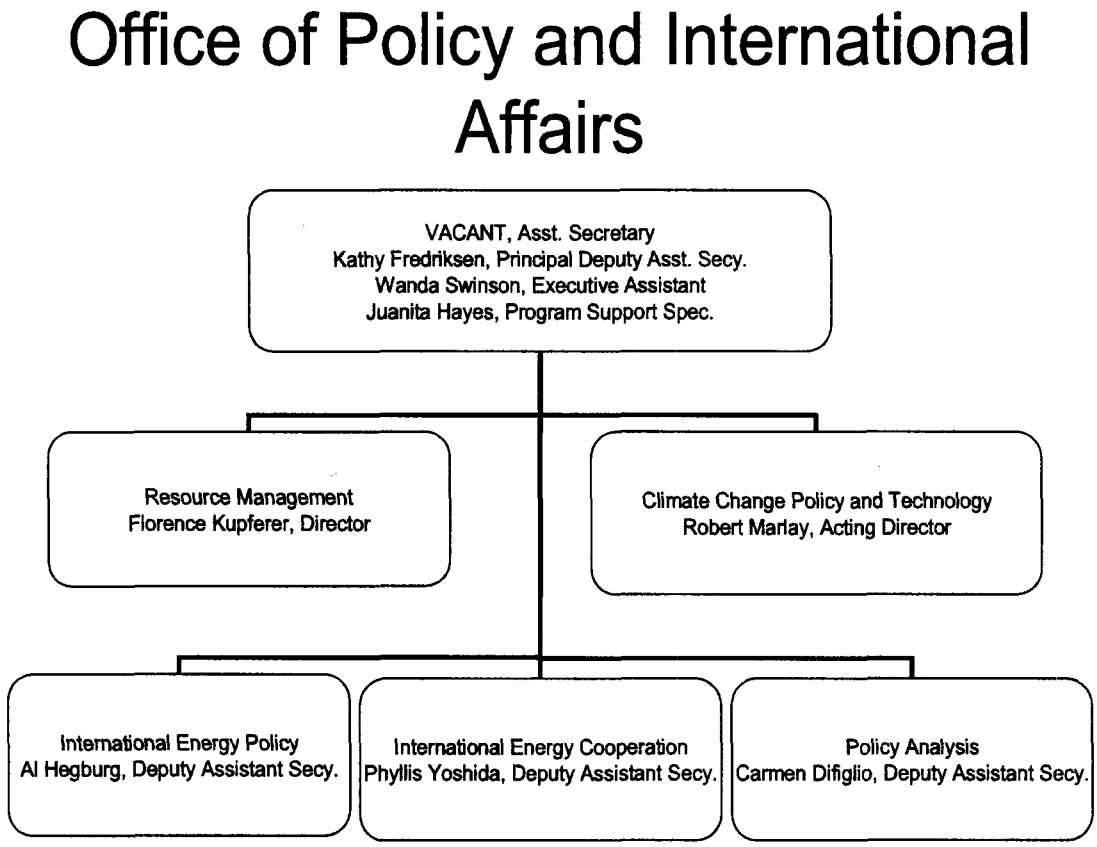
US-India Energy Dialogue Working Group Meetings, TBD

Energy Symposium of the Americas 2009: Adjusting to the New Energy Reality, TBD

Hot Issues

Although climate change is a long-term issue, it requires near-term action. Significant delays in research, development and deployment investments in advanced climate change-related technologies or policy-making efforts to address barriers to greenhouse gas reductions may foreclose certain mitigation options and constrain decision-makers in the future.

Current Organizational Chart



Office of Public Affairs

Organization Information

Organization name
Office of Public Affairs

Address:
1000 Independence Ave., NW, Washington, DC 20585

Organization Phone Number:
202-586-4940

Organization Website:
http://www.energy.gov/contact/media.htm

POC E-mail Address:
Pamela.baker@hq.doe.gov

Supporting the DOE Mission

Strategic Theme 5 – Management Excellence: Managing for Excellence
Strategic Goal 5.4 – Resources: Institutionalize a fully integrated resource management strategy that supports mission needs and postures the Department for continuous process improvement.

Primary responsibility: Assist with the communication all of the messages inside and outside the Agency. Additional responsibility: to provide oversight and guidance to lab and field offices' Public Information Officers (PIOs).

