State Energy Advisory Board
Meeting Minutes: November 2 - 4, 2010
Washington, DC

MEETING ATTENDEES

Designated Federal Officer (DFO):

- Gary Burch, STEAB DFO, Senior Management Technical Advisor, Intergovernmental Projects, Golden Field Office, Denver, Colorado

STEAB ATTENDANCE		
BOARD MEMBERS	Present	Absent
Susan S. Brown, Deputy Administrator, Wisconsin Division of Energy	✓	
Dan Carol, Strategic Advisor/Organizational Consultant	✓	
William Vaughn Clark, Director, Office of Community Development, Oklahoma Department of Commerce		✓
John H. Davies, Director, Division of Renewable Energy and Energy Efficiency, Kentucky Office of Energy Policy	✓	
Cris Eugster, Executive Vice President and Chief Sustainability Officer, CPS Energy	✓	
David Gipson, Director, Energy Services Division, Georgia Environmental Facilities Authority	✓	
Philip Giudice, Commissioner, Massachusetts Department of Energy Resources	✓	
Ryan Gooch, Energy Policy Director, Tennessee Economic and Community Development		✓
Paul Gutierrez, Vice Provost for Outreach Services, Associate Dean and Director, Cooperative Extension Service, College of Agriculture and Home Economics, New Mexico State University	✓	
Duane Hauck, Director, Extension Services, North Dakota State University	✓	
Cecelia Johnson-Powell, Community Development Manager, Indiana Housing and Community Development Authority	✓	
Peter Johnston, Project Manager, Clean Energy Technologies, Burns & McDonnell	✓	
Maurice Kaya, Hawaii Renewable Energy Development Venture	✓	
James Nolan, Weatherization Director, Department of Public, Health and Human Services		✓
Tom Plant, Director, Colorado Governor's Energy Office	✓	
Larry Shirley, State Energy Office Director, North Carolina Department of Administration	✓	
Janet Streff, Manager, State Energy Office, Minnesota Department of Commerce	✓	
David Terry, Executive Director, ASERTTI	✓	
Steve Vincent, Regional Business Manager, Avista Utilities	✓	

Contractor Support:

- Emily Lindenberg, SENTECH, Inc.
- Bryan Pai, SENTECH, Inc.

DOE Staff

- Gil Sperling, Senior Advisor, Office of the Assistant Secretary, EERE, DOE.

Public:

- No public representatives participated in this meeting.

WELCOME & INTRODUCTION

The November 2010 STEAB meeting commenced at 9:00 a.m. ET on Tuesday, November 2, 2010.
Janet Streff (JS) Board Chair, welcomed members to the meeting and thanked them for traveling to Washington, DC, for the first meeting of the STEAB during fiscal year 2011.

SPEAKERS

No formal presentations were made during this meeting; however, speakers from the Department of Energy (DOE), many specifically from the Office of Energy Efficiency and Renewable Energy (EERE), were invited to provide updates and insight with regard to specific areas of interest to the Board.

- **"Opening Remarks and Overview of DOE Technology Transfer Initiatives"**
  Dr. Karina Edmonds, Technology Transfer Coordinator, DOE.
- **"EERE Overview and Status of EE Programs"**
  Dr. Kathleen Hogan, Deputy Assistant Secretary for Energy Efficiency, EERE, DOE.
- **"Update from OWIP on Issues Relating to States"**
  LeAnn Oliver, Program Manager, OWIP, EERE, DOE.
- **"Update on EECBG Sub-Committee"**
  Mark Johnson, Chair, EECBG Sub-Committee, OWIP, EERE, DOE.
- **"Update on Technical Assistance Program (TAP)"**
  Molly Lunn, Program Analyst, OWIP, EERE, DOE.
- **"The New EERE 'Super FACA' "**
  Dr. JoAnn Milliken, Senior Advisor for Research Policy, EERE, DOE.
- **"Commercialization Update"**
  Wendolyn Holland, Senior Advisor, Commercialization, EERE, DOE.
- **"Update from the Biomass Program"**
  Dr. Paul Bryan, Program Manager, Biomass, EERE, DOE.
- **"Update from the Buildings Technology Program (BTP)"**
  Saralyn Bunch, Supervisor, Building Codes Group, BTP, EERE, DOE.
- **"Update from the Industrial Technologies Program (ITP)"**
  Isaac S. Chan, Acting Program Manager, ITP, EERE, DOE.
- **"Update from the Solar Program"**
  John M. Lushetsky, Program Manager, Solar Energy Technology Program, EERE, DOE.
- **"Update from the Wind &Water Program"**
  Jacques Beaudry-Losique, Program Manager, Wind and Hydropower Technologies Program, EERE, DOE.
- **"Update on the SBIR/STTR Program"**
  Dave Goodwin, Physical Scientist, SBIR/STTR Program, DOE.

OPENING REMARKS AND OVERVIEW OF DOE TECHNOLOGY TRANSFER INITIATIVES

- Janet Streff (JS), the STEAB Chair, welcomed the Board to the November meeting in Washington, DC and thanked them all for coming. She then introduced Dr. Karina Edmonds, the Department of Energy (DOE) Technology Transfer Coordinator, and turned the floor over to Dr. Edmonds.
- Dr. Edmonds thanked the STEAB for inviting her to come and speak[1]. She joined DOE in April in the position which was created by Congress in 2005. Her responsibilities are to accelerate technology transfer within DOE, assist with streamlining partnerships, work to create clean energy jobs, and act as a point-of-contact at headquarters for all tech transfer needs. Currently, DOE has two groups which deal with tech transfer: one, representatives from the National Labs in the Tech Transfer Working Group; and two, the Technology Transfer Policy Board. Dr. Edmonds liaises with both groups. Her vision is to encourage the public to gain familiarity with the Labs in their States in order to create an innovative infrastructure that provides a framework for exchange of information, and connects stakeholders and accelerate tech transfer from the Labs to the Commercial Sector. To do this well, she is trying to engage scientists directly in the transfer of their technology and help them recognize the value of the commercialization.
- Dr. Edmonds indicated to the STEAB that the "Priorities Through 2012" document she had previously received were parallel to her goals for her position. She asked the Board to encourage their States and agencies to be early adopters of technology from the Labs and to help create market pull though early implementation. With each STEAB member having contact with State Programs and offices, there is an opportunity to facilitate outreach directly and help the States understand what is available to them. She noted that market pull is the

[1] Dr. Edmonds presentation can be found as Appendix A directly following these meeting minutes.

biggest challenge she is facing, but they are using a Technology Portal as a resource to highlight new and emerging technologies in order to help create this pull.

- Tom Plant (TP) asked Dr. Edmonds about the Technology Transfer Fund and asked if it was something which currently existed and if so, what the funds were targeted for? The response was that the fund is in the process of being created and DOE's focus is to make the funding available in order to then extend the EERE Commercialization Fund and providing matching funds to Labs which engage in deployment activities. Cris Eugster (CE) asked about the types of performance metrics which DOE would use to track the success of technology transfer. Dr. Edmonds responded that they will be tracking invention disclosures, the number of new licenses, the amount of royalties, and other similar metrics.
- JS thanked Dr. Edmonds for her time and due to the addition of new members to the STEAB, and several DOE visitors, asked the Board to introduce themselves and briefly state their background and goals for the meeting.

EERE Overview and Status of EE Programs

- Dr. Kathleen Hogan, Deputy Assistant Secretary for Energy Efficiency, spoke to the STEAB about the current activities of the office of EERE, focusing specifically on the Energy Efficiency Program areas[2]. Currently, accelerating the usage and breadth of appliance standards, increasing the adoption and compliance with energy codes, and working with EPA to strengthen the Energy Star Program are all a priority. EERE has had great success with instituting appliance standards, and 11 new standards are being put into place by June of 2011. When these are in place, standards will cover 30% of all energy devices; and the office is looking at compiling a database which will contain all of the energy savings appliances as well as their corresponding standards.
- EERE is also working with the EPA to improve the Energy Star Program and create new products, increase third-party testing, and assist with better enforcement of the standards. With regard to building codes, EERE is working to increase code stringency, improve training, and enforce a 90% compliance rate. In the arena of retro-fits, EERE has a new goal of between 5 and 10 million homes retrofitted each year in the residential sector, and 4 billion commercial square feet a year. In some cases, Dr. Hogan noted that better training is needed for those who perform the retro-fits, and better consumer information needs to be made available via more effective delivery modes. Trying to address these needs, there is the National Laboratory Collaborative on Building Technologies, which is a group of 5 labs which are collaborating on research and development in an effort to meet the priorities critical to DOE's Commercial Building Initiative (CBI).
- Another initiative on the policy side, EERE has the SEE Action Network. This group is helping the Federal government achieve cost-effective energy efficiency by 2020 by focusing on State and local governments which are in need of assistance to advance policies and practices which can bring energy efficiency to scale. There currently are 8 working groups, and they focus on things like residential EE, commercial EE, building codes, appliance standards, and other areas. The working groups are putting together blueprints for DOE which will show the areas which need the most investment in order to achieve the aggressive EE goals previously set. Dr. Hogan concluded her presentation by noting that financing and consumer engagement, as well as convincing Congress and regulators that energy efficiency works and is important to the country, are vital to the successful implementation of EE and RE technologies in the United States.
- CE asked how SmartGrid standards play into the activities of EERE, if at all. Dr. Hogan responded by saying that SmarkGrid standards are under the purview of the Office of Electricity (OE), but EERE is involved in the process and there is a SmartGrid working group within the SEE Action Network. David Terry (DT) commented that it was good to hear how EERE was focusing on bringing EE to the residential side at many levels, but noted that there still are a lot of angles to leverage. John Davies (JD) asked about American Recovery and Reinvestment Act (ARRA) funding. Now that DOE is in the implementation and deployment phase, what is the plan for April of 2012 when the money is gone, and is there planning underway to make it a 'soft-fall?' Dr. Hogan answered by noting everyone in the government is asking that question. Right now, DOE is reviewing the data collected and is trying to lay the groundwork with States and other grantees so that sound investments of the final ARRA money can be spent well to maintain momentum. DOE is also reviewing best practices from the ARRA roll-out to try and leverage what resources are left. Dan Carol (DC) informed Dr. Hogan that the STEAB is focused on a bottom-up approach to innovation and job creation, with an emphasis on consumer education about EE and RE, and asked about DOE's perspective on working with governors and other local agencies or utilities. Specifically, he was hoping to understand how DOE may engage directly with these groups, and offered the STEAB's assistance to do so. Dr. Hogan said this outreach

[2] Dr. Hogan's presentation can be found as Appendix B directly following these meeting minutes.

would be helpful in order to bring in information about building codes, appliance standards, etc, and that DOE is also looking to take steps to more effectively engage with the constituency.

UPDATE FROM OWIP ON ISSUES RELATING TO STATES

- LeAnn Oliver, Program Manager of the Office of Weatherization and Intergovernmental Program (OWIP), spoke next, providing the Board information on her professional background before coming to DOE and her three focus areas for OWIP moving forward. She was hired as the PM in the beginning of October, and spent most of her earlier career working in finance with the Small Business Alliance and the Loan Guarantee Program, and just before coming to DOE, she was the Deputy Administrator for Cooperatives at USDA. Acknowledging the challenges ARRA has placed on EERE and OWIP, she mentioned some of the areas of most concern are staffing issues, scale issues, and the ability to spend the money both quickly and as effectively as possible. Her goal for OWIP is to have spent 50% of the allocated ARRA funds by June of 2011.
- She then spoke about her three main focus areas moving forward. The first is to ensure there is an organizational structure in place to continue supporting the $11 billion in funding allocated to OWIP by ARRA in a reasonable manner which includes data collection, effective oversight, and tracking of costed funds. The second area of focus is looking towards OWIP and its Programs post-ARRA. This includes reviewing what was spent, on what, which Programs can continue being effective with other financing options, what are the best-practices, and what are lessons-learned for the future. The final area correlates to Dr. Hogan's presentation, and deals with supporting the development of the retro-fit industry, and in turn, increasing "green" job creation. Ms. Oliver is anxious to better understand the implications of "green" job creation and hopes to learn ways to improve training programs and make connections between these "green" jobs and an improvement to the local economy.
- Ms. Oliver then opened up to questions from the Board. Maurice Kaya (MK) commented that in the past, OWIP used to host forums for the States to meet with PMs from EERE and discuss best-practices and challenges in their States. This was done regionally, but over the last several years these have gone away. They were an effective way to focus on Programs and highlight technologies, and perhaps these would be helpful to bring back now in an effort to address the States' concerns about post-ARRA funding. Ms. Oliver said the idea is definitely worth considering, but she knows that funding for these types of forums are always an issue with DOE.
- Duane Hauck (DH) followed-up on DC's comment about bottom-up change, noting the infrastructure needed to address EE and RE deployment is a massive undertaking. Instead of trying to start from scratch, perhaps OWIP can look at what exists in each State and community now, and utilize the existing capabilities. This would also encourage DOE to reach out to States and local utilities, engaging the Department in a way which brings all vital stake-holders to the table for discussion. Ms. Oliver stated DOE is working to convene a meeting to discuss exactly this issue and to talk about the policy issues which need to be addressed in order to move the discussion and implementation forward. She noted that just getting the players into the room is the first step in what will be a long process. JD continued this comment by noting EE and RE should be understood by DOE to be local issues; and until the market is transformed and consumers understand the value added by these technologies, change will be a long and tedious process. JS agreed with JD, saying DOE cannot just 'push' information onto consumers but need to 'pull' the public into the conversations about EE and RE in this country in order to make sure there is buy-in at the local level, which will then precipitate change from the bottom-up. Ms. Oliver whole-heartedly agreed with this by emphasizing energy education is a major issue facing the US.
- Susan Brown (SB) highlighted the difficulty of putting Federal dollars towards new and innovative ideas. She expressed her concern that DOE does not recognize how frustrating it is to spend money as quickly as DOE would like for the newer programs created by ARRA. Ms. Oliver addressed this issue by saying grantees are consistently asked for data from these new programs in order to prove their validity or their failure in an effort to advocate for the continuation of certain new programs. DOE needs the data to ensure successful new programs remain so, post-ARRA. Ms. Oliver the concluded her presentation and thanked the STEAB for hosting her as a speaker.

UPDATE ON THE EECBG SUB-COMMITTEE

- Mark Johnson, Chair of the Energy Efficiency and Conservation Block Grand (EEBCG) Sub-Committee, spoke to the STEAB about the recommendations the Sub-Committee has compiled since the August meeting[3]. All of

[3] The EECBG recommendations can be found as Appendix C directly following these meeting minutes.

the recommendations on the list have been brought to the attention of OWIP, and the responses listed next to the recommendations are the responses from DOE. Overall, the biggest failure of the Program for the last year-and-a-half was the guidance provided to the grantees. All guidance was new, as was the Program, and when things hit a bump, all of the answers and information from DOE took too long to get to the grantees. The biggest success of the EECBG Program has been the 2,430 grantees who received funding. This created grassroots indoctrination which DOE is confident will continue despite the end of funding. Many of the grantees funded pilot programs or case studies, and ultimately DOE hopes the success of those efforts will encourage private funding to roll-out larger efforts moving forward.

- DOE hopes to continue the EECBG Program, or at least use these "proof-of-concept" projects to encourage momentum with projects already underway. In order to showcase the successes and discuss challenges and best-practices, DOE has convened meetings with grantees, State Energy Program (SEP) officials, and EECBG Project Officers in order to encourage a dialogue. These are one-day events and typically have between 80 and 100 people in attendance. It was at one of these discussions that the issue of guidance came up for discussion. Through the suggestions and criticisms made at this meeting, DOE began making changes and States noticed the guidance from DOE improved. Mr. Johnson went on to say that these workshops with States and DOE look beyond just the implementation issues, and aid in relationship building, stake-holder buy-in, and connecting SEP with the workforce in a way that DOE feels is making lasting changes. He concluded his presentation by noting that many cities have begun working with other government agencies in a way that could encourage additional funding for projects. Right now, in order to sustain the successful programs, more education and knowledge sharing is needed between DOE, the grantees, and the public about the benefits of these projects.
- JS thanked Mr. Johnson for his comments, and asked the STEAB to officially approve the report of Recommendations submitted by the EECBG Sub-Committee. Larry Shirley (LS) moved to adopt, and CE seconded. JS asked if there was additional discussion, and seeing as there was none, the Board voted and unanimously agreed to adopt these Recommendations on November 2, 2010.

UPDATE ON THE TECHNICAL ASSISTANCE PROGRAM (TAP)

- Molly Lunn was the next speaker, and provided the Board with an overview on the background of TAP, the current activities as well as what the Program is looking to do moving towards the future[4]. TAP was designed to provide technical assistance to State and local officials and was administered by OWIP and managed by the National Renewable Energy Lab (NREL). The average commitment used to be one week by lab personnel with annual funding of about $5,000 to each awardee. Today, TAP works to implement successful and sustainable clean energy programs, and its current main focus is on the ARRA initiatives with Block Grants and SEP in order to make sure there is a return on investment. The network of technical experts has expanded to 250 providers and reaches across more National Labs and other organizations. Access to TAP experts is done via an online request to the Technical Assistance Center, or through use of the Solution Center. The Solution Center is an online tool which launched right after ARRA, but will be sustained beyond just recovery funding, and includes best-practices, case studies, offers webinars, and includes a comprehensive project map.
- Currently, TAP provides assistance to the following major areas: revolving loan fund questions, on-build financing, EE and RE technology, Program design, and financing. Though TAP will continue after ARRA funding is gone, it will need to ramp-down. Ms. Lunn asked the Board to go back to their States and ask, are OWIP and EERE providing the type of technical assistance that States and localities really need, and if so, are we doing it in the most effective way?
- DC offered two suggestions to Ms. Lunn with regards to this question, by stating that with the end of Cap and Trade and the Climate Bill, non-profits are looking at TAP as something which is vital to keeping EE and RE programs moving forward. Has TAP considered partnering with non-profits, Universities, etc in order to find new funding and work together to sustain current programs? Secondly, he suggested as TAP ramps-down, to look at other avenues already providing a similar type of assistance -- i.e., the Extension Service, Small Business Administration, etc. Perhaps there are ways to partner with these groups to reach past just stake-holders and State officials and reach individuals and smaller programs at the community level. Ms. Lunn thought both of these suggestions were worth reviewing with her team and thanked the group for their strategic thinking.

[4] Ms. Lunn's presentation can be found as Appendix D immediately following the minutes.

THE NEW EERE "SUPER FACA"

- Dr. JoAnn Milliken, Senior Advisor for Research Policy, and the DFO of the new Efficiency and Renewables Advisory Committee (ERAC) was the next speaker[5]. The ERAC reports directly to the Secretary of Energy, is made up of 20 members and provides advice on the plans, priorities, and strategies of EERE, funding for EERE Program areas, and can make recommendations related to funding directly to the Assistant Secretary for EERE. The Committee will have sub-committees which will focus on those EERE Programs which do not already have Advisory Committees, although the ERAC sub-committees may also be cross-cutting and incorporate more than one EERE Program area. The first meeting will be on November 30, 2010, in Washington, DC; and more information about the ERAC can be found on the website at www.erac.energy.gov .
- Dr. Milliken continued her presentation by discussing the ways the ERAC differs from the STEAB. STEAB focuses on technology transfer and State interaction, deployment activities, and provides a link between the States and EERE. ERAC focuses on research and development and the overall EERE deployment portfolio, tech development, R&D integration, and advises on funding and policy, as well as strategies to maintain a balance between the competing Program elements within EERE. LS asked what the impetus was for the creation of this group, wondering specifically if there were needs not being met by the STEAB, and if so, what could the Board do to provide better council to the Assistant Secretary on these issues? Dr. Milliken answered by stating that the STEAB's language in the Charter did not specifically speak to R&D and technology or financial policy. There was a need to have a broader focus on the technology and R&D portfolio, as well as to make sure that all EERE Programs had some type of Advisory Committee; whether that was their own FACA or representation on a sub-committee to the ERAC.
- DC commented that STEAB is focused on green-job creation, as noted in the "Priorities Through 2012" document, but wanted DOE to be more transparent about where the Department thinks States should be or could be with regards to job creation and infrastructure development. The more information States have about where DOE 'thinks' they should be, the more effective States will be about trying to get to those benchmarks. The STEAB can help facilitate this dissemination of information as the Board is, as Dr. Milliken noted earlier, State-centric. There was a positive response from Dr. Milliken and she noted this would be an issue raised at the ERAC meeting; and as all Advisory Committee meetings are open to the public, anyone from the States was free to attend. She suggested that anyone with an interest in coming to the meeting should review the details on the ERAC website.

COMMERCIALIZATION UPDATE

- The next presenter was Ms. Wendolyn Holland, Senior Advisor for Commercialization[6]. She provided the Board with an overview of the Commercialization activities within the EERE portfolio, mentioning that she works very closely with Dr. Edmonds on a daily basis. The initiatives are the Entrepreneur in Residence (EIR), Energy Innovation Portal, Innovation Ecosystem Development Initiative, and the Technology Commercialization Fund.
- The Technology Commercialization Fund consists of 52 projects within 8 National Labs, which funds a wide range of EE and RE technologies for R&D, as well as commercialization. The EIR program ran for 2 years but was not re-funded by DOE; however, Ms. Holland mentioned she is working on trying to get funding for EIR again in FY 12. She did note that some Labs began their own programs modeled after EIR, and they are partnering with local businesses and venture capitalists in order to gain technical expertise as well as an entry point into the marketplace. The new Energy Innovation Portal is essentially a one-stop shop for all EERE technologies available in the National Lab system for licensing. The portal is web-based and contains summaries of the technologies as well as marketing summaries. Though the site is still developing, it appears very promising so far as EERE is tracking success by analyzing new patent and trademark filings. The Innovation Ecosystem Development Initiative was a new open solicitation in an effort to define clusters of innovation which would create an environment of collaboration between Universities, private investors, etc., which would result in both the creation of a new EE or RE technology, as well as the commercialization of that technology via the cluster.
- MK asked Ms. Holland if there were plans to expand the idea of the Innovation Ecosystem and hold another open solicitation? Ms. Holland said that the previous awards were supposed to go to only 3 clusters; but

[5] Dr. Milliken's presentation can be found directly following the meeting minutes as Appendix E.
[6] Ms. Holland's presentation can be found directly following the meeting minutes as Appendix F.

because the offer was so popular, DOE made 5 awards. There has been additional interest expressed, and she has requested funding for another solicitation in FY 2011. SV asked Ms. Holland how EERE is helping private investors bridge the "valley of death" in commercialization, if at all? The response outlined how the Labs own the technologies they create and therefore must make the connections to the marketplace, while being cautious about profit-seeking and maintaining the necessary levels of "appropriateness." It is a tricky business, which is why the Technology Portal will be so vital to helping market the Lab technologies.

- Dr. Milliken added a few comments to the presentation by noting how several years ago, all of the DOE Programs added market transformation activates to their portfolios in order to address the issues of market barriers and identify the challenges of Commercialization. Though there is not a lot of money allocated to these activities, the conversations are happening and there are people at all levels within DOE who are trying to address these challenges.
- JS thanked Ms. Holland and Dr. Milliken for their insight into EERE's Commercialization and asked that they please let the STEAB know if there are ways for the Board to assist the increasing the visibility of the Portal or with other efforts.

TASK FORCES

- The conversation then turned to the five STEAB Task Forces, and JS asked for each Task Force to provide an update on recent activities. The Agenda Task Force began the discussion and GB reminded the Board that the Task Force had compiled the list of questions for speakers to address during the November meeting, and this process will continue moving forward to ensure that presentations to the group remain relevant to the Board's activities.
- David Terry (DT) gave a brief review of the Climate Change and Energy Bill Task Force, noting the group had held several conference calls to discuss the scope-of-work. They had pulled materials together for review and then abruptly had to abandon momentum due to the Cap and Trade Bill coming off the table and the Climate Bill halting progress on the Hill. He feels there is not a need for this Task Force anymore since the Bill in question is no longer moving forward. DT did suggest that perhaps the scope-of-work could alter, instead of abandoning the Task Force altogether, and maybe the new charge would be to look at climate areas of interest and emissions issues facing States, and look at the environmental impact of energy in the US with regards to water issues and coal-ash issues. GB thanked DT for his comments and mentioned a facilitator would be leading the STEAB through a discussion about "next steps" for Task Forces, and this issue would be raised again during that portion of the meeting.
- Philip Giudice (PGD) provided an update on the Deployment Task Force, noting that the group had not made a lot of progress since the June meeting, but he, DC, and MK would be working closely as a group moving forward to review the objectives and begin drafting a working-paper which will speak to the current EERE deployment efforts as well as the suggestion for EERE to focus on bottom-up change. MK commented that there are a lot of different efforts going on within EERE and more information needs to be gathered in order to begin a proper assessment of the current state of deployment within EERE.
- Cecelia Johnson-Powell (JCP) spoke next regarding the HUD/DOE Task Force. She briefly reviewed for the group the three objectives of the Task Force, noting the group had recruited three ad-hoc members to provide expertise and advice on the issues of low-income housing, the commercialization of weatherization to all income levels, as well as replicating existing successful programs in all US States. CJP noted that the Task Force needs to have more contact with HUD officials and be able to bring together DOE and HUD in a collaborative effort, but the group currently does not know who at HUD to reach out to. Gil Sperling interjected that Bruce Katz would be a good contact person as he brought HUD, DO and other private sector individuals together at the Brookings Institute to discuss multi-family and assisted housing and how it would relate to a recent HUD MOU. Susan Brown (SB) noted that before beginning discussions with HUD and DOE, the Task Force needs to better understand what the roles and responsibilities are of each agency as they relate to Weatherization so the Task Force knows how to proceed. CJP agreed and asked that all members of the Task Force plan on having a teleconference call in December to review these topics and create a list of next-steps.
- The final Task Force overview was that of the USDA/DOE Task Force. DH provided the update and provided a copy of the Task Force's white-paper to the group[7]. He reminded the STEAB that this Task Force operates off of Resolution 10-01, and the Task Force has held several conference calls as well as flew to Washington, DC, to meet with USDA and DOE officials to begin a dialogue about the proposed collaboration. Earlier in the

[7] A copy of the USDA/DOE Task Force white-paper can be found as Appendix G.

morning of November 2nd, the Task Force met with Ralph Otto from USDA, LeAnn Oliver from DOE, and James Wade of USDA to discuss the white-paper and open a dialogue between the two agencies. He drew the group's attention to page 2 of the document, which outlined the ultimate goal of having the two agencies establish a working group and commit Federal resources in the amount of $20 to $25 million per year for a minimum of three years. This commitment would then allow funds to be allocated through a soft-granting process where every State is eligible for grants and would have to submit a Plan-of-Work Submission compiled by both the SEO and the State Extension Service. An evaluation process by HUD and DOE would be held and the funding would then be granted based on the merits of the submission. DH reiterated the issue facing this goal is getting both agencies to first buy-into the Program and then ultimately commit funding which will be in short supply once ARRA money is gone.

- JS thanked everyone for providing these updates and mentioned how pleased she was to hear about the progress of the USDA/DOE Task Force as well as the addition of ad-hoc members to the HUD/DOE Task Force. The next agenda item was a facilitated Board discussion regarding a review of current issues and the proposed consideration of eliminating or creating Task Forces. She introduced Bryan Pai (BP) who facilitated for the Board back in June of 2010, and asked for everyone's participation during the facilitated discussion. BP thanked the STEAB for inviting him back to facilitate and asked that the group focus on Task Forces during this part of the facilitation process and asked everyone to review what has worked well for Task Forces since June of 2010. Many of the comments centered on how the Task Forces allowed the Board to concentrate on specific issues, and the structure of the Task Forces allowed members to do work outside of the full STEAB meetings and calls. Others felt the Task Forces helped bring a depth and breadth to the STEAB which the Board had not had before, and the Task Forces provided flexibility to go outside of DOE and engage with other Federal agencies and other Federal contacts.
- BP then asked the group to discuss what they felt did not work over the last several months with regard to the Task Forces. Many members expressed concern that some of the Task Forces lacked a specific goal or objective, and listed only broad areas of interest. Others felt there was a need for more Task Forces to take on issues such as post-ARRA Program funding, EERE Budget for FY 2011, more State-centric Task Forces to deal specifically with State issues relating to DOE, and still others wanted to make sure that the existing Task Forces really looked at answering questions about sustainability and transformational change, no matter the objective. There were comments about establishing an SEP Task Force to assist with the evaluation currently underway at DOE with respect to SEP and perhaps the STEAB could engage with the contractor who is conducting the evaluation. Other comments spoke to enhancing the activities and membership of existing Task Forces and perhaps assigning new responsibilities to Task Forces which have made head-way in accomplishing the objectives outlined last June.
- BP summarized the discussion by observing that the entire Board felt that Task Forces were a successful way for the STEAB to accomplish more specific tasks, and commented how it appeared as if there was a potential to create three new Task Forces; 1) Helping EERE to soft-land the ARRA funding issues; 2) a Task Force to help advertise dates of the upcoming end to ARRA funding; and 3) a Task Force to focus on recovery and the success/failures of ARRA funding. JS noted that the group may want to consider a fourth Task Force which would focus on the SEP evaluation, and the group agreed that this could be a potential fourth new Task Force.

UPDATE FROM THE BIOMASS PROGRAM

- Wednesday, November 3rd, began with a series of updates from different EERE Program areas. Dr. Paul Bryan, the new Program Manager for the Biomass Program, spoke first. He commented briefly on his background before coming to DOE, and noted the objectives for Biomass are to combat climate change by reducing greenhouse gasses and providing a safe and successful alternative to crude oil use in the United States[8]. The Program is invested in a lot of research and development and has cultivated relationships with strategic partners to address sustainability and longevity issues. Dr. Bryan also noted the Program is concerned with distribution and end-use questions and is working with the Office of Electricity as well as other EERE Programs to address these questions.

[8] A copy of Dr. Bryan's presentation can be found as Appendix H.

UPDATE FROM THE BUILDINGS TECHNOLOGIES PROGRAM (BTP)

- The next presenter was Srarlyn Bunch, Supervisor of the Building Codes Group, from the Buildings Technologies Program[9]. She began relaying statistics such as 72% of the electricity generated in the US is used for buildings, and building lighting and heating/cooling is the biggest user of industrial energy. She noted BTP follows Assistant Secretary Zoi's four planks and has structured its efforts in a way that directly affects and impacts those goals. Currently, the Program has an overall goal to reduce carbon emissions by 83% by 2050. It is using ARRA funding to increase home-owner energy savings strategies, and work on market outreach, education, communication and training. The Program also focuses on R&D and currently manages the Appliance Rebate Program, which offers 554 rebates on 24 types of appliances. Ms. Bunch noted that $265 million in rebates have been offered, and partnerships with EPA and EnergyStar® have been very successful. She concluded her presentation by reviewing how STEAB can help the Program. She asked the Board to assist with outreach efforts and strategies in a way which encourages States to adopt new energy codes and energy models for buildings, both residential and commercial.

UPDATE FROM THE INDUSTRIAL TECHNOLOGIES PROGRAM (ITP)

- Isaac Chan, Acting Program Manager for ITP, was the next presenter. He began with an overview of the budget breakdown for the Program, stating 2/3 of ITP's budget was for analysis and the remaining 1/3 was for research and development[10]. The Program has a good track record of working with industry and providing technical assistance and energy savings measures, noting the Program has produced 220 commercial technologies and 215 patents. Additionally, there is an upcoming launch of the Superior Energy Performance Program, which is a market-based accredited certification which creates a verified record of all industrial energy improvements, therefore creating a value-added for corporations looking to showcase their energy savings and carbon reduction. Another Program, the Global Superior Energy Performance Partnership (GSEP), is a global network aimed at harmonizing national training and performance standards. The presentation continued with Mr. Chan noting the Program moving forward needs to focus on leveraging public and private partnerships, inspiring a culture which places value on strong energy management, and building a technical workforce at the State and local level which can improve existing infrastructure and verify future energy savings as a result of retro-fits and upgrades. To conclude, Mr. Chan addressed the STEAB and asked for help encouraging State involvement, corporate engagement to assist with cost-sharing once ARRA funding is gone, and also promoting the Superior Energy Performance Program.

UPDATE FROM THE SOLAR ENERGY TECHNOLOGY PROGRAM

- Mr. John Lushetsky, Program Manager of the Solar Energy Technology Program, provided the next update to the Board[11]. The Solar Program handles PV, distributed generation, CSP, and other elements; and most of the funding goes to supporting technology development in the PV supply chain, CSP Laboratory facility upgrades, high-penetration PV, and other Lab needs specifically at NREL or Sandia. He went on to say that one of the biggest market transformation activities which took place under ARRA was the Solar Instructor Training Network. This is a network which established regional training centers throughout the US in places like Penn State, University of Utah in Salt Lake City, and other centers in Texas, Florida and California. This network was a joint program between the Department of Education, DOE and the Department of Labor, and brought instructors from major Universities and technical schools into a network managed by a central coordinator who then assists with disseminating best practices, certifications, and develops a uniform curriculum. He also spoke to the Board about the accomplishments of the Loan Guarantee Program, which provided $3.8 billion in awards for solar projects. In terms of where the Solar Program is going in FY 11, Mr. Lushetsky stated electricity from PV is not yet broadly competitive throughout the US, but there are improvements which will account for reduced installation costs in the coming years. Also, the new program is being very aggressive with R&D with such programs like the $1/watt Program, and also encourages investments in technologies which will ultimately accelerate PV's use and effectiveness.
- After a brief overview of the Solar American Cities Program, and the creation of a "Guide for Local Governments," Mr. Lushetsky concluded his presentation by reviewing some of the ways he hopes the STEAB can help the Solar Program. He specifically noted issues of sustainability, addressing regulatory and financial

[9] Ms. Bunch's presentation can be found as Appendix I.
[10] Mr. Chan's presentation about ITP can be found as Appendix J.
[11] Mr. Lushetsky's presentation about the Solar Energy Technology Program can be found as Appendix K.

barriers to new technologies, and understanding how to balance resources early-on. He hopes the Board will speak to their States and policy makers about supporting engagement efforts to overcome deployment and market barriers, encourage utilities to address technical concerns with regards to rolling-out solar technologies at a larger scale, and also to lead by example by vocally promoting EE and RE technologies at the State and local level.

UPDATE FROM THE WIND & WATER PROGRAM

- The final update from EERE Programs came from Mr. Jacques Beaudry-Losique, Program Manager for the Wind and Hydropower Technologies Program[12]. He opened the presentation by giving an overview of the Program's goals: double renewable energy capacity by 2012; facilitate wind market expansion; improve costs, performance, and reliability of wind turbine technology; support US manufacturing of wind and hydropower technologies; and reduce barriers to deployment of those technologies. He noted that wind has an enormous untapped resource in the Great Plains States, but that transmission is a key issue. Over the next two years, the Program really hopes to improve transmission capabilities; and Mr. Beaudry-Losique knows that interagency collaboration is key. He noted that in order to prime utility companies for the transmission of these types of technologies, the misinformation and lack of education about these technologies need to be addressed by outreach efforts and policy changes.
- He also outlined the four new initiatives the Program has undertaken within the last year. The initiatives are: 1) the National Offshore Wind Energy and Deployment Initiative, 2) improving the reliability of current wind turbine fleets, 3) addressing national siting challenges, and 4) facilitating growth in the domestic supply chain for wind equipment. Mr. Beaudry-Losique asked the STEAB to please engage with the Wind Powering America Network, promote offshore wind to the National Ocean Council, and support the region-wide collaboration on planning and managing wind deployment and transmission siting issues.

UPDATE ON SBIR AND STTR PROGRAM

- Dave Goodwin next spoke to the Board about the Small Business Innovation Research Program (SBIR) and Small Business Technology Transfer Program (STTR)[13]. The Programs receive $167 million per year, and the SBIR Program provides funding to stimulate technological innovation in small businesses to assist with Federal agency research and development needs, while the STTR Program involves substantial cooperative research collaboration between small businesses and other non-profit institutions like National Laboratories or Universities. He noted the process of a two-phase system and peer review process, which evaluates the ability to carry-out the proposal in a cost effective manner, the marketability of the proposal, and the scientific uniqueness of the proposal. In FY 2009, there were awards made within 32 States; and ARRA made an impact on the program by allotting $73 million just for EERE awards. Concluding his presentation, Mr. Goodwin indicated that the Technical Assistance Program for SBIR/STTR focuses its efforts on training and having a central database of market overviews, technology road-maps, and other information potential awardees would find useful.
- He did let the Board know that traditionally, women-owned or minority-owned companies which submit proposals do well in Phase I of the process, but not Phase II. The reasoning is that these proposals in Phase II seem - to peer reviewers - to lack commercial viability or a depth of resources which would assist with the commercialization of the technology. Due to this trend, Mr. Goodwin told the Board the Program is looking to perhaps roll-out a mentoring program for those types of companies in an effort to help them combat the pitfalls facing their proposals in Phase II.
- DC asked Mr. Goodwin if the DOE tracked the success of small businesses who received awards from the SBIR/STTR Program? The response was affirmative, and Mr. Goodwin stated the Program tracked products and sales from small business and that before the recession, they could track the creation of 18,000 new jobs as a result of SBIR/STTR Program awards.
- JS thanks Mr. Goodwin and all of the EERE Program Managers for coming to speak to the STEAB.

[12] Mr. Beaudry-Losique's presentation can be found following the minutes as Appendix L.
[13] Mr. Goodwin's presentation can be found as Appendix M.

PUBLIC COMMENTS

- JS noted the group was now at the public comments portion of the meeting. GB noted that he had not been contacted by any members of the public who wished to provide comments at the meeting. Seeing as there were no members of the public present at the meeting, JS then closed the meeting for public comments.

BOARD DISCUSSION AND REVIEW OF STEAB'S PRIORITIES AND CHALLENGES

- JS again asked BP to please lead the STEAB in a review and discussion of the "Priorities Through 2012" document[14]. Before that discussion began, it was brought to the group's attention that they needed to appoint a new member to the EECBG Sub-Committee as CJP was not able to engage fully with the group and was stepping down from her role as the STEAB representative to the Sub-Committee. Peter Johnston (PJ) volunteered for the role, SV moved to vote on that appointment and DC seconded. JS asked if there was discussion, and seeing as there was none, called for a vote. On November 3, 2010, PJ was appointed as the STEAB representative to the EECBG Sub-Committee.
- BP commenced facilitation by asking what challenges the Board feels they are facing when trying to implement and accomplish their priorities. Paul Gutierrez (PG) said that the meeting with Assistant Secretary Zoi in May of 2010 helped eliminate challenges, when she empowered the STEAB to engage in conversations with other agencies about potential projects without committing DOE resources, and this helped advance several priorities. CE asked if the STEAB considered the interface between DOE and the States to be a challenge, and several members agreed. GB reminded the Board that the STEAB is charged to work with the States and DOE and act as a liaison between the two. That was one of the legislative missions of the Board, but could certainly be added to the "Priorities" document.
- BP moved facilitation along by then asking the Board to review the "Priorities" document and discuss any additional priorities they would like to add. SV recommended more specificity as it related to engagement with other Federal agencies, and DT commented it was vital to raise the value proposition of SEPs and WAPs by showing EERE what they can offer. DC asked a rhetorical question about how can the STEAB be more relevant to DOE? Were there other priorities we could add which speak directly to that concept, or are there more actionable items the Board can take other than just Resolutions? Mr. Sperling suggested that STEAB specifically look to assist SEP and WAP because EERE does not feel as if these Programs are on target to meet their goals, and perhaps the STEAB can aid these Programs in bringing these Programs to scale. In response to DC's comment, CJP suggested the Board to create a Marketing Task Force which would help to drive policy decisions; and DT as well as others on the Board agreed.
- CE suggested future STEAB Resolutions be more straight forward recommendations with simple actionable items which DOE can take without allocating funding, so that progress can start being made. DH agreed but Tom Plant (TP) questioned what kind of action items would be outlined in these Resolutions, since it takes infrastructure and man-power to implement programs and projects. Those things, he noted, are often the barriers to progress within DOE; and perhaps the best way to get momentum started is to work at the community level, with a bottom-up approach.
- BP interjected with another question for the group to ponder. After hearing from many EERE Program Managers (PMs), BP wanted the Board to think about how they could specifically help the different PMs accomplish some of the tasks which were highlighted in the earlier presentations? Some of the suggestions were to write a Resolution on how EERE should handle Programs and projects post-ARRA, encourage DOE to engage with partnerships with other agencies to support sustainability, perhaps the STEAB could partner with TAP to take on some of the assistance and marketing once the funding from ARRA goes away, and others suggested resurrecting the old STEAB Resolution 09-01, which supported Congressional funding to support Advanced Energy Technology Transfer Centers.
- DC and CJP continued the dialogue about marketing, with DC specifically suggesting the Board network with DOE, USDA and other officials to foster a sense of collaboration, and work with Dr. Edmonds to drive market transformation at the local level, drawing from Resolution 10-02, which talks about the need for bottom-up change. JS astutely observed that the Programs within EERE are disconnected from each other. She reminded the Board how many PMs discussed transmission issues, the need for better education and outreach to the public, and increased deployment, yet none of the Programs seemed to be talking to each other about lessons-learned or best-practices from individual efforts. Perhaps there is a void there which the STEAB can fill. The Board could work more closely with all the EERE Programs to try and form more collaborative efforts to

[14] The STEAB's "Priorities Through 2012" document can be found as Appendix N.

combat the issues discussed during the presentations. Many members of the Board agreed this would be a good undertaking for the group and discussed ways that they could identify cross-cutting technologies to market outside of EERE, ways to partner with a tech-transfer program and encourage States to get involved with their Labs, and other ways to encourage the creation of a clean-energy economy.

- BP encouraged the group to make an "action plan" moving forward which would assign the ideas discussed previously to the existing Task Forces and perhaps even begin forming new Task Forces to take on some of these actionable tasks. He reminded the group they had discussed enhancing collaborations between States, focusing more on commercialization, perhaps partnering with TAP, continuing momentum with the USDA/DOE Task Force collaboration, adding next steps to 10-02, and create a playbook for State and local communities demonstrating how to work towards a clean-energy economy. JD interjected that the STEAB needed to take into consideration the national election, which occurred the day before, and that there were going to be upwards of 20 new SEO Directors coming on in 2011-- and now is the time to really show these new directors the value of their office, as well as the reasons it is important to move aggressively towards a clean-energy economy.
- BP thanked JD for his comments and turned the discussion to assigning action items to each Task Force. He noted the STEAB now had 7 Task Forces: Agenda, Climate Change and Energy Bill, Deployment, HUD/DOE, USDA/DOE, plus the new ones -- the ARRA Task Force and the SEP Evaluation Task Force. GB suggested the Agenda Task Force be abolished, and the Executive Committee of the STEAB will take on these responsibilities for setting the meeting agendas, inviting speakers, and putting together speaker questions. This was agreed upon, and the STEAB began assigning goals to each of the remaining 6 Task Forces. The assignments were as follows:
  - The USDA/DOE Task Force would take on TAP, along with their partnership with USDA, assist with bringing USDA Ag Extension and DOE to scale, maintain the momentum already in place by continuing to host meetings with USDA and DOE officials, and also create a white paper which would outline the potential Program should both agencies agree to participate and be able to allocate funding.
  - The Deployment Task Force would resurrect Resolution 09-01, work with State and local organizations to find and market EE and RE technologies, create a playbook for State and local entities to work towards establishing a clean energy economy, work more closely with TAP, work to create a close partnership with Dr. Edmonds and tie her efforts directly to the EERE Commercialization efforts, bring EERE Programs together in a way which would centralize their commercialization efforts, and refine future STEAB Resolutions to ensure they speak to collaboration, deployment, market transformation and commercialization.
  - The HUD/DOE Task Force will review the documents from HUD which speak to the action items already on their Task Force Outline, and continue to work towards beginning a dialogue with HUD and DOE officials.
  - The new ARRA Task Force will work to support innovative ideas to soften the landing once ARRA funding is gone, and try to ascertain what DOE has in store for ARRA funds which have not been allocated. The Task Force will look at what is going well, what is not working, how to use the existing infrastructure to encourage the sustainability of Programs and projects begun under ARRA, and increase the flow of information from DOE to the States.
  - The SEP Task Force will request a draft of the SEP Evaluation before the report is published and use it to create ARRA metrics which can be used to measure the success of ARRA funding on DOE and EERE Programs. These metrics can be shared with the ARRA Task Force and can also be rolled-out to States for use with future Programs.
- Finalizing this discussion, new members were assigned to the Task Forces. HUD recognized the need for additional members and asked to wait until the Membership Package was approved by DOE before bringing on new members. CE and SV asked to join the Deployment Task Force. Vaughn Clark, DG, Mr. Sperling, Ryan Gooch and some potential new members all became part of the ARRA Task Force. LS, PJ and JS volunteered to participate on the SEP Task Force.
- On the final day of the meeting, JS asked the STEAB to briefly focus on Board business and determine times for the next live meetings, as well as confirm timing for future STEAB teleconference calls. The Board unanimously agreed to keep the teleconference times at 3:30 PM Eastern on the third Thursday of every month. The Board also voted to have a June meeting, June 7 – 9, 2011, in Washington, DC, and a Fall meeting from November 8 – 10, 2011, at a location TBD.

- Reviewing the logistics for the next meeting of FY 2011, the Board discussed potential invitees to serve as speakers. DC asked to invite the Clean Economy Network and perhaps other stake-holders in the Bay Area, and DH suggested having a Board dinner which included speakers and other invitees so it could be about relationship building and networking. SV proposed inviting someone from the Earth Advantage Institute -- a group which partnered with LBNL to create an Energy Performance Score. MK added he would like to hear from a speaker about large-scale solar, and LS asked if the Executive Committee would invite someone from the California Energy Commission. GB and JS promised to review these requests and make the appropriate invitations as the date of the February meeting drew closer.
- JS then asked the Board to continue the discussion from the previous day about the "Priorities Through 2012" and any potential new action items to assign to Task Forces. DC suggested that a preliminary first step could be to create a list of all of the topics, issues and suggestions that have been voiced over the last few days and provide that list to DOE and the States, so both groups know what are "hot button" items or issues-of-concern. He clarified this idea came about because the biggest complaint by the States is that they are not sure what DOE wants from them or what the goals are for EERE and the different Program Offices.
- DH then spoke briefly to the STEAB about the current actions undertaken by the USDA/DOE Task Force. He mentioned meetings with USDA officials like Dr. Ralph Otto and teleconference calls with Dr. Kathleen Hogan, as well as elaborated how the Task Force was going to move forward to meet their goals -- both the old and the newly outlined objectives from the November Board meeting. He noted that the Task Force will have a call in December to continue discussions about how to proceed and engage DOE and USDA more closely and work to get both agencies to commit resources to a potential pilot Program.
- DC commented that an action item for the entire Board is for the STEAB to get involved in the upcoming SEP meeting which is scheduled for sometime during the Summer. DT agreed but did note that SEP was going out of their way to include groups like NASEO, NARUC and others in the discussion and inviting them to be stake-holders in the Program, and asked if it was necessary for the STEAB to be invited or if we could just align the June STEAB meeting to the same dates as the SEP meeting to allow for cross-over? JS, DC, and DH all thought it was more important to have STEAB at the table than it was to remain on the periphery, and JD suggested trying to make sure at least the STEAB officers could attend the SEP meeting.

BOARD MEETING CONCLUSION

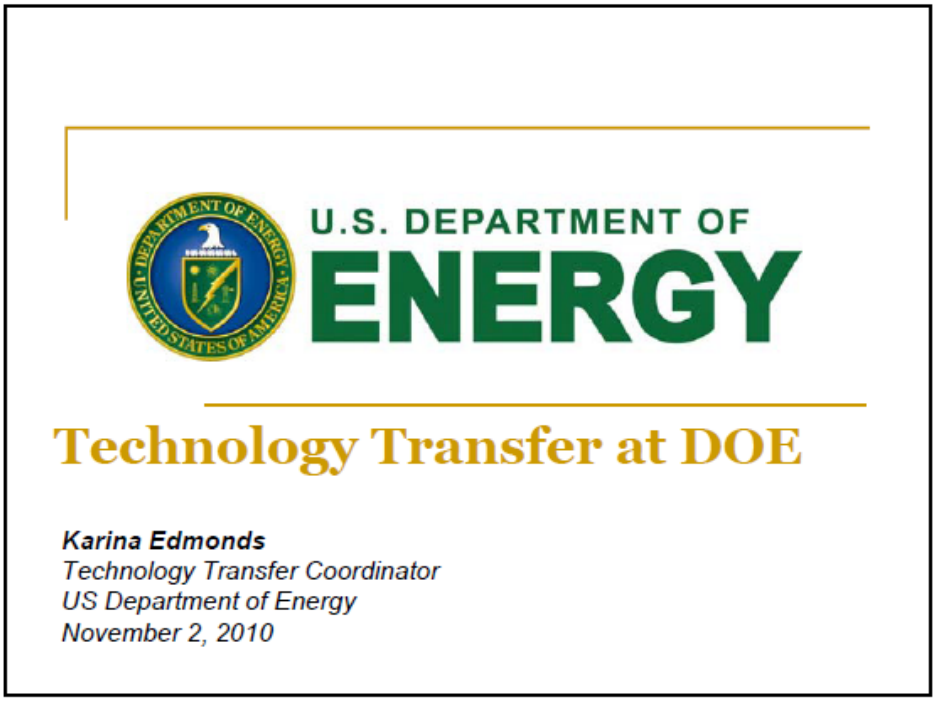
- JS asked the Board if there was any additional discussion or business the group would like to address. Seeing as there was none, she thanked all the Board members for making the trip to Washington, DC, for the November Board meeting, and first meeting of FY 2011. She wished everyone a safe journey home and reminded them to keep an eye out for details regarding the upcoming February 2011 meeting in Berkeley, CA. JS then adjourned the meeting at 10:35 AM on Thursday, November 4, 2011.

ACTION ITEMS arising from the STEAB November 2010 meeting are highlighted below:

In the coming weeks/months, the Board has several action items on the agenda with associated timeframes to ensure their effectiveness. The Board is currently planning a face–to-face meeting in Berkeley, CA, during the week of February 21, 2011. In addition, the Board is considering several potential actions based on topics discussed during this meeting, with the intention of re-visiting them for further discussion during upcoming teleconference calls.

ACTIONS	RESPONSIBLE PARTY	DUE DATE	STATUS
Scribe and upload meeting minutes & handouts to STEAB website.	• SENTECH, Inc. (scribe) • DFO/Board Chair (approval)	• Submit draft minutes to DFO for editing. • Post Minutes to site after approval.	• Submitted draft minutes to DFO for review. • Approved by DFO and posted to the STEAB website.
Next Meeting: • DoubleTree Berkeley Marina	• SENTECH, Inc. • DFO	• February 22 – 24, 2011	• Stacey Young (SENTECH, Inc.) is finalizing the logistics with the hotel. • Executive Committee assisting with speaker selection and presentation questions.
Send Thank You notes to Speakers	• SENTECH, Inc. (scribe) • Board Chair/DFO (approval)	• November 30, 2010	• All Thank You notes to speakers went out on November 5, 2010.
Annual Report	• SENTECH, Inc. (author) • DFO (approval and editing)	• Final copy available by February 2011 Board Meeting.	• Executive Summary and first section finalized. • Draft is being edited for remaining sections. • Final copies will be printed starting 2/11/11.
Update Task Force Outlines	• Task Force Chairs	• February Meeting	• Outlines need to be updated by Task Forces. Could be done in break-out sessions at February meeting.

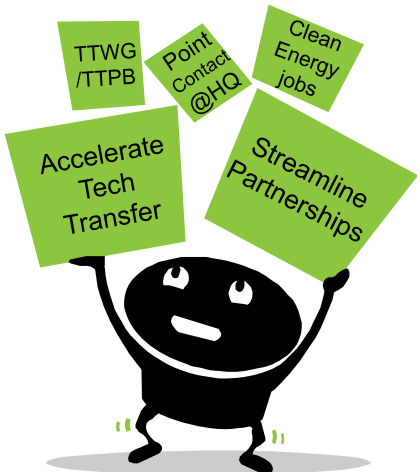
Appendix A: Presentation by Dr. Karina Edmonds



Statutory Requirements of EPAct2005

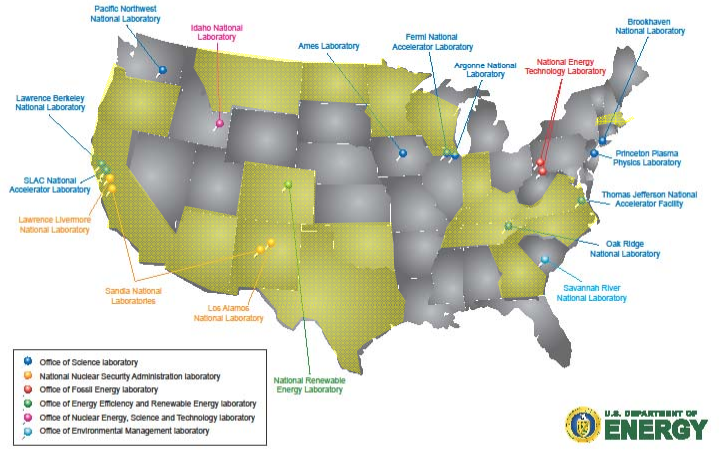
- **Appoint Technology Transfer Coordinator**
  "(a) The Secretary shall appoint a Technology Transfer Coordinator to be the principal advisor to the Secretary on all matters relating to technology transfer and commercialization."
- **Establish Technology Transfer Working Group**
  "(d) TECHNOLOGY TRANSFER WORKING GROUP.—The Secretary shall establish a Technology Transfer Working Group, which shall consist of representatives of the National Laboratories and single purpose research facilities …."
- **Establish Energy Technology Commercialization Fund**
  "(e) The Secretary shall establish an Energy Technology Commercialization Fund, using 0.9 percent of the amount made available to the Department for applied energy research, development, demonstration, and commercial application for each fiscal year, to be used to provide matching funds with private partners to promote promising energy technologies for commercial purposes."
- **Develop Technology Transfer Execution Plan**
  "(g) PLANNING AND REPORTING.—
  "(1) IN GENERAL.—Not later than 180 days after the date of enactment of this Act, the Secretary shall submit to Congress a technology transfer execution plan.
  "(2) UPDATES.—Each year after the submission of the plan under paragraph (1), the Secretary shall submit to Congress an updated execution plan and reports that describe progress toward meeting goals set forth in the execution plan and the funds expended under subsection (e)."
- **Oversee the Activities of the Technology Partnership Ombudsman**

Major Roles and Responsibilities



U.S. DEPARTMENT OF ENERGY

Department of Energy National Laboratories

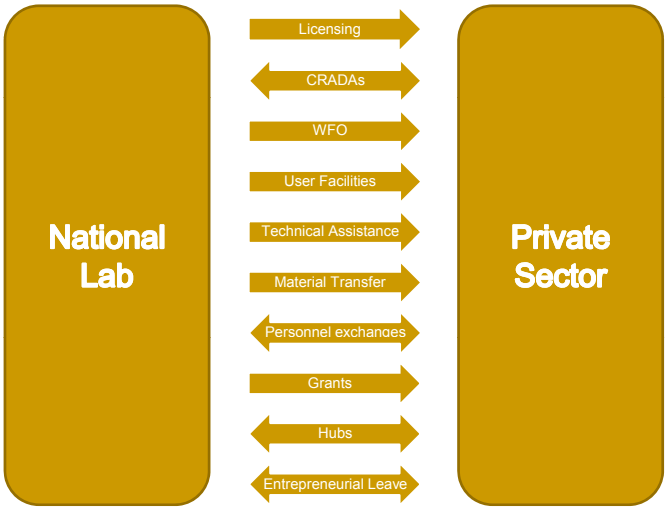


U.S. DEPARTMENT OF ENERGY

Vision

To create an innovation infrastructure that provides a framework for exchange of information and low-transaction-cost opportunities for connecting stakeholders and accelerate the transfer of technologies from the National Labs to the commercial sector.

Interacting With Labs



Goals

- Improve contractual vehicles
  - Update and streamline WFO and CRADA agreements
  - Create new opportunities to partner with industry
- Inreach
  - Educate tech transfer offices to improve consistency, streamline processes
  - Improve relationships with inventors to increase IP captured, manage expectations
- Outreach
  - Develop interagency relationships to improve coordination, synergies
  - Let industry know we're open for business

Driving Innovation

- Educate scientists/technologies about IP
- Engage entrepreneurs (within and outside)
- Cultivate entrepreneurial environment
- Support small businesses and start-ups
- Empower Tech Transfer Staff to negotiate
- Be facilitator not a gatekeeper
- Be sensitive to business and start-up needs

Get as many technologies out as possible!

How Can STEAB Help?

- Be an early adopter
  - Assist in creating a market pull
  - Support start-up creation
- Facilitate outreach
  - Tell constituents about lab resources in their backyard
  - Technology assistance programs
  - http://techportal.eere.energy.gov/
  - http://techtransfer.energy.gov/
- Connect the dots for your state

Boron Aluminum Magnesium Composite Material

DOE-EERE ISU Research Foundation, Iowa Company Assistance Program Industry

Among the hardest bulk materials after diamond.

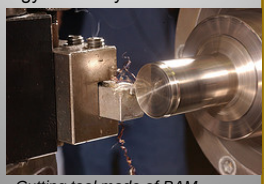
Combines high hardness with low friction .

Coefficient of friction lower than Teflon.

Reduces drag in moving parts.

Could protect mechanical parts from wear and tear, and boost energy efficiency.

Currently being studied as a nanoscale coating for pump components and industrial cutting tools to reduce friction and thereby boost equipment energy efficiency.



Cutting tool made of BAM

Material exclusively licensed to Newtech Ceramics, Boone, IA.

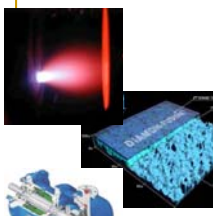
Application development with Eaton and Greenleaf Corporations through a DOE-EERE funded CRADA.

BAM's possible applications include aerospace, mining, oil well drilling, water jet cutting nozzles, engine timing chains, ice skate runners, etc.

AlMgBoride coating performance of machining Ti6Al4V

	Crater wear	Flank wear
% improvement over WC	86 %	95 %
% improvement over TiAlN	150 %	135 %

BAM coated rotors could save US industry 330 trillion Kilojoules/year by 2030 or about $179 million a year.



Example: $AlMgB_{14}/TiB_2$ nanocomposite coatings developed at The Ames Laboratory, evaluated by ORNL, and recently transferred to Eaton and Greenleaf Corporation as a result of funding provided by EERE-ITP.

Problem: Over 30 TBtu of energy is lost in the U.S. each year due to frictional losses in hydraulic pumps and high-speed machine tools.

Solution: Ultra-low friction, wear-resistant "Nanocoatings" for industrial components and systems.

Approach: Collaborative research programs that facilitate tech transfer from National Labs and Universities to private industry.

U.S. DEPARTMENT OF ENERGY

Reduced friction and wear confirmed by ASTM tests at Oak Ridge National Laboratory :

Project Goal	Achieved	Technical comments
30% reduction in wear	**69% reduction in total wear**	52100 steel pin-on-disk (vane) tests with lubricant starvation (dry)
	40% reduction in total wear	Reciprocating 52100 pin-on-vane side with lubricant starvation (dry)
50% reduction in friction coefficient (μ)	**70% reduction in friction**	Reciprocating tests run with lubricant starvation (dry); initial sliding period, prior to transition.

- **First ever $AlMgB_{14}$ coatings by production-scale PVD.**
- **Validated reduction in both wear and friction in laboratory and field testing**
- **Successfully scaled-up laboratory process to industrial production levels**

U.S. DEPARTMENT OF ENERGY

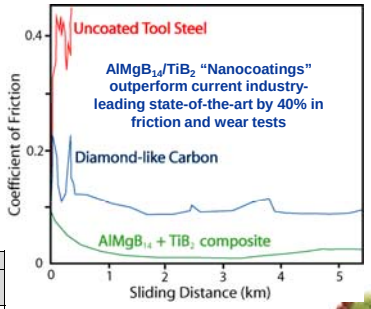
Improved efficiency for hydraulic pump and advanced machine tooling



What does the Nanocoatings technology do?
- Reduces the coefficient of sliding friction and minimizes material wear-improving mechanical AND volumetric efficiencies.

How is this technology implemented?
- Nanocoatings allow for less costly base material selections because of the coating's natural lubricative effect.

How does this immediately help customers?
- Efficiency gains have been proven in aerospace applications related to engine driven pumps.
- Industrial hydraulic applications have shown efficiency gains of 10% and higher.
- Critical aerospace alloys can be machined more quickly and using less energy ⇒ lower cost.



	ATS Testing			Startup Efficiency Testing	
	Volumetric Efficiency (%)	Mechanical Efficiency (%)	Overall Efficiency (%)	clockwise (%)	counter clockwise (%)
Baseline	82	93	76	47	49
w/ Nanocoatings	92 (+10%)	93 86	(+10%)	59 (+15%)	54 (+5%)

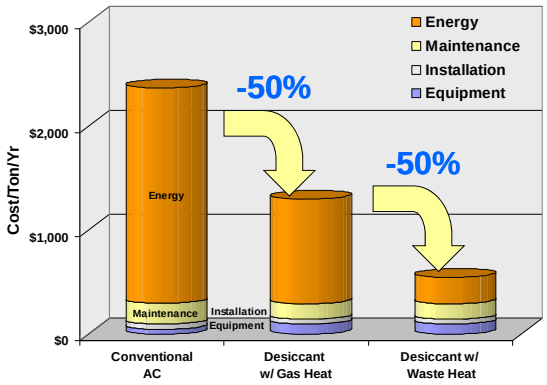
Overall operating efficiency gain of 10% ⇧ Startup efficiency gain of 10% ⇧

U.S. DEPARTMENT OF ENERGY

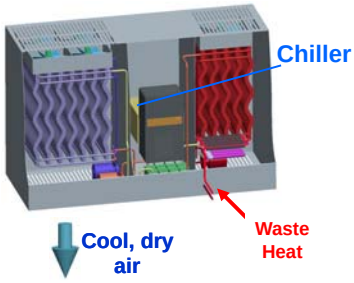
7Solar HVAC Solution

NREL NATIONAL RENEWABLE ENERGY LABORATORY

- Desiccant Heating ,Ventilation and Air Conditioning (HVAC)
- Waste heat as energy source for Desiccant HVAC
- Removes 22M $mtCO_2e$ = 3.7M cars by 2020 at 10% of market



Desiccant HVAC

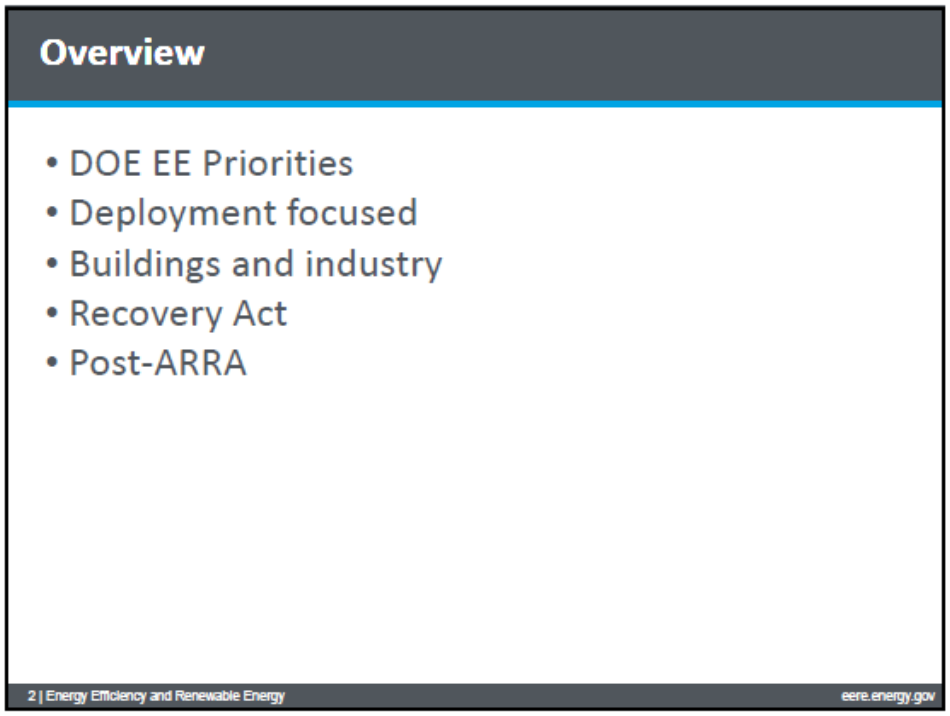


U.S. DEPARTMENT OF ENERGY

Thank you!

U.S. DEPARTMENT OF ENERGY

Appendix B: EERE Overview by Dr. Kathleen Hogan



Advancing Energy Efficiency

ACCELERATING APPLIANCE STANDARDS

STRENGTHENING THE PROGRAM / DISTINGUISHING TOP PERFORMERS

CODES: Accelerate Adoption and Compliance

RETROFITS:

- Low Income Weatherization
- Residential Retrofits
- Commercial Building Retrofits

EECBG
WAP
SEP

INDUSTRIAL IMPROVEMENTS

STATE and LOCAL POLICIES

SEE Action
STATE ENERGY EFFICIENCY ACTION NETWORK

Accelerating Efficiency Standards

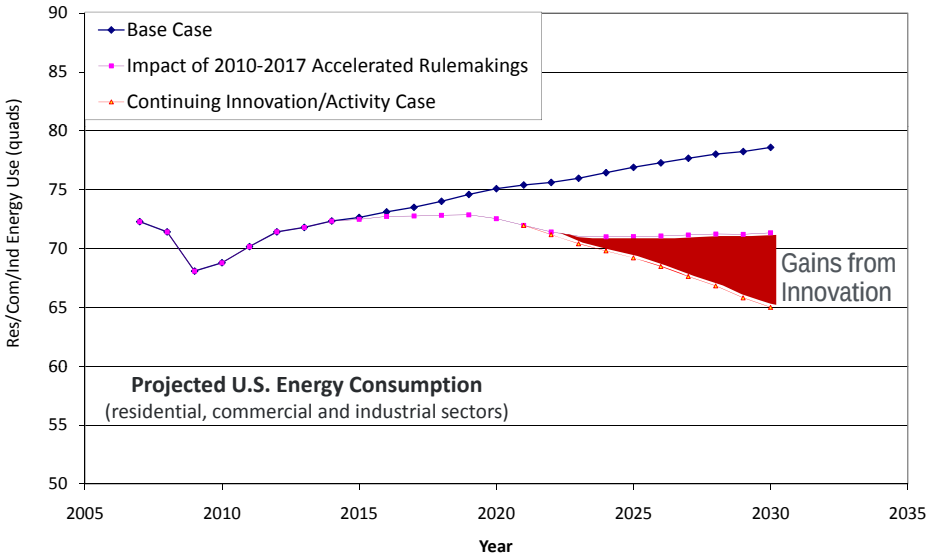
New standards (>20 products) since March 2009
will save **$250 - 300 billion** through 2030

Standards issued in the next 2 years (11 products)
could save an *additional* **$250 – 300 billion**

New standards will cover **>30% of *all*** energy consuming devices in the residential and commercial sectors

Combined with new reporting and enforcement efforts

Appliance Standards → Innovation → Standards



Accelerated Standards Might Regulate

Industrial equipment that DOE has not fully regulated:

- compressors
- fans
- blowers
- electrolytic equipment
- electric arc equipment
- pumps
- steam boilers
- ovens
- kilns
- evaporators
- and dryers

(See: 42 USC 6311(2)(B))

Other products for which DOE has not set mandatory standards:

- room air cleaners and purifiers
- water coolers
- audio/video equipment
- computers
- cordless phones
- set-top boxes and cable boxes
- imaging equipment
- ventilating fans
- heat/energy recovery ventilators
- luminaires
- small network equipment
- uninterruptible power supplies

Energy Star

- New EPA/DOE MOU
- Strengthens
  - New products
  - Faster revisions
  - Third-party testing and certification
  - Government testing
  - Enforcement
- Top Tier recognition

Appliance	Total Units	Testable Units Delivered	Test Reports Submitted	Referred to EPA
Freezers	24	14	8	
Clothes Washers	40	38	30	
Dishwashers	11	10	9	2
Tankless Water Heaters	12	10	10	
Storage Water Heaters	11	9	8	
Room Air-Conditioners	86	49	21	
Total	**266**	**197**	**147**	**2**
As of 08/10				

Top Tier Recognition

- Leverage ENERGY STAR
- Link to DOE R&D
- Connect high efficiency products with consumers that want to
  - Do right thing for the environment
  - Do the most they can
  - Buy the most efficient product available
  - Be an early adopter; trendsetter
  - Not focus mostly on saving money
- Next steps
  - Results of EPA/DOE research
  - Proposal for comment by Sept 30
  - Comments by Oct 31
  - 2011 Rollout

MOST EFFICIENT
www.energystar.gov
ENERGY STAR
THIS PRODUCT DELIVERS THE HIGHEST ENERGY SAVINGS

Needs to be Useful Tool for
- Consumers
- Manufacturers
- Program Administrators
- Retailers

Building Codes: Improving Energy Savings

- Improve energy savings
  - Increase code stringency
  - Speed adoption
  - Improve training
  - Improve compliance

30% Better Codes

50% Better Codes

90% compliance by 2017

- Recovery Act Funding
  - 90% Code Compliance Assessment Pilots and Tools Development
    - 9 states with contracts final by Sept. 2010
  - Residential & commercial training, and train-the-trainer activities thru technical assistance to States
  - New solicitation for States & Municipalities -- $7 million
    - **Adoption, Training, and Compliance Assessment**
    - Awarded 23 grantees

Building Codes: Stringency

30% Goal for Model Energy Codes

- 2012 IECC expected to save 30% over 2006 IECC
- ASHRAE 90.1-2010 expected to save 20-25% over 90.1-2004
  - Final publishing – October 2010
  - Preliminary Determination – Spring 2011

50% Goal for Model Energy Codes

- A challenge
  - 2015 IECC – 20% jump in three years
  - ASHRAE 90.1-2013 – 25-30% jump in 3 years and out of cycle
  - Prescriptive approaches maxed out
- Pursuing stretch, outcome-based codes
  - ASHRAE Std.189.1 (High Performance / Green Buildings) and International Green Conservation Code (IGCC)
  - Offer 35% (ASHRAE) to 40% (IGCC) savings

Efficient Homes, Buildings, and Industry

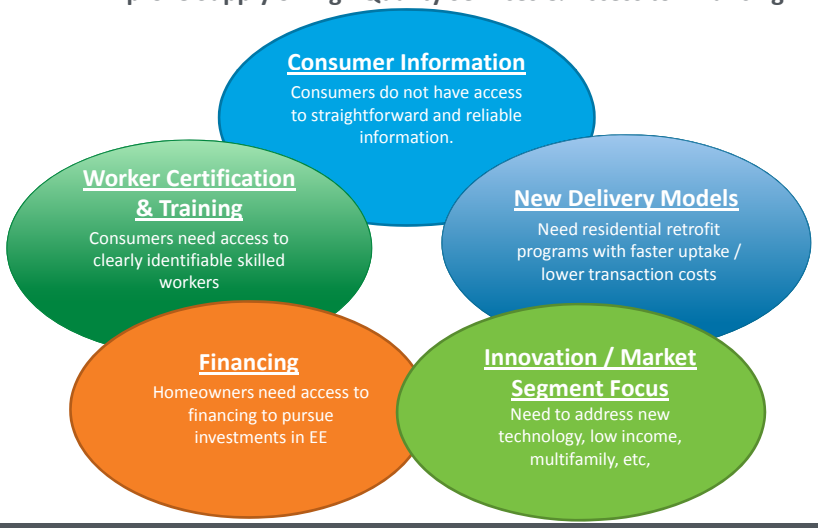
Imagine

- Retrofitting **5-10 *million* homes each year**
- Retrofitting **4 *billion* commercial square feet / year**
- Saving **20% in industrial energy**

Source: U.S. Census

Residential Retrofits: Addressing Market Barriers

Motivate Homeowners and Improve Supply of High Quality Services & Access to Financing



Consumer Information

- National Home Energy Score
  - Asset based home assessment
  - Voluntary
- Provides
  - Score based on climate / home size
  - Recommendations for home improvements
  - Estimate of savings from cost-effective improvements
  - Recommendation to get further detail from certified home auditor
- Offered by qualified assessor
- Administered by partnering organization
- Supported by
  - Web site information
- Available for piloting this Fall

Recommendation of the Vice President's Middle Class Task Force

Workforce Development: Voluntary National Home Retrofit Guidelines

Key Elements

- **Standard Work Specifications**: Enable programs to strengthen field guides /manuals
- **Job Task Analyses**: Assist training providers with course content and curricula for
  - Energy Auditor, Installer/Technician, Crew Chief, and Quality Assurance Professional/Inspector
- **Knowledge, Skills and Abilities**: A clear set upon which to base worker credentials; increase workforce mobility up career ladders and across career lattices
- **Technical standards reference guide:** Catalogue of standards developed by industry or third-party organizations

Next Steps

- Public comment Fall, 2010
- Deploy through WAP and other grantees (eg "Better Buildings")

Recommendation of the Vice President's Middle Class Task Force

- Lay foundation for robust worker certification and training program accreditation
- Build confidence with consumers and EE finance community that retrofit work delivers expected benefits

Financing

- Assisting grantees in development of full spectrum
  - Unsecured revolving loan funds;
  - Loan loss reserves
  - FHA Financing demonstration program
  - On-bill utility financing
- Providing TA across full suite
  - Guidance
  - Best practices
- ~ $450 million of DOE-administered Recovery Act funding supporting residential financing programs.
  - Revolving loan funds established in ~35 states
  - Estimated to be matched by $1 billion in state or private sector funds

Recommendation of the Vice President's Middle Class Task Force

New Delivery Models

BETTER BUILDINGS

Vision: *Create self-sustaining market for building energy efficiency retrofits*

Grants

- 34 local and state governments (reaching more than 50 communities)
- 3-year awards from $1.5 million to $40 million and $486 million total
- Innovative models for single / multifamily building retrofits; and low income, small business, commercial, farms, and historic buildings

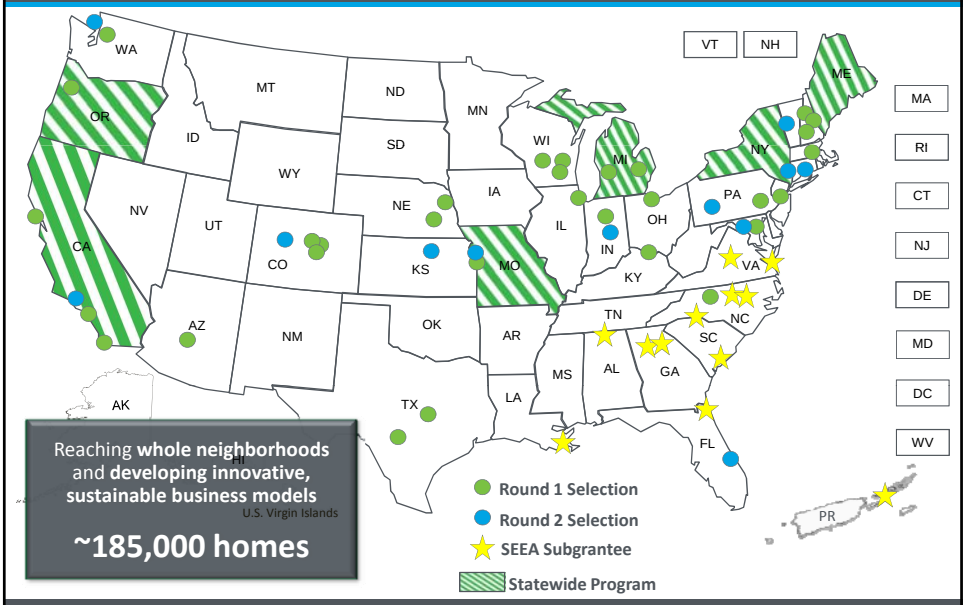
Progress

- Kicked off in July 2010
- Communities developing implementation plans
- Technical assistance being provided, emphasis on financing solutions

Projected Results

- 200,000+ retrofit buildings (majority residential)
- Retrofits of at least 15% energy savings; some >30%
- Data collection to determine effective technologies, measures, approaches
- Capture and disseminate approaches that demonstrate proven models

New Delivery Models



Supporting Low-Income Families

WAP Recovery Act Update ($5.2 B)

- 25,000+ homes weatherized per month; 200,000+ homes through August 2010
- On target for 275,000 homes by 12/10; nearly 600,000 homes by 3/31/10
- Ramping up Quality Assurance

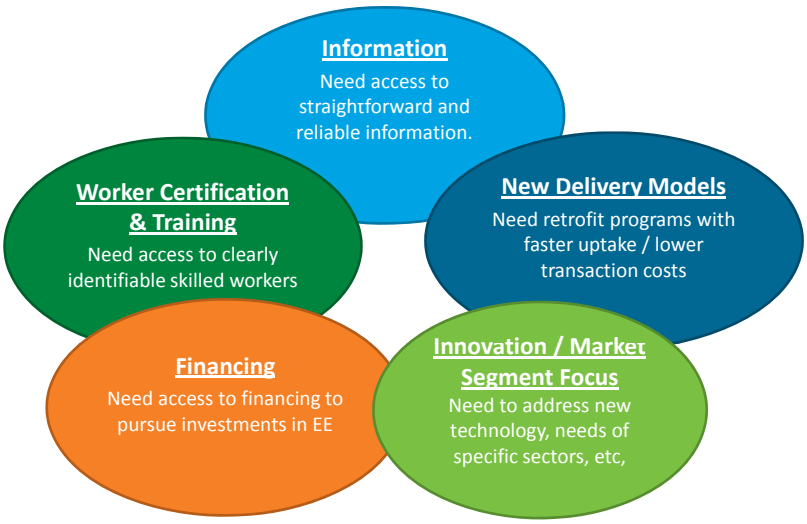
WAP Innovation Grants ($30M)

- Pilots to increase the leverage/effectiveness of Federal funding thru traditional and/or nontraditional weatherization providers.
- 16 Selections for 2-year projects – address financing programs for multi-family properties, workforce development, new technologies and behavior interventions, and incorporating Green and Healthy Homes approaches
- Will leverage $96 million (3.2x) and weatherize over 19,000 homes

Sustainable Energy Resource Grants ($90M)

- Available from WAP Recovery Act based on EISA 2007 formula
- Adds “renewable and domestic energy technologies” not currently covered
- Funded 27 states, 100 local agencies for technologies including: solar hot water, solar PV, solar home heat, high-efficiency hot water, residential wind, cool roofs, in-home devices, innovative foam insulation

Commercial Retrofits: Addressing Market Barriers



Efficient Commercial Buildings

DOE Commercial Building Initiative

COMMERCIAL BUILDING ENERGY ALLIANCES
Retail, Real Estate, Hospitals, and more
Technical solutions / golden carrots / bulk purchasing

COMMERCIAL BUILDING PARTNERSHIPS
Organizations work with DOE National Labs on retrofits to achieve 30% savings and 50% savings in new construction

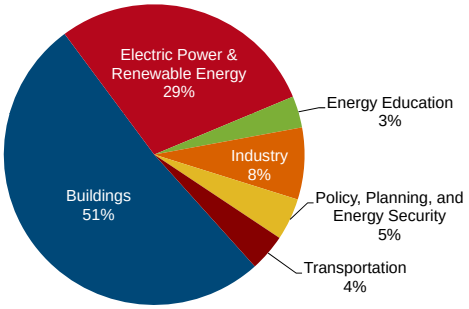
NATIONAL LAB COLLABORATIVE ON BUILDING TECHNOLOGIES
5 National Labs Collaborating on RD&D

HIGH PERFORMANCE GREEN BUILDING CONSORTIA
Building industry groups providing and disseminating information and research results

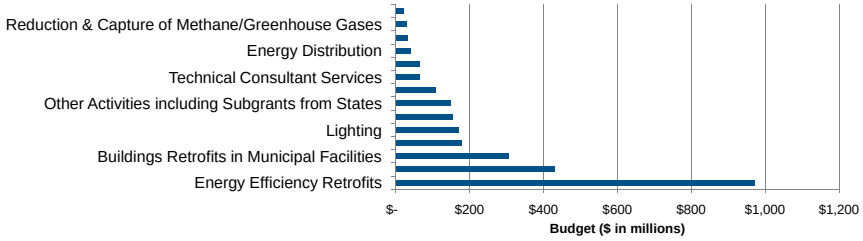
State Energy Program and Energy Efficiency & Conservation Block Grants

SEP Activities

Recovery Act funds are leveraging $6 billion of private capital



EECBG Activities



Workforce Development: Recovery Act

Building Equipment Technicians

- Development of a Model Energy Conservation Training Program
- Development of a Training Program for Commercial Building Technicians
- Training Program Development for Commercial Building Equipment Technicians
- Building Operator Certification (BOC) For Building Technicians

Building Operators

- Net-Zero Energy Building Operator Training Program
- Benchmark Green: Commercial Building Operator Certificate Program via Advanced Online Instruction
- UT/GTKS Training Program Development for Commercial Building Operators
- Development of a Total Energy, Environment and Asset Management (TE2AM) Curriculum

Building Energy Commissioning Agents / Auditors

- Training Programs for Commercial Building Energy Commissioning Agents/Auditors
- Veterans Commissioning Training Program for Commercial-Healthcare Facilities
- Energy Commissioning Agent/Auditor Training in the New York Metro Region
- Curriculum for Commissioning Energy Efficient Buildings
- Master Curriculum Development for Energy Auditors, Commissioning Agents and Energy Engineer

Efficient Industrial Facilities

DOE Industrial Initiatives

ISO5001 SUPPORT

Foundational tool that any organization can use to manage energy

SUPERIOR ENERGY PERFORMANCE

–Single facility ISO 50001 conformance with validated energy performance improvement
–Focus for Certified workforce

CHP AND REGIONAL APPLICATION CENTERS

SAVE ENERGY NOW PARTNERSHIPS

–Companies that pledge to reduce energy intensity 25% in 10 years
–Advancing energy management

R&D INITIATIVES

ISO 50001
Components in place:
- Baseline
- Policy
- Plan
- Team/Leader

Superior Energy Performance

Market-based, ANSI-accredited **plant/building** certification program, provides industrial facilities a roadmap for continual improvement in EE and competitiveness.

Goals:
- Drive continual improvement
- Develop a transparent system to validate improvements and management practices
- Encourage broad participation throughout industry
- Support and build the industrial efficiency market and workforce

Strategy:
- Foster corporate culture of **continuous improvement** in EE
- Use **ISO 50001** standard as foundational tool for energy management
- T**iered program** with entry point for companies at all levels of experience
- Create **verified record** of energy intensity/efficiency improvement.

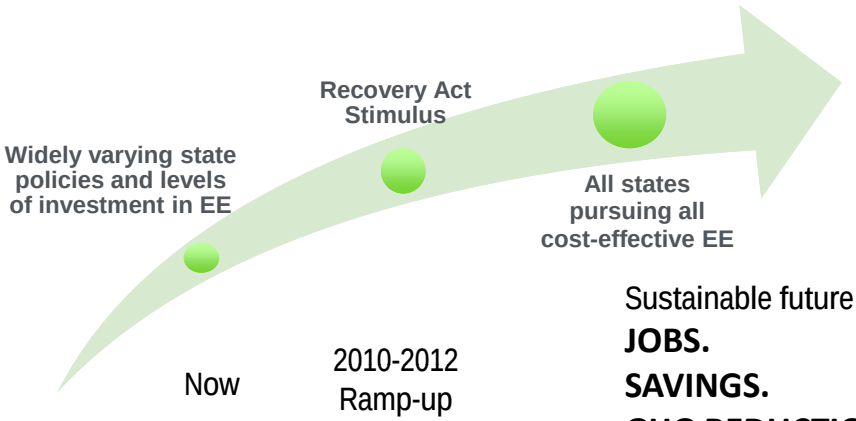
Superior Energy Performance will be launched nationwide in 2011 for commercial and industrial facilities

Industrial EE Market Benefits

Superior Energy Performance builds and supports the industrial energy efficiency market:

Utilities	• Highlights a plant-wide, systems-oriented approach to programs • Helps verify facility savings, including permanent operational changes, to contribute to industrial EE program investments
ESCOs	• Builds greater credibility with industrial customers and a stronger business case for providing third-party EE services and off-balance sheet capital investments
Supply Chains	• Provides a pro-active turnkey program for major OEMs and retailers to request their suppliers to meet the program requirements

All Cost-Effective EE



Sustainable future
JOBS.
SAVINGS.
GHG REDUCTIONS.

SEE Action
STATE ENERGY EFFICIENCY ACTION NETWORK

State Energy Efficiency (SEE) Action

- All cost-effective EE
- Address key barriers
- Structure
  - Executive Group
  - Working Groups
- Supporting pieces
  - Ongoing TA
  - Coordination across key grant programs
- Facilitated by EPA/DOE (builds upon National Action Plan)

Path to all Cost-Effective EE

- Strong Commitment / Policy
- Best Programs
- Financial Solutions
- Accountability
- Customer information
- Learning / sharing

SEE Action Network - WGs

SEE Action Working Groups

- State/local co-chairs
- Diverse WGs
- Aggressive Goals
- Blueprint to Achieve Goals
  - Goal
  - Where are we today
  - What we need to do
  - Roles/responsibilities
  - Coordination/outreach
- Implementation

DOE/EPA facilitate
- Work groups
- Meetings
- Development of key deliverables
- Coordination platform

Additional EE Efforts

- FEMP
  - ESPCs
  - Product procurement
  - Water efficiency
- Vehicle Technology Program

Challenges

- Post-Recovery Act funding / financing
- Robust data on energy efficiency savings
  - Convince financing organizations
  - Convince regulators
- Engage the consumer
  - Market appeal for EE
- State and local regulations in full support of EE

Source: Center on Budget and Policy Priorities

Appendix C: EECBG Adopted Recommendations

STEAB
STATE ENERGY ADVISORY BOARD

EECBG Sub-Committee

EECBG / STEAB Speaker Answers
November 2010 Meeting
Mark Johnson, Chair

1) **3 most pressing issues facing EECBG:**
   1. **Spending/Costing: 20% spent with 80% to go.**
   2. **Guidance: Davis Bacon and Buy American requirements.**
   3. **New state, county and city EECBG staff.**

2) **Recommendations to DOE to help EECBG run more smoothly:**

Issue	Recommendations	Technical Assistance	Business Intelligence	Communications
· EECBG Management	· Overall management of this grant program should be improved.	Agreed. Regional Coordinators in the Technical Assistance Program have become a tremendous asset to project officers, providing programmatic and technical support to grantees.	The focus of management is on ensuring projects make progress towards completion and grantees are on track to meet the costing target of 50% by 6/30/11. Additional objectives are monitoring and minimizing waste, fraud and abuse. Finally, grantee programmatic metrics including jobs, financials and performance metrics are critical.	
	· Communities need more consistency in the assignment of project officers. One Colorado community indicated it has now been assigned to the fifth P.O.	n/a	While there were early assignment changes of project officers, all roles are filled and there will be minimal changes to assignments.	n/a
	· Must reporting occur in both PAGE and Federal Reporting? Could one system handle a grant?	n/a	Yes, there are DOE requirements (in PAGE) and OMB requirements (in FR.gov). It is possible to report into PAGE and export values into FR.gov to minimize duplications. Go here for details: http://www.page.energy.gov/Helpc/PAGE_Help.htm	n/a
· Stories are run as "feel-good" to the public rather than discussing the "money." No emphases on the money being allocated and at what amounts.	· The stories themselves are a result of the funding, and the funding from ARRA is what should be highlighted, not the "feel-good" story for the public.	n/a	n/a	To date, EECBG grantees and project officers have submitted over 160 EECBG story leads, which have resulted in 100 stories that are now online, 20 percent of the total content of the EE website. In many cases, submitted leads and estimates of job creations and energy savings have not held up to additional scrutiny. As larger projects are started, we will have a better mix

· DOE not appropriately "selling" successes and accomplishments of the EECBG program.	· Work with another agency or group to create a website which properly showcases the EECBG program and its successes. Create compelling multi-media (videos) to tell the story in relatable terms to the population about the great work EECBG's enables.	The Technical Assistance Program has staff dedicated to creation of media kits and feeding success stories to Energy Empowers, which has just posted the first EECBG video, see http://blog.energy.gov/blog/2010/09/27/recovery-act-lighting-streets-philadelphia	Visit www.energyempowers.gov	DOE is producing an initial run of five short videos to showcase the various ways that communities are using their EECBG funds. We are also providing content suggestions and promoting video projects that have been completed by grantees on Energy empowers and YouTube. The Allen, TX YouTube video is a good example of this.
	· Going forward--it sure would be nice if the EECBG program continued to be funded so we had a revenue stream we could count on and plan for, similar to CDBG. We've been reluctant to spend the money on any programs that would be on-going, since we do not have local dollars to contribute.	The Technical Assistance Program has staff dedicated to sustainable actions that recipients can take for programs that endure beyond ARRA.	We're focused on demonstrating the success of the program to showcase the work of the EECBG program. Any assistance in doing so is appreciated.	n/a
· Lack of local expertise and assistance available to communities.	· State Energy Offices or Regional Energy Management Offices - Create case studies, best practices and recommend that recipients w/o energy management expertise form or join Regional Energy Management Offices, or that EECBG recipients of a certain size (perhaps less than $500,000 award) be managed by the State Energy Office. These offices provide public sector energy management expertise at a scale that is responsive to local practices and budgets but at a large enough.	The Technical Assistance Program created the Regional Coordinator Team specifically to provide a regional framework that works with local recipients. In September, the first of a monthly regional call series kicked off, encouraging peer to peer exchange among recipients. TA is building off these calls with regional events.	n/a	

· Grantees spend a lot of time on clearing issues which are later refined or mitigated by a SOW. No guidance regarding which T&C should be part of our contracts other than we should include Davis-Bacon and Buy American, as applicable.	· More guidance and assistance needed from DOE on the front end in order to mitigate these issues which take up time and money for the grantees and cause them to then seemingly fall behind with the "spent" vs. "contracted" funds.	The regional coordinators have provided calls with over 1,000 grantees specifically to address these issues. Project officers have handled the other recipients. We also have codified EECBG guidance on the Guidance webpage, so everyone has access to official positions on various topics.	Guidance is regularly updated on the OWIP webpage. In the past few months, significant guidance has been released on reporting requirements, draw down and procurement procedures, Davis-Bacon and Buy American. These are supplemented with webinars, FAQ's and a help desk.	
· The ongoing conversations about "obligated funds to grantees which are not yet noted as "Spent" or "Contracted" by DOE". Updating Project Officer weekly, yet still the same questions are asked. Duplication of effort to report via computerized program and still have to complete/keep revising a "spend plan.	· Would be much more productive to do "spend plans" as we finalize contracts. Until contracts are finalized, it is difficult to report numbers to DOE which are so preliminary in nature. DOE needs to understand that until contracts are finalized, reporting is difficult and cumbersome for States.	n/a	We plan to focus on spend plans in the next quarter in order to minimize the number of times information is requested.	

3) **Status of EECBG appropriations funding request: FY2012 requested and not confirmed yet.**
4) **Biggest successes and failures of EECBG so far: Biggest success is the +2,400 cities, counties, states and tribes spending +20% of their money. Biggest failure so far has been our slow obligations and guidance.**

Best regards,

Mark Johnson

Adopted by the STEAB on November 2, 2010

Appendix D: Technical Assistance Program (TAP) Presentation by Ms. Molly Lunn

STEAB Briefing

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Technical Assistance Program: Creating Jobs, Building Clean Energy Capacity

November 2, 2010

Molly Lunn, SEP & EECBG Technical Assistance Team

Background: Pre-ARRA TA

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

- Technical Assistance Project (TAP)
  - Provided direct technical assistance to state and local officials
  - Administered by WIP, managed by the National Renewable Energy Lab (NREL), and staffed by technical experts at NREL, Lawrence Berkeley National Lab, and Oak Ridge National Lab
  - Focus was on quick response to technical (i.e. solar siting), policy (i.e. RPS), and program design (i.e. energy planning) questions

    Average commitment was $5-7K (~1 wk) of lab personnel time
  - Annual funding ~$500K from SEP

Background: Ramp Up for ARRA

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

- At outset of ARRA, it was determined that there was a need for expanded TA effort to support SEP and EECBG grantees
- Design and scope of TA was fleshed out over late Winter-Spring 2009
  - *Labs would continue to provide support, but WIP would expand expertise in:*
    - *State and local coordination and capacity building*
    - *Energy savings performance contracting*
    - *Financing*
    - *Program design and implementation*
  - Competitive solicitation to bring on additional experts was issued in Fall 2009 by ORNL, expanded network was under contract following March

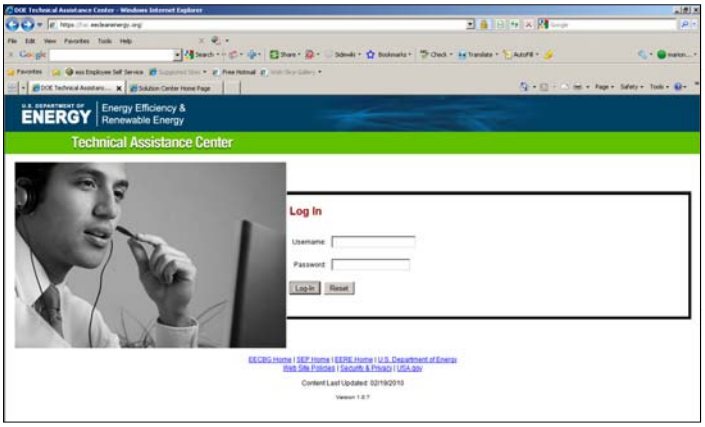
Where Are We Now?

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

- Technical Assistance Program (TAP): *To provide state, local, and tribal officials with the resources needed to swiftly implement successful and sustainable clean energy programs.*
- Recovery Act Initiative
  - Assisting SEP and EECBG ARRA recipients
  - Aims to accelerate spending, improve project/program performance, and increase return on ARRA investments
  - Expanded network of technical experts
  - Jointly-funded with SEP and EECBG ARRA dollars
- Non-ARRA TAP
  - Continues to be available to assist state and local officials
  - Does not currently include expanded network of experts

Accessing TA: Provider Network

Technical Assistance Center live now: https://tac.eecleanenergy.org/



Make a request for direct technical assistance here or call 1-877-EERE-TAP (1-877-337-3827)

Accessing TA: Online Resources

Solution Center: http://wip.energy.gov/solutioncenter

Resources include: best practices, webinars, project map, events calendar, TAP blog (http://www.eereblogs.energy.gov/tap/)

By the Numbers

- Direct one-on-one assistance
  - 828 requests, 568 closed and 260 in process
  - Approx. 75/25 split between EECBG and SEP
  - Three main content areas: financing, EE and RE technologies (buildings, on-site renewables, lighting), and program design
- Aggregated assistance
  - Webinars
  - Peer exchange
  - Workshops

Where Are We Going

- TAP has its own “ramp-down” reality to consider
- Establishing a TA framework for post-ARRA:
  - What types of TA do we want to provide, and
  - How should it be structured,
  - In light of expanded audience, but more limited resources?
- Key questions
  - What will state and local needs be?
    How does WIP’s TA fit into larger picture EERE and beyond?
  - What structure, abilities, and resources should TAP pursue?
- Post-ARRA planning in process now

Appendix E: Dr. Milliken's Presentation on the ERAC

Office of Energy Efficiency and Renewable Energy
Federal Advisory Committee

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

State Energy Advisory Board Meeting
Washington, DC
November 2, 2010

JoAnn Milliken
Senior Advisor

Energy Efficiency and Renewable Energy Advisory Committee

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

- The Energy Efficiency and Renewable Energy Advisory Committee (ERAC) is a discretionary advisory committee - it is not required by statute
- The Committee reports to Secretary of Energy
- ERAC will periodically review the Office of Energy Efficiency and Renewable Energy (EERE) portfolio and provide advice on:
  - EERE's competing long-range plans, priorities and strategies;
  - Appropriate levels of funding to develop EERE's plans, priorities and strategies;
  - Specific issues of concern to DOE as requested by the Secretary of Energy or the Assistant Secretary for EERE.
- The Committee will include approximately 20 members from diverse sectors and backgrounds to ensure a balanced perspective
  - Members will serve as special Government employees or representatives
  - Term lengths ≤ three years with staggered expiration dates to ensure continuity in the functioning of the committee
  - Members may be reappointed for successive terms, but no more than two successive terms.
- Subcommittees or workgroups will be formed to facilitate functioning of the Committee
- Biannual meetings are anticipated, but subcommittees/working groups may meet more frequently

ERAC Current Status

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

- Federal Register Notice posted on June 22, 2010 to request membership nominations
  - Over 75 nominations received
- Nineteen nominees were recommended for approval by Secretary Chu
  - Sixteen as special Government employees (e.g., expertise in applied sciences, energy management, energy planning, impact analysis, and science and technology policy)
  - Six as representatives (e.g., viewpoints of companies developing, manufacturing, and distributing renewable energy and energy efficient technologies, venture capital companies investing in early-stage and established companies, and utilities integrating renewable energy into their strategies.)
  - Six are proposed as three year terms, seven as two year terms, and six as one year terms
- On 10/28/10, the Secretary approved the ERAC members
  - Appointment letters and welcome packages are being sent to the members for their acceptance
  - Charter approval expected this week
- The inaugural meeting will be held in Washington, D.C. on November 30, 2010 - in accordance with Federal Advisory Committee Act statute, notice will be made in the Federal Register at least 15 days prior to the meeting
  - Website for ERAC is currently in development with expectations to have part of site constructed in time to coordinate with Federal Register Notice (**November 15, 2010**) – www.erac.energy.gov (URL pending approval)

ERAC and other FACs

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

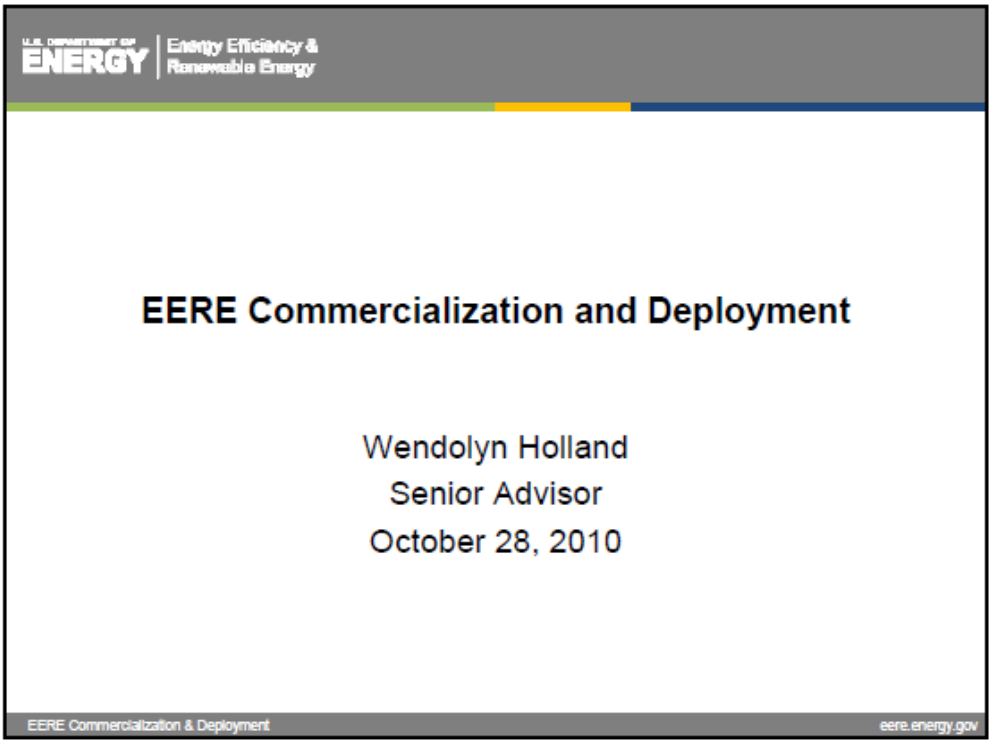
- To achieve its objectives, the Energy Efficiency and Renewable Advisory Committee (ERAC) may establish subcommittees for EERE programs without an existing statutory advisory group
- Specific interactions with subcommittees and statutory advisory groups will be determined when formal meetings begin
  - ERAC will complement and may seek to coordinate existing efforts related to EERE
  - ERAC will have no authority over any statutory advisory groups

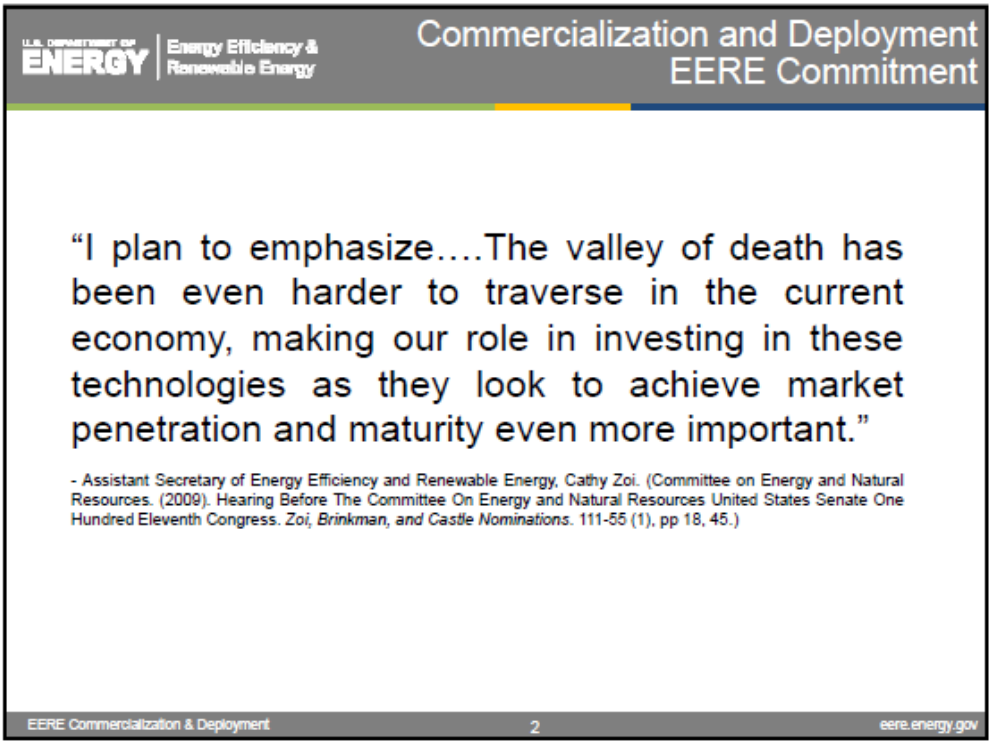
Comparison of ERAC and STEAB

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Energy Efficiency and Renewable Energy Advisory Committee	State Energy Advisory Board
Committee scope as defined by its charter	**Committee scope as defined by its charter**
• Periodic Reviews of the diverse elements of EERE research, development, demonstration, and deployment portfolio.	• Make recommendations to Assistant Secretary for EERE **with respect to the energy efficiency goals and objectives of programs carried out under Parts D and G of the Energy Policy and Conservation Act and under Part A, title IV of the Energy Conservation and Production Act** and to make administrative and policy recommendations to improve these programs, including actions that should be considered to encourage non-Federal resources (including private resources) to supplement Federal financial assistance
• Advice on competing long-range plans, priorities, and strategies to support EERE's mission	• Serve as liaison between the States and DOE on energy efficiency and renewable energy resource programs
• Advice on appropriate levels of funding to develop plans, priorities, and strategies to help maintain an appropriate balance between competing elements of the EERE programs	• Encourage transfer of the results of the energy efficiency and renewable energy resource activities carried out by the Federal Government
• **Advice on specific issues of concern to DOE as requested by the Secretary of Energy or Assistant Secretary for EERE**	

Appendix F: Commercialization Update from Ms. Holland





U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Commercialization and Deployment Initiatives

Initiatives

- TCF 2007 & 2008 administration (in support of EPACT 2005, Title X)
- Entrepreneur in Residence
- Energy Innovation Portal
- Innovation Ecosystem Development Initiative
- "Speed of Business" Lab Agreement Throughout Study

Duties

- Providing Finance Expertise
  - Commercial Real Estate Efficiency Retrofit Financing
  - Bloomberg New Energy Finance
- Collaboration with Department of Commerce
  - USEAC Education
  - National Export Initiative drafting and HTS code revision

ARRA Implementation

- 48C Advanced Energy Manufacturing Tax Credit

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Entrepreneur in Residence (EIR)

Objective: To bridge the gap between the scientific research and venture capital / market-focused talent, lessening the commercialization valley of death

Role

- Targeted talent focused program where an EIR sits alongside a researcher at a National Lab to further move the technology from the lab to the market

Structure

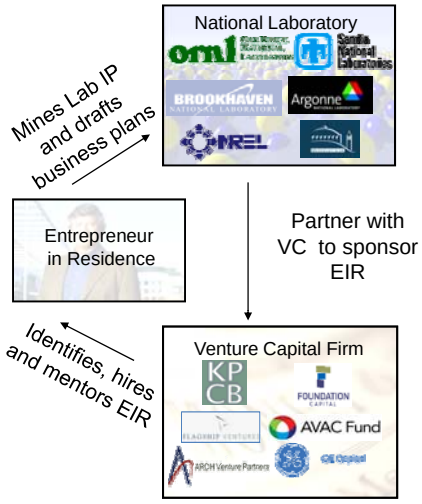
- EERE Competitively selects Venture Capital Firm
- Venture Capital Firm hires entrepreneurs
- EERE provides small matching-funds and full access to laboratory ($50-100K)

Process/ Outcome

- 3EIRs in 2008 - Pilot
- 3 EIRs in 2009 – Rollout & Emulation
  - LabStart / Los Alamos
  - AVAC / Argonne
  - New Companies and Spinouts

Lessons/ Moving Forward

- More time
- Widen scope outside of EE
- New Companies and Spinouts



Energy Innovation Portal

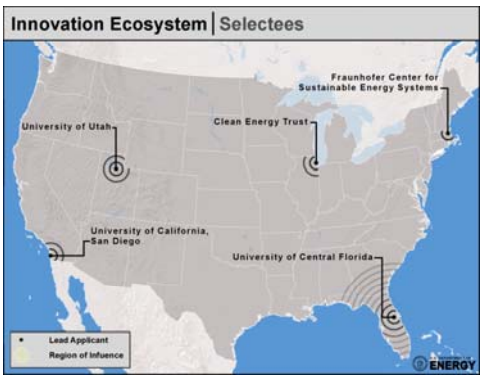
Objective: To bridge the information and technology gaps by promoting technology ready for commercialization to the external market focused community.

Role	• To address the lack of access and visibility of technologies available for commercialization in the National Labs that are ready for market and or commercial partners • Required by NREL M&O Contract
Structure	• Website designed for prospective investors and companies to search information on all patented EERE technologies at the National Labs • Focus on technology ready for licensing and commercialization
Process/ Outcome	• 100 project summaries prior to large-scale roll-out in June 29, 2010 • 180 project summaries on the website as of August 2010
Moving Forward	• 180 summaries end FY10; 205 today • Pipeline is 279 • Potential to scale, add additional features and expand scope of mission

Innovation Ecosystem Development Initiative

"Accelerating the rate of movement of innovative energy technologies from university laboratories to the market."

- A diverse group of applications, range of backgrounds
- Covering regions throughout the country
- Activity is focused on university tech transfer



- Released: May 21, 2010
- Selections announced: September 15, 2010
- 5 awards of $1,050,000 over 3 years
- Cost Share Requirement: 20%

Technology Commercialization Fund (TCF)

Objective: To bridge the funding gap between profit driven investors and innovation driven scientists

Role	• Funding for highly-focused early-stage lab technologies on the brink of commercialization • Removes hurdles to early stage commercialization • In 2007 and 2008 fund size determined by 0.9% of EERE Applied R&D spending
Structure	• Funds restricted to prototype development, demonstration and deployment • All funds will be administered in partnership with third-party sponsors who provide at least 50% of the maturation project costs • Decision Criteria: likelihood of commercial success, potential market opportunity, aligned with DOE priorities
Process/ Outcome	• 52 Projects Funded • Solar, Buildings and Biomass majority of TCF project technology areas • NREL and ORNL received the largest amount of funding • 14 R&D 100 Award Winners
Lessons/ Moving Forward	• Problems –Great Recession and corporate partner back-out • Contractual vehicles can hold up progress • Cost share requirement is helpful, but may slow progress in very early stage technologies • Need performance and success metrics

Section 1001.(e) Highlighted

Energy Policy Act of 2005

(Signed Aug. 8, 2005)

- Authorizes the establishment of the Technology Commercialization Fund (TCF)

Title X Sec.1001 (e) TECHNOLOGY COMMERCIALIZATION FUND.

— The Secretary shall establish an Energy Technology Commercialization Fund, using 0.9 percent of the amount made available to the Department for applied energy research, development, demonstration, and commercial application for each fiscal year, to be used to provide matching funds with private partners to promote promising energy technologies for commercial purposes.

TCF Process

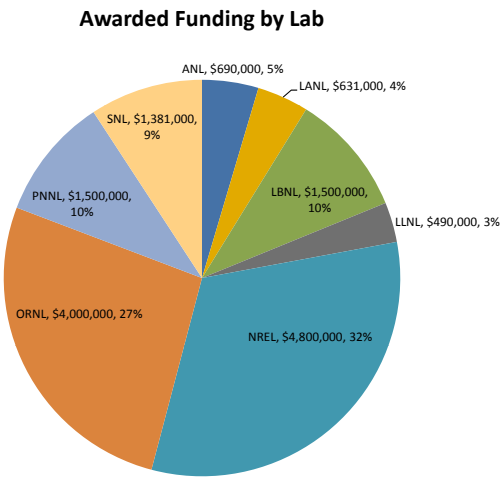
Objective:

To deploy EERE technologies developed in the national labs into the commercial marketplace.

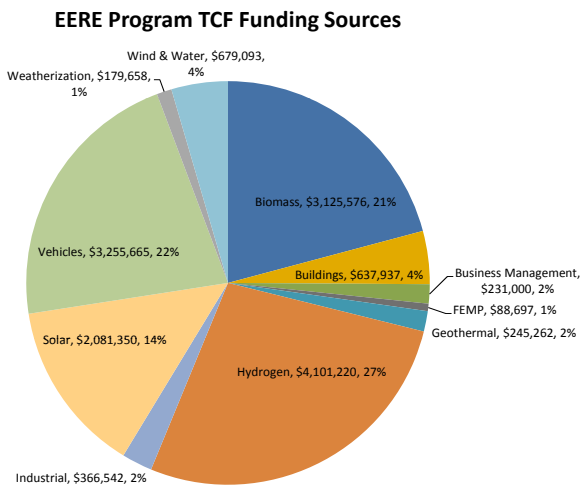
- Labs apply for funds, and develop own process for selecting projects
- Projects span the Energy Efficiency and Renewable Energy Technology Portfolio
- Technology selection and deployment is based on market demand
- Minimum 50% Partner Cost Share required on all projects
- In 2007, the fund was called the Technology Commercialization Development Fund or TCDF
- As of 2008, the fund was called the Technology Commercialization Fund or TCF

2007	2008
NREL	ORNL
ORNL	LBNL
SNL	PNNL
	SNL
	ANL
	LANL
	LLNL

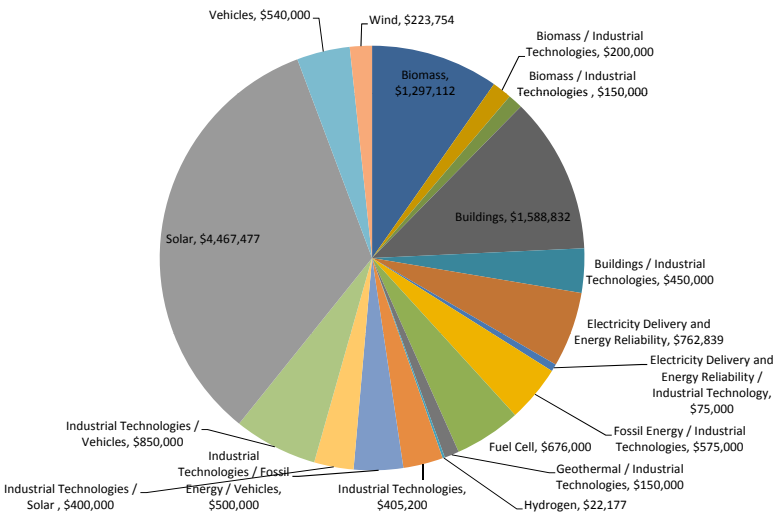
Funding by Lab



Funding by Program Source

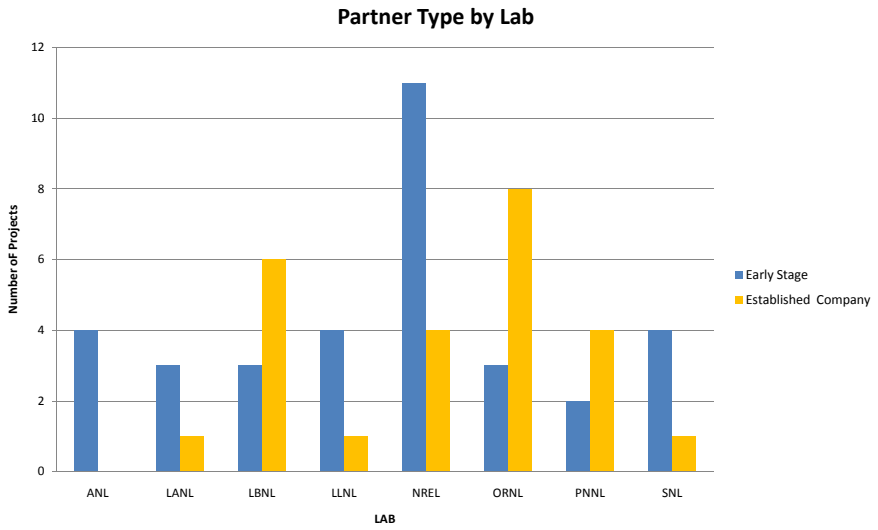


Funding by Technology



U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

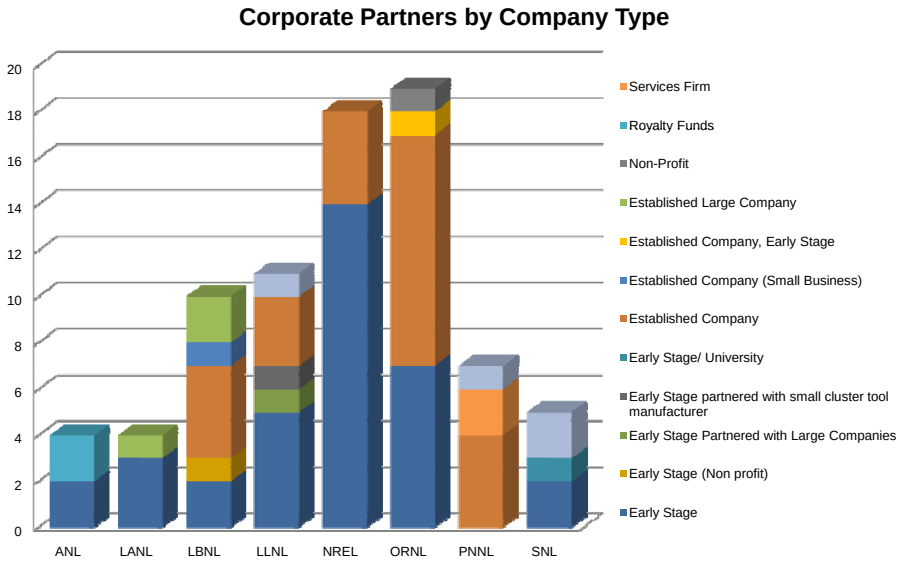
Partner Type by Lab



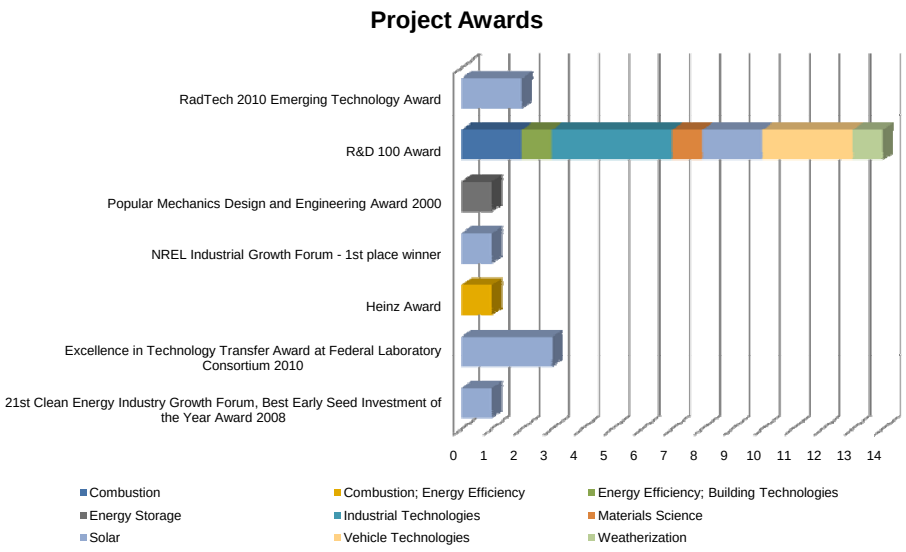
This graph reflects the 52 projects that are completed and ongoing

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

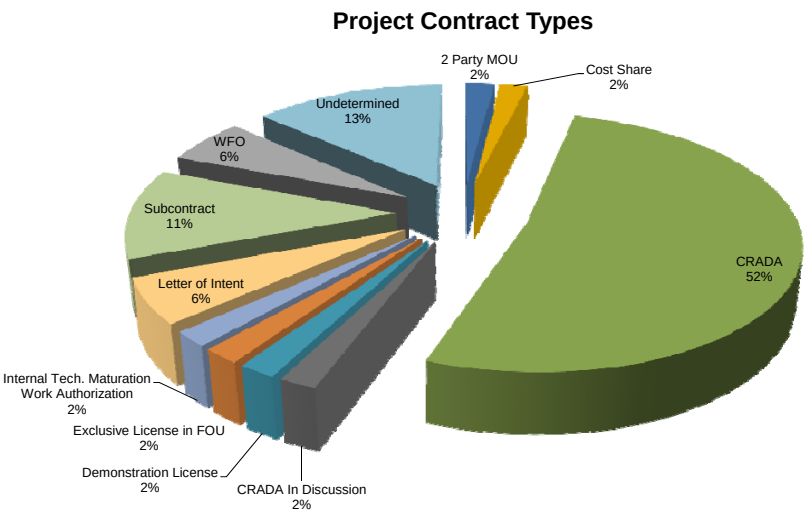
Corporate Partner Types Breakout



Project Awards



Contract Types

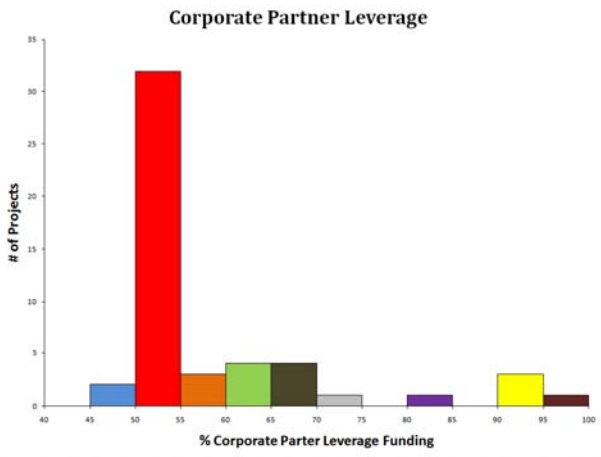


TCF Outcomes – Measuring Success

- 52 Projects Completed and Ongoing
- Corporate Partner Leverage
  - % of Corporate Cost Share, relative to total
- License Creation
  - # of Licenses Exercised
- Technology Readiness Level Increase
  - Scale from 1 (basic idea) to 9 (Commercial)
- Commercial Success Potential
  - Low – low potential of commercial success
  - Medium - more than one indication the project will be a commercial entity, a possibility exists the project could commercialize
  - High – high potential for commercialization with additional commitment from commercial partner (license, monetary, etc.)

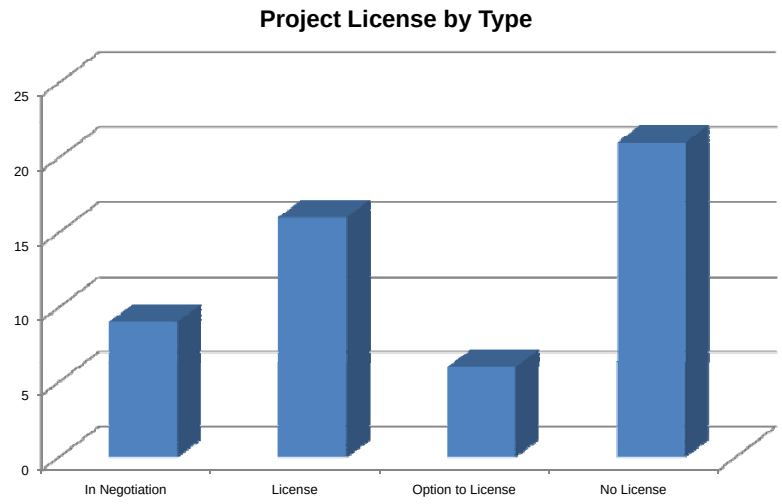
Corporate Partner Leverage

Percentage Leverage	# of Projects
45	0
50	2
55	32
60	3
65	4
70	4
75	1
80	0
85	1
90	0
95	3
100	1
Total Projects	51

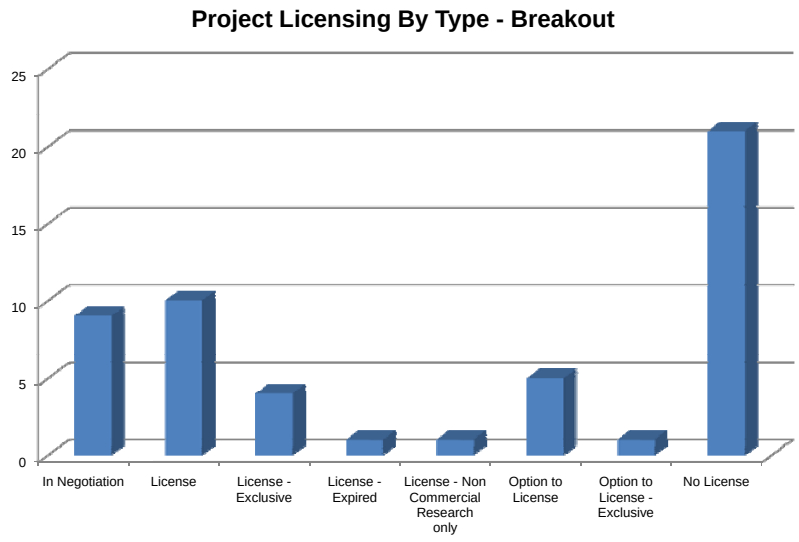


This graph reflects the 51 projects out of the total of 52. The unrecorded project denotes a lab and venture capital consortium with an unspecified amount of partner leverage.

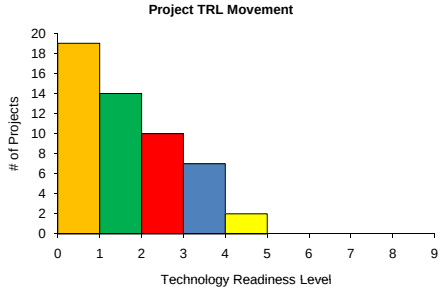
Project Licensing Metric

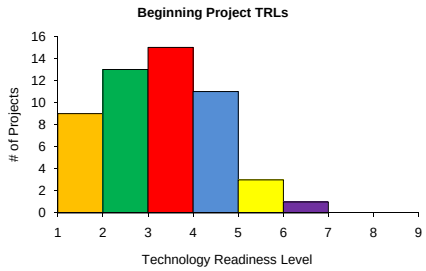


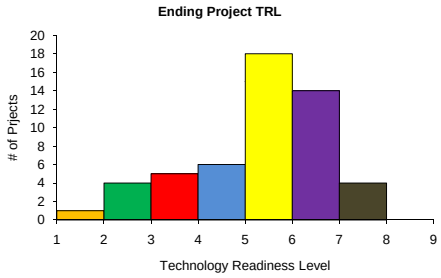
Project Licensing Metric



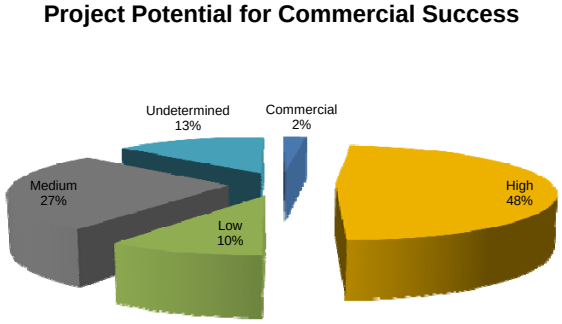
Technology Readiness Level Project Movement







Potential for Commercial Success



Row Labels	Count of Project Name
Commercial	1
High	25
Low	5
Medium	14
Undetermined	7
Grand Total	**52**

Summary of Analysis

- **52** Projects Completed and Ongoing
  - Solar and Buildings projects constitute the majority of the funded portfolio
- Most projects are **50 to 55% Leveraged**
- Most projects resulted in **No Licenses - yet**
- Most projects moved **1 to 2 Technology Readiness Levels**
- Most projects have a **High or Medium Potential** for commercial success

Los Alamos TCF Impact

- CRADA with Procter & Gamble
  - Production of alcohols and olefins from cellulose (non-petrochemical feedstock)
  - $200K TCF funds; $1.2M partner funds; $1.8M partner in-kind
- CRADA with Solix Biofuels
  - Using acoustic separation to harvest algal lipids
  - $200K TCF funds; $145K partner funds; $225K partner in-kind
- CRADA with EnergyWare
  - Software that optimizes energy use by computer CPUs
  - $154K TCF funds; $250K partner in-kind
- LabStart - Ultraconductus
  - Nanotechnology-based conductor with goal of 5 - 20X the conductivity of copper, at a lower cost (ultraconductor)
  - $77K TCF funds

Sandia TCF Impact

- Letter of intent with Advent Solar
  - Development of emitter wrap-through solar cell technology
  - $200K in TCF funds; $2M in partner in-kind
- Letter of intent with Accelergy Corp and UTEP
  - Designer transition metal sulfide catalysts for next-generation fuel synthesis
  - $290K in TCF funds; $300K in partner in-kind
- CRADA with Automotive Fuel Cell Corp
  - Automotive deployment of proton exchange membrane for automotive fuel cells
  - $476K in TCF funds; $250K in partner funds; $1M in partner in-kind
- CRADA with H2Scan
  - Prototype hydrogen sensors fuel cell vehicles
  - $200K in TCF funds; $32K in partner funds; $210K in partner in-kind
- Letter of intent with Solar Infra
  - Fully integrated plug-play AC solar energy system
  - $193K in TCF funds; $900K in partner in-kind

Argonne TCF Impact

- Cost Share with Energy ANL Systems Division
  - Resin wafer deionization for biodiesel desalination
  - $75K TCF funds; $75K partner in-kind
- Subcontract with Advanced Diamond Technologies
  - Ultrananocrystalline diamond hydrodynamic thrust bearings for pharmaceutical processing
  - $155K TCF funds; $260K partner in-kind
- WFO with SiLyte
  - Organosilicon electrolytes for lithium batteries
  - $200K TCF funds; $360K partner funds
  - Leveraged $5.8M from DOE Office of Vehicle Technologies for similar materials
- With University of Chicago Argonne LLC
  - Atomic layer deposition of indium tin oxide for flat panel display
  - $240K TCF funds; $260K partner funds

Lawrence Berkeley TCF Impact

- WFO consortium with Statoil ASA, Boeing, GM, and POET
  - Technological economic modeling tool for lignocellulosic biorefineries
  - $100K TCF funds; $150K partner cash contribution
- MOU with Infosys, California Energy Commission, DOE-Building Technologies
  - Development of GUI for EnergyPlus (building simulation tool for more efficient designs)
  - $250K TCF funds; $1.8M partner funds; $1.5M partner in-kind
- CRADA with Carrier and Honeywell
  - Low swirl burner for ultra-low emissions in heating systems
  - $150K TCF funds; $150K partner in-kind
- CRADA with UC Berkeley, Magee Scientific, TSI Inc, Harmonic Devises
  - MEMS-based sensors for commercial buildings and process control
  - $249K TCF funds; $252K partner in-kind
- CRADA with World Vision Australia
  - Fuel efficient stoves pilot in Ethiopia (derivative of Berkeley-Darfur stove)
  - $137K TCF funds; $137K partner in-kind from World Vision
  - Partner in Global Alliance for Clean Cookstoves from Clinton Global Initiative

Lawrence Berkeley TCF Impact (cont)

- CRADA with OSIsoft (formerly with SAP)
  - Distributed Energy Resources Customer Adoption Model microgrid optimization software
  - $160K in TCF funds; $150K in partner in-kind
- CRADA with Empire Magnetics
  - Field demonstrations for certification of a 3 KW vertical axis wind turbine, located on Treasure Island
  - $223K in TCF funds; $221K in partner in-kind
  - Technology originated from Institute for Proliferation Prevention (IPP)
- CRADA with Rose Street Labs Energy
  - Development of nitride/silicon tandem solar cell
  - $100K in TCF funds; $100K in partner in-kind

Lawrence Livermore TCF Impact

- Demonstration License with Amber Kinetics, Arnold Magnetic Technologies, and EMB Inc.
  - Fly wheel with massive magnetic bearings and electrostatic generator for energy storage
  - $225K in TCF funds; $30K in partner funds (possibly $5M more); $120k in partner in-kind
  - One partner exited, then another emerged
  - Active in Arc of Hilo, Hawaii
- CRADA with TroyCap
  - Nanolaminate capacitor for high density energy storage
  - $75K in TCF funds; $50K in partner funds; $30K in partner in-kind
- CRADA with Tassajara
  - Increased efficiency in collection and storage of thermal energy
  - $75K in TCF funds; $50k in partner funds; $25K in partner in-kind

NREL TCF Impact

- CRADA with Ampulse
  - Thin film cell consisting of heteroepitaxially grown silicon on a substrate and buffer layer
  - $750K in TCF funds; $525K in partner funds; $300K in partner in-kind
- Subcontract with Glocon
  - Improved blade profile for air cooling applications
  - $380K in TCF funds; $725K in partner in-kind
  - Opportunity for commercialization by Glocon dropped several years ago, TCF fund jump-start current commercialization effort
- CRADA with Atlas Material Testing and Technology
  - Prototype of an ultra-accelerated weatherization system
  - $132K in TCF funds; $135K in partner in-kind ;
  - Technology originated from Institute for Proliferation Prevention (IPP)
- Subcontract with Ventek
  - Predicting strength grade of veneer using near infrared light spectrum
  - $137K in TCF funds; $137K in partner in-kind

NREL TCF Impact (cont)

- Subcontract with Nuclear Filter Technology
  - Optical sensor for hydrogen detection
  - $22K in TCF funds; $22K in partner funds
- CRADA with Advanced Optical Systems
  - Development of an optical furnace and use for thin film silicon on glass
  - $500K TCF funds; $420K partner funds; $100K partner in-kind
- CRADA with Schott Solar
  - Coating for heating collecting element in concentrating solar power application
  - $475K in TCF funds; $900K in partner in-kind
- CRADA with SkyFuel
  - Abrasion resistant coating for PV and CSP reflectors
  - $280K TCF funds; $60K partner funds; $204K partner in-kind
- CRADA with SkyFuel
  - Demo Plant of SkyTrough system at SEGS-II in Dagget, CA
  - $245K TCF funds; $407K in partner in-kind
- Subcontract with Tau Science
  - Determining quantum efficiency in photovoltaic cells on manufacturing scale
  - $225K TCF funds; $500K partner in-kind

Oak Ridge TCF Impact

- CRADA with Nu-Energie
  - Combined reaction & product recovery process for biodiesel production
  - $150K in TCF funds; $20K in partner funds; $130K in partner in-kind
- CRADA with eSpin Technologies and MAST Carbon
  - Development of energy-efficient HVAC systems with CO_2 and VOC capture
  - $450K TCF funds; $550K in partner in-kind
- CRADA with Carpenter Technologies
  - Manufacture of evaluation of alumina-forming austenitic (AFA) stainless steel tubes for chemical processing
  - $200k TCF funds; $200K partner in-kind
- CRADA with GE Energy Solar, Capstone Turbine Corp, Ametik Specialty Melts, Carpenter Specialty Alloys
  - Manufacture of evaluation of alumina-forming austenitic (AFA) stainless steel tubes for turbine recuperator
  - $375K TCF funds; $375K partner in-kind
- NanoSteel Company, Southwire
  - Laser fusing of bulk amorphous/nano steels on wear components
  - $150K in TCF funds; $150K partner in-kind

Oak Ridge TCF Impact (cont)

- CRADA with Duraloy Technologies
  - H-Series alloys for application in chemical reformer tubes
  - $200K in TCF funds; $200K in partner funds
- CRADA with Caterpillar, Honeywell
  - CF8C Plus Stainless Steel Thin Section Castings for Turbochargers
  - $500K TCF funds; $550K partner in-kind
- WFO with Ampulse (note NREL partnership)
  - Enhanced thin film photovoltaics on flexible substrates
  - $400K TCF funds; $100K partner funds; $400K partner in-kind
- CRADA with Eaton Innovation, American Magnetics
  - High magnetic field processing of polymorphic materials
  - $550K TCF funds; $250K partner funds; $300K partner in-kind
- CRADA with Carpenter Technologies
  - Advanced thermo-magnetic processing prototype for steel market
  - $100K TCF funds; $50K partner funds; $50K partner in-kind
- CRADA with Metalsa Roanoke
  - Magnetic processing of structural components for transportation vehicles
  - $200K TCF funds; $100K in partner funds; $100K in partner in-kind

Pacific Northwest TCF Impact

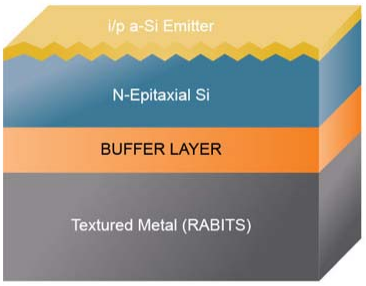
- Proctor & Gamble
  - Conversion of lactic acid derivatives for acrylates
  - $397K in TCF funds; $162k in partner funds; $235K in partner in-kind
- POET Research
  - Fungal bioprocess for upgrading thin stillage
  - $175K in TCF funds; $175K in partner funds
- ATMI
  - Manufacturing rapid cycle thermal swing adsorption module
  - $50K in TCF funds; $50K in partner funds
- CRADA with Vitex, Arkema
  - 25-Year lifetime for flexible buildings-integrated photovoltaics
  - $300K in TCF funds; $300K in partner in-kind
- CRADA with Vorbeck
  - Free-standing electrodes for advanced lithium ion batteries
  - $340K in TCF funds; $30K in partner funds; $310K in partner in-kind

High-efficiency crystalline silicon PV made at low thin-film costs

Recipient: NREL/ORNL
Project Partner: Ampulse
Project Status: On-Going
Agreement Type: CRADA
Related Program: Solar

TCF Funding: $900,000
Partner Cash Contribution: $675,000
Partner In-Kind Contribution: $300,000
Partner Type: Early Stage

- Ampulse is a start-up company that was formed by Battelle Ventures to commercialize a thin film silicon photovoltaic technology utilizing intellectual property from NREL and Oak Ridge National Laboratory.
- Typical crystalline photovoltaic cells utilize only a small portion of the total silicon used in the manufacture of the cell for electricity generation. This effect, coupled with the silicon wasted in the manufacture of crystalline photovoltaic cells, has led scientists to investigate thin film opportunities.
- If successful, Ampulse will develop a thin film cell consisting of heteroepitaxially grown silicon on a specialized substrate and buffer layer. ORNL is providing the buffer layer and substrate that is being used at NREL for heteroepitaxy silicon growth.
- *Ampulse now has 9 employees, 6 consultants, 16 sponsored researchers, and $13M in equity*



Ampulse c-Si Thin-Film Single Junction Photovoltaic Cell

Fuel Efficient Stoves Pilot in Ethiopia

Recipient: LBNL
Project Partner: World Vision Australia
Project Status: On-Going
Agreement Type: CRADA
Related Program: Building Technologies

TCF Funding: $137,000
Partner Cash Contribution: $0
Partner In-Kind Contribution: $137,000
Partner Type: Early Stage (Non-Profit)

- More energy efficient cooking stoves will reduce GHG emissions due to combustion. The Berkeley-Darfur stove is applicable throughout sub-Saharan Africa, to perhaps 100 million people.
- World Vision International (WVI) would like to implement a fuel-efficient stove in Ethiopian households, earn carbon-credits from the saved fuel, and thus make the efficient stoves program financially self-sufficient.
- LBNL will provide technical support, test suitable instrumentation for validation and verification of stove usage in the field, and conduct emissions tests on the modified stoves using simulated Ethiopian cooking protocols.
- Principal Investigator is Dr. Ashok Gadgil
- Darfur Stoves Project recently announced as Partner in Global Alliance for Clean Cookstoves from Clinton Global Initiative.

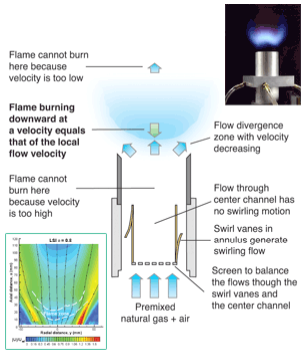

Ethiopian cook stove

Low Swirl Burner for Residential and Commercial Applications

Recipient: LBNL
Project Partner: Carrier, Honeywell (2 projects)
Project Status: Complete/On-Going
Agreement Type: CRADA
Related Program: Building Technologies

TCF Funding: $150,000
Partner Cash Contribution: $0
Partner In-Kind Contribution: $ 150,000
Partner Type: Established Company

- The LSB is a patented technology that offers ultra-low emissions, high efficiency, and low fabrication cost. The burner assembly will be a low velocity, low pressure drop design compatible with existing heat exchanger configurations and operating with a heat output up to 30 kBtu/h.
- LBNL will adapt the Low Swirl Burner (LSB) to operating conditions for high efficiency downfired storage tank water heaters.
- Carrier has provided a prototype of a furnace with the LSB that LBNL has tested and has found to meet with SCAQMD proposed emissions rules.
- Honeywell currently has a license with LBNL for the LSB and is in negotiations to expand their capabilities to include water heaters.



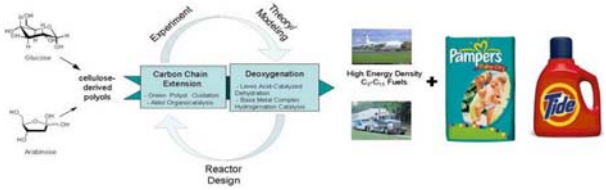
Schematic of how the low-swirl combustion effect is achieved.

Chemical Conversion of Cellulose to Hydrocarbons

Recipient: **LANL**
Project Partner: **Procter & Gamble Co.**
Project Status: On-Going
Agreement Type: **CRADA**
Related Program: **Industrial Technologies**

TCF Funding: **$200,000**
Partner Cash Contribution: **$1,125,000**
Partner In-Kind Contribution: **$1,800,000**
Partner Type: **Established Company**

- The objective is to create an alternative to petroleum-based feedstocks for manufacture of plastics (packaging) and surfactants by chemical conversion of cellulose (renewable sugars) to hydrocarbons.
- LANL staff brought this potential catalytic pathway to P&G's attention in late 2008, using a $20K demonstration project, funded from LANL's license royalties, as an early proof of principle. That early demonstration, plus the commitment of TCF funds, convinced P&G to pursue the project.
- New chemistry for bio-degradable cleaning products has spun out from the core project. LANL has invested $20K of its royalty funds in yet another proof of principle, which P&G will evaluate for its performance characteristics during Fall 2010.



Appendix G: USDA/DOE Task Force White Paper Draft

USDOE/USDA
State Energy Extension Partnership (SEEP) Concept Paper
October 1, 2010

Background – The State Energy Advisory Board (STEAB) adopted Resