



U.S. Department of Energy

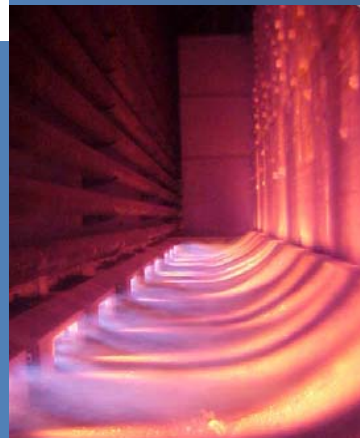
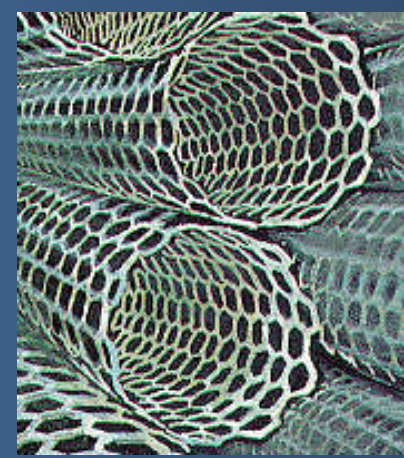
Energy Efficiency and Renewable Energy

Bringing you a prosperous future where energy
is clean, abundant, reliable, and affordable

Save ENERGY Now

Energy Assessments: What are the Benefits
to Small and Medium Facilities?

**Bill Prymak, US Department of Energy
Golden Field Office
February 19, 2009**



Energy Assessments: What are the Benefits to Small and Medium Facilities?

Webcast Agenda

- Overview of Industrial Assessment Center (IAC) Program
 - Bill Prymak, US Department of Energy
- Facility Assessment Process
 - Don Kasten, Rutgers University
- Demonstration of IAC Website
 - Don Kasten/Michael B. Muller, Rutgers University
- Q&A



DOE Industrial Technologies

Goal:

Drive a 25% reduction in industrial energy intensity by 2017.

Save
ENERGY
Now



ITP Directly Supports DOE Strategic Goals

DOE Goals include

- Promote America's energy security
- Increase energy diversity
- Reduce environmental impacts of energy
- Increase energy productivity



EERE Goals include

- Dramatically reduce, or even end, dependence on foreign oil (Goal 1)
- Increase the efficiency/ reduce the energy intensity of industry (Goal 6)



ITP Goal

Drive a 25% reduction in U.S. industrial energy intensity by 2017 in support of the Energy Policy Act of 2005 (EPAct 2005)

Technology Delivery Program supports ITP Goal

Help plants save energy today by assessing opportunities and facilitating adoption of best energy management practices and efficient new technologies



Industrial Technologies: Save Energy Now

Save
ENERGY
Now



Technology
Research &
Development



Technology Delivery

- Energy Management
- **Plant Assessments**
- Software Tools
- Training
- Plant Certification
- Info & Resources



ITP Technology Delivery Products and Services

Tools

- Baselineing
- Software Decision Tools
- Energy Management

Facilitation

- Visions & Roadmaps
- Supply Chain Partnerships
- Utility Services to Industrial Customers
- State/Regional Partnerships

Training

- Tool Awareness
- End-user
- Qualified Specialist
- Special Topics

Information

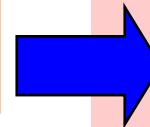
- Website
- Information Center
- Tech. Info.
- On-Line Databases

Standards

- ISO 50001
- ANSI/Plant Certification

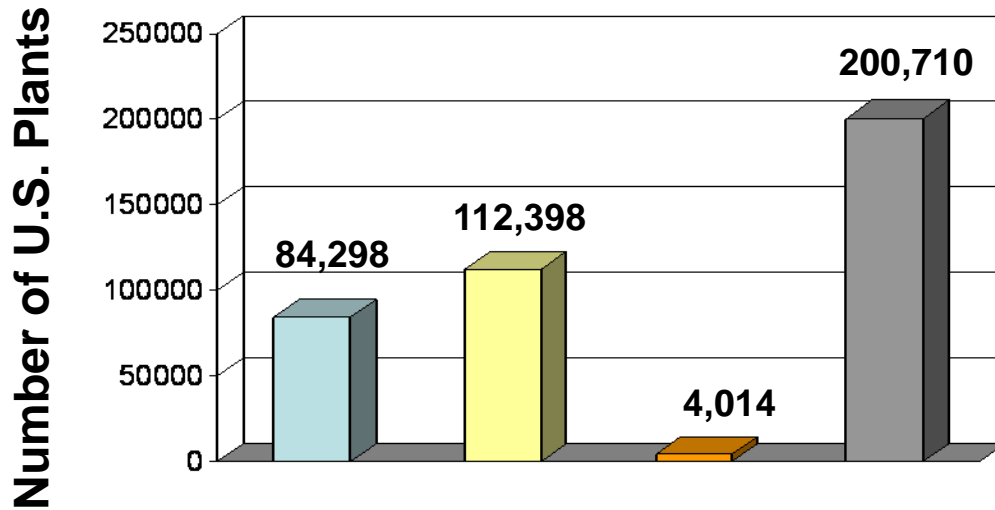
Assessments

- Large Plant Energy Savings Assessments
- **Industrial Assessment Center 1-day audits**
- Partner-led Assessments States, Utilities, etc.



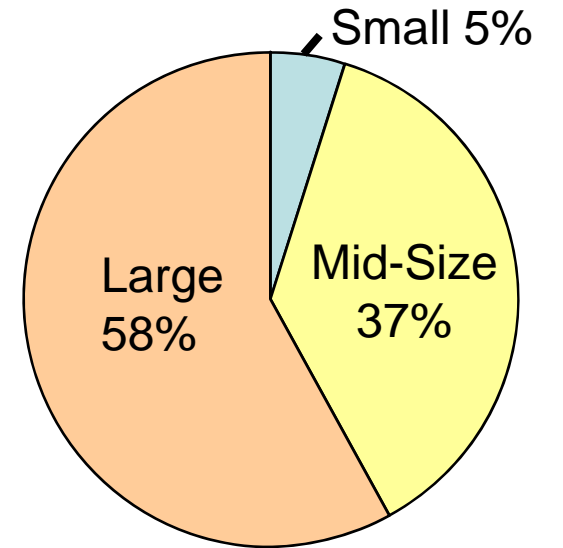
U.S. Manufacturing Sector Energy Use

U.S. Manufacturing Plants: By Size



	Small Plants	Mid-Size Plants	Large Plants	All Plants
Annual Energy Consumption (Billion Btu/yr)	<25	26-500	>500	
Annual Energy Consumption (\$/yr est.)	<\$100K	\$100K-\$3M	>\$3M	

Percent of Total Manufacturing Energy



2002 EIA MECS

Over 196,000 plants use 42% of U.S. manufacturing energy



Plant Energy Assessments

Industrial Assessment Centers

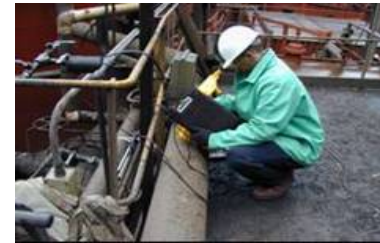
➤ *Small/Medium Plant Assessments*



- *Plants with energy consumption \$100,000 to \$2 million; < 0.3 TBtu*
- *Over 14,000 assessments completed*
- *Conducted by Industrial Assessment Centers at 26 universities*
- *150+ students trained each year; ~ 60% of graduates make careers in energy field*
- ***New savings identified – 25.5 TBtu/yr, \$185M/yr (2006 - 2008)***

Energy Savings Assessments

➤ *Large Plant Assessments*



- *Plants with energy consumption > 0.3 TBtu*
- *Over 625 ESAs completed since 2006*
- *Targeted single system assessments in 5 areas*
- *Average identified energy savings per plant: 8%*
- *Contract with over 70 energy experts*
- ***New savings identified – 100 TBtu/yr, \$827M/yr (2006 – 2008)*** 8



Large Plant Energy Savings Assessments

- **FREE** 3-day assessment focused on large plants (>0.3 TBtus annual total energy consumption) - complement to the IAC program, which focuses on small to medium sized plants
- Conducted by DOE Energy Experts and plant personnel
- Help plants quantify immediate opportunities for energy and cost savings through targeted system assessments (steam, process heat, compressed air, pumps, fans)
- Provide valuable hands-on learning that can help plant staff gain knowledge to multiply the benefits of the assessment
- Learn more and apply online at:

<http://www1.eere.energy.gov/industry/saveenergynow/index.html>





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SEN Participants

Industrial Assessment Centers

IACs are ITP's nationwide network of energy savings teams

- **Core activities:**
 - Perform **FREE** energy, waste and productivity assessments; and
 - Train next generation of energy savvy engineers
- **Unique program:**
 - university-based;
 - internationally recognized experts;
 - motivated student workforce; and
 - continued energy service to industry through IAC alumni
- **Results (average identified savings per assessment per year):**
 - **\$135K energy savings + \$85K productivity improvements = \$220K**
 - **23.5 BBtu Energy (or about 10%)**
 - **1.3 K metric tons CO₂**



Bottom line: wealth of knowledge and experience – motivated people with diverse capabilities that can provide ongoing to support



Industrial Assessment Centers 2006-2011



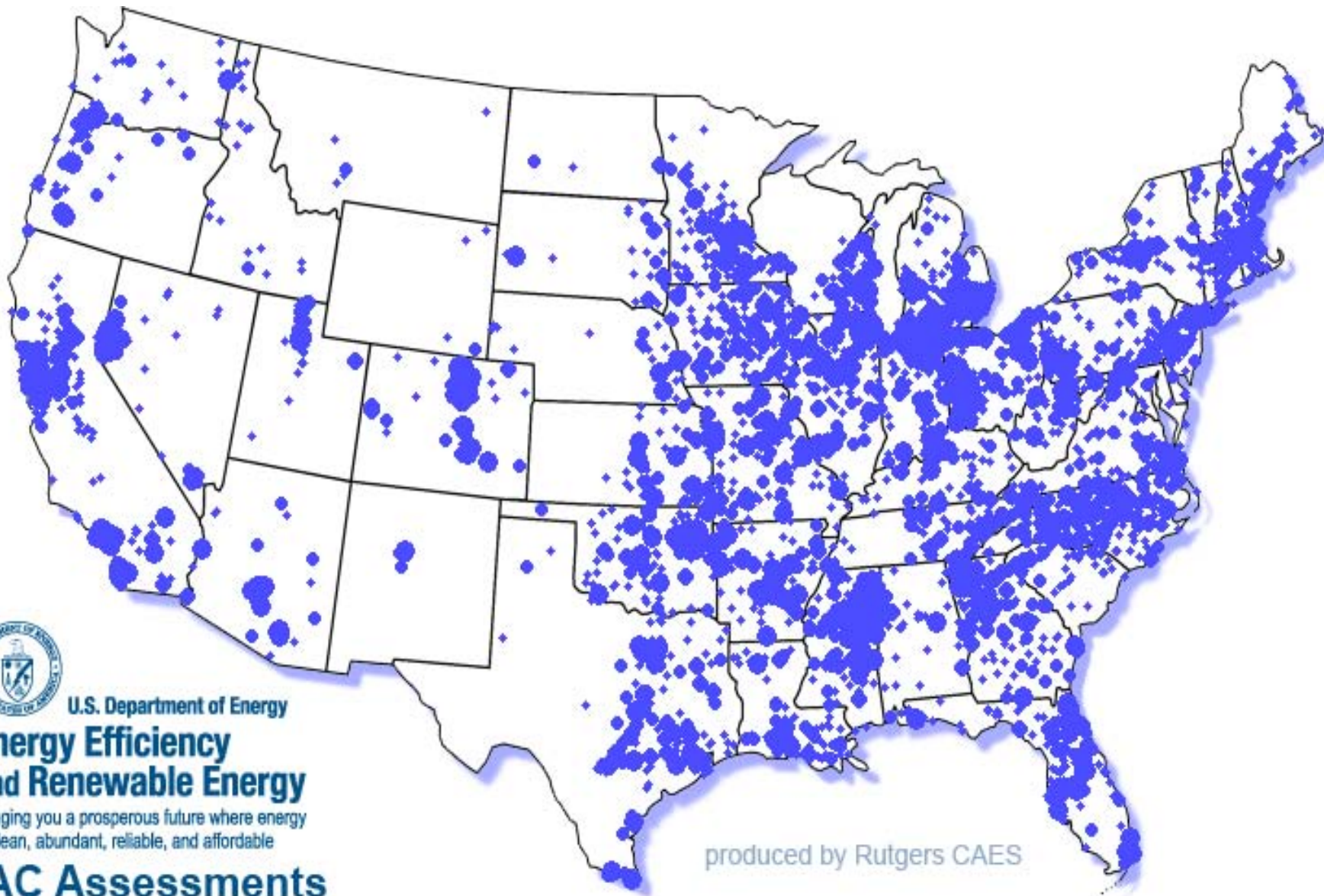
Field Managers
 THE STATE UNIVERSITY OF NEW JERSEY
RUTGERS
CAES
 CENTER FOR ADVANCED ENERGY SYSTEMS
www.iac.rutgers.edu



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IAC Assessments

produced by Rutgers CAES



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Current IAC “Structure”

- DOE: Program and project management
- Technical Field Manager: Currently located at Rutgers University Provides technical oversight for all 26 operating Centers, maintains the IAC database, case studies and other relevant tools
- IAC Centers: Currently 26 located at ABET accredited engineering departments in universities around the country – Competitively selected every 5 years (next in 2011)
- ORNL: Metrics, analysis and student/alumni activities



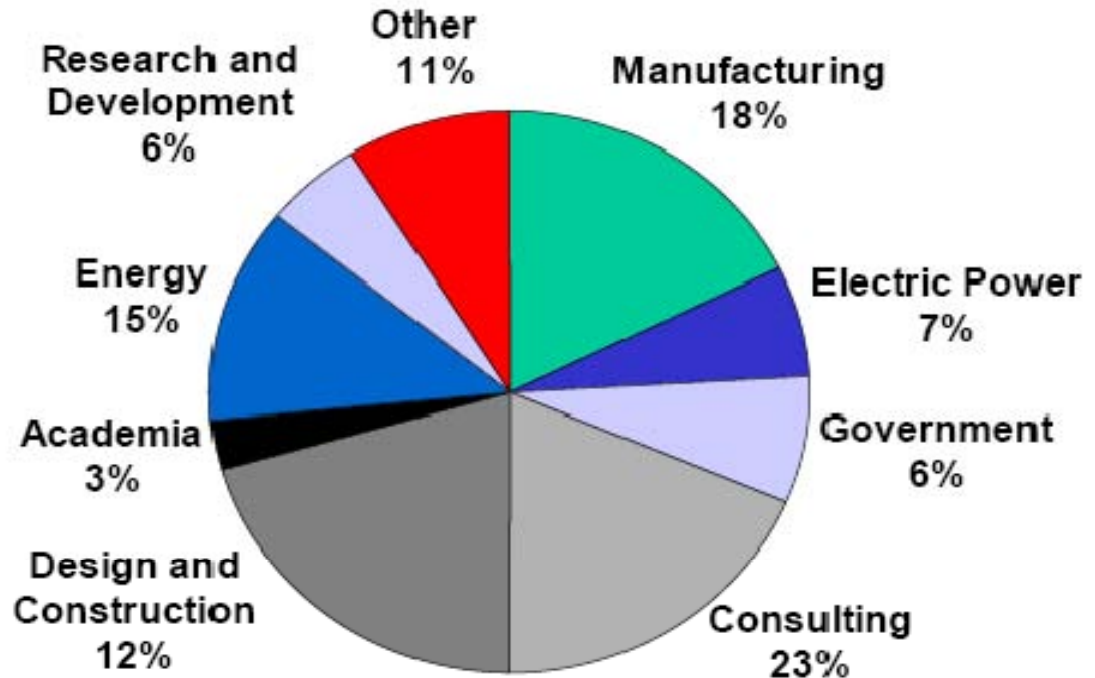
Green Workforce

***2,500 alumni since 1977
with 56% now working in
energy related positions!***

IAC Student Website

- Information on IAC Program
- Links to energy related websites
- Post job openings
- <http://www.iacforum.org/iac/app>

IAC Alumni Employment by Sector



MEPs and the IACs

Ongoing collaboration with the National Institute of Standards and Technology's Manufacturing Extension Partnership (MEP)

- Began with Memorandum of Understanding signed in February 2007
- Goal: Formally establish collaborative efforts to support energy efficiency in the U.S. manufacturing industrial base
- ITP's IAC program took the lead in these collaborative efforts:
 - 13 internships funded (IAC students at local MEPs)
 - 90 joint industrial assessments
 - All 26 Centers contacted their local MEP to provide training and DOE resources (information packet with tools and publications)
 - Ongoing collaboration efforts at several IACs due to win-win nature of the partnership
- MEPs are tracking number of “touches” with DOE resources (the latest report from NIST indicated nearly 4,000 in FY2007)



IACs - Looking Ahead

- IAC assessment program will with focus on high quality results and student training
- Continue to provide workshops, training, software testing, and implementation of new initiatives
- Expand reach of the IACs to all 50 States with additional funding and centers
- Continue to expand IAC partnerships with MEPs and industry



IACs – How to Contact

- http://www1.eere.energy.gov/industry/bestpractices/iac_eligibility.html
- DOE – Bill Prymak, 303-275-4931, bill.prymak@go.doe.gov
- IAC Field Manager - <http://www.iac.rutgers.edu/>