Key Activities: Provide agency-wide public affairs support to the Secretary and other senior officials and assisting program offices in carrying out the Department's public information activities and initiatives.

Provide staff resources for planning and coordinating press conferences, preparing and distributing press releases, advisories and news briefs; and responds to inquiries for information or interviews from the news media. Operates the Departmental public inquiries, handling requests concerning all DOE programs and activities; respond to public inquiries from the general public, Federal agencies, National, State and local governments and private citizens. Provide assistance, advice and prepare speeches, talking points and presentations for the Secretary.

Mission Statement

The Office of Public Affairs (PA) communicates information about DOE's work in a timely, accurate, and accessible way to the news media and the general public. PA performs critical functions which directly support the mission of the Department and the Secretary of Energy. These functions include communicating the Departmental message, policies, initiatives and information to the news media and the general public; managing and coordinating public affairs activities for Headquarters, field offices and sites, and DOE laboratories; serving as primary spokesperson for the Department; responding to requests for information from the public and the news media; arranging interviews with the news media; providing speechwriting services to the Secretary, Deputy Secretary and Under Secretaries; preparing written press releases about Departmental activities and sharing Departmental highlights with the news media and the general public.

Status

Budget

FY2009 Congressional Request: 3,780 (in thousands)

Staff (as of 9/30/08):

Federal 12 (1 Detail)
Political 9
1 Temporary Student

Facilities:

Headquarters, Forrestal Building, Washington, DC

Performance Measures:

FY08 3rd quarter Joule status: Green

History

1989 – Secretary Watkins directed the Under Secretary to assess the existing management structure of the Office of Congressional, Intergovernmental, and Public Affairs. As a result of this review, the Congressional and Intergovernmental functions were split from the Public Affairs function. The Office of Public Affairs (PA) was established as a separate entity, headed by a director who reported to the Secretary. The Office of the Assistant Secretary for Congressional and Intergovernmental Affairs (CI) retained the consumer and public liaison functions until 1993, when they were transferred to PA.

1995 – PA was transferred back under a reconstituted Office of the Assistant Secretary for Congressional, Public and Intergovernmental Affairs, following recommendations of the Strategic Alignment Implementation Group formed by Secretary O'Leary to improve management efficiency and resource utilization.

1997 – The Office of Congressional, Public, and Intergovernmental Affairs is again split into two separate organizations - the Office of the Assistant Secretary for Congressional and Intergovernmental Affairs (CI) and the Office of Public Affairs (PA). CI continues to be led by an Assistant Secretary, and PA by a director, with both reporting to the Secretary of DOE; however, all resource management and administrative functions continue to be performed by one shared Office of Resource Management. The consumer, public liaison, and public participation functions remain within CI.

Critical Operating Procedures

PA activities are organized around two primary constituency groups:

(1) Media
(2) Public Relations/General Public

(1) Media Activities:

- *Budget and Appropriations* – PA manages the media/public relations element of the Department's annual roll-out of the President's Budget Request and Secretarial and Program officials' hearings before Authorizing Committees with jurisdiction over the Department's budget. PA also schedules meetings and briefings with members and Committee staff to provide detailed explanations of the Department's program budget requests.
- The Director represents and serves as the principal point of contact between the Secretary and Secretarial Officers with the news media, and general public regarding energy issues and public information affecting the Department. PA coordinates with program offices and the Office of the General Counsel to ensure public statements are accurate.
- The Director is responsible for establishing the Departmental policy and direction for interaction with the news media and general public and directs broad policies that affect the entire DOE complex concerning public affairs initiatives.
- Provides advice to the Secretary, Deputy Secretary, Under Secretaries and all senior Departmental officials and participate in broad Department-wide projects which the Secretary has a special interest or where there may be significant public implications relating to the news media. Provides oversight and guidance to field offices on their interaction with the news media. Defines coordination requirements as it relates to communication plans and all major public affairs activities.
- Provides outreach and liaison guidance, policies and procedures to Secretarial Officers and other Departmental staff as well as oversight of field organizations concerning their public affairs functions.
- Serves as Departmental liaison with the White House Office of Public Liaison on Administration issues and prepares reports on meetings and travel or speaking engagements by the Secretary or other officials of the Department.
- Participates fully with the Office of Congressional and Intergovernmental Affairs in the review and comment on Congressional testimony, reports, correspondence, and communications plans.

- Develops a comprehensive and innovative approach to the design and presentation of visual materials for support of the Secretary in a variety of contexts including speeches, briefings, letters and presentations to the Department's employees and the general public.
- Serves as the chief public voice on behalf of the Secretary of Energy on all energy issues. Provides management oversight and direction for the production of written materials to define, explain and promote energy policy and programs, e.g., speeches, articles, editorials, statements, and other materials prepared for information for targeted public interest groups or the general public.
- In conjunction with the Office of Congressional and Intergovernmental Affairs, continually assesses outreach activities involving stakeholders at other levels of government and with business/industry, civic groups, nonprofit education organizations, colleges, universities, laboratories, foundations, and all other energy-oriented organizations, and makes policy recommendations on initiatives.

Press Activities

- Manages press services for the Department in accordance with the Secretary's policy of openness and leads or participates in matrix management activities to accomplish the goals of the Department.
- Prepares media advisories, press releases, fact sheets, background information and other materials for the Secretary and other senior officials in cooperation with the appropriate program areas to use when talking to the media.
- Arranges press conferences, interviews, editorial boards and similar public opportunities for the Secretary and other senior Departmental officials.
- Motivates public awareness of energy programs from reactive, active to a proactive posture.
- Provides policy advice on Communication Plans for dissemination of information to the public routinely and in emergencies.
- Serves as the central point of contact with the national print and broadcast media.

Communications & Speechwriters

- Interfaces with senior Departmental officials on a regular basis to remain abreast of policy developments and program progress across all of the Department's organizational units. Develops ideas, themes, and strategies for integrating information on various energy-related program efforts and initiatives and how and when it should be presented to the general public or specific stakeholders.
- Develops the conception, development and production of speeches, talking points, storyboards, by-line articles, magazine and trade journal articles for the Secretary to define, explain and promote Department policies and programs.
- Monitors daily and weekly media publications to determine level of editorial response and serves as key advisors to the Director on methods of responses.
- In conjunction with the press activities, develops ideas, themes, and strategies for offering information on various program efforts and initiatives to national as well as regional and local media through editorial outreach efforts.

Public Information Activities

- Responds to general public inquiries about the Department and National energy policy.
- Responsible for reviewing all Departmental publications, exhibits, and audiovisual products.
- Operates an open call-in and inquiries service where the general public can obtain information about the Department.
- Assembles and distributes to the senior staff the daily newspaper and weekly magazine clippings concerning the Department's mission and activities.
- Coordinates public events and programs and assists other Departmental elements by developing information materials and publicizing the events.

Organizational recent accomplishments and strengths

PA issues numerous media advisories and press releases each week as well as conducts a number of interviews with Department officials for trade and national media outlets. PA has initiated broad communications strategies between several agencies, the White House, and DOE field/lab public affairs offices on current news topics and garnered numerous media hits.

PA maintains positive relations and ongoing dialogue with key media personnel as well as with the general public. This allows PA to provide the Secretary and senior Departmental officials with factual information and insight into key media/public occurrences as well as public views and preferences.

Leadership challenges

After the new Administration begins in January 2009, PA will need to reevaluate its main message points to align them with the new Administration's goals and priorities.

Key strategies and timing

PA maintains a series of DOE-centric data bases, including DOE News clips and Bulletin News Network which are distributed throughout DOE.

PA develops, in coordination with the Secretary's office, an Outreach and Communications Strategy for members of the media and public inquiries.

PA is responsible for daily press briefings with the Secretary and Deputy Secretary to keep them abreast of news stories (wires, broadcast, and print media) impacting the Agency.

PA manages development and coordination of Secretarial briefing process (books and oral prep) for Media Events.

Critical events and action items

3-month events

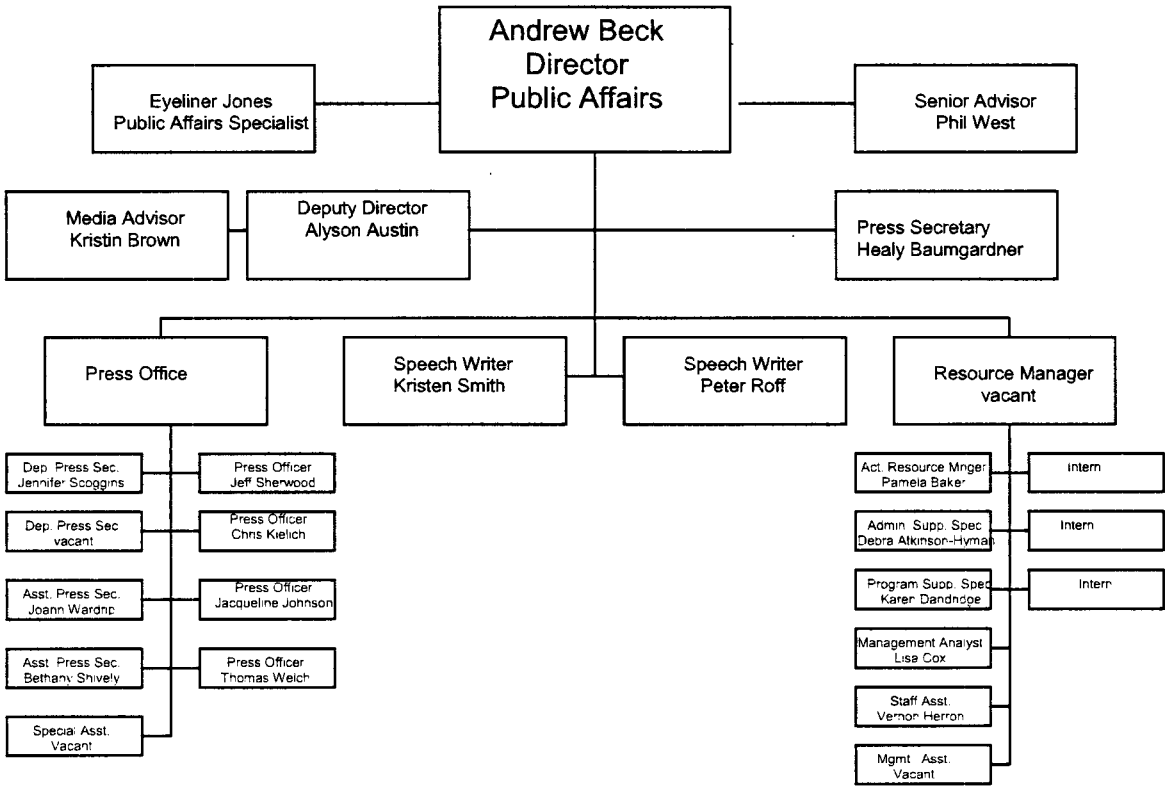
February 2009 – Budget Rollout: PA will be responsible for coordinating with the Office of Congressional & Intergovernmental Affairs on upcoming Congressional testimony and budget briefings to the news media.

12-month events

- Global Nuclear Energy Partnership (GNEP)
- Loan Guarantee Program
- Challenge X Awards
- National Science Bowl Awards
- National Interest Electric Transmission Corridors designation
- 2008 Congestion Study rollout

Funding profile

PA	FY 2008 Current Appropriation	FY 2009 Congressional Request
	3860	3780


Andrew Beck
Director
Public Affairs
Eyeliner Jones
Public Affairs Specialist
Senior Advisor
Phil West
Media Advisor
Kristin Brown
Deputy Director
Alyson Austin
Press Secretary
Healy Baumgardner
Press Office
Speech Writer
Kristen Smith
Speech Writer
Peter Roff
Resource Manager
vacant
Dep. Press Sec.
Jennifer Scoggins
Press Officer
Jeff Sherwood
Dep. Press Sec
vacant
Press Officer
Chris Kielich
Asst. Press Sec.
Joann Wardrip
Press Officer
Jacqueline Johnson
Asst. Press Sec.
Bethany Shively
Press Officer
Thomas Welch
Special Asst.
Vacant
Act. Resource Mnger
Pamela Baker
Intern
Admin. Supp. Spec
Debra Atkinson-Hyman
Intern
Program Supp. Spec
Karen Dandridge
Intern
Management Analyst
Lisa Cox
Staff Asst.
Vernon Herron
Mgmt. Asst.
Vacant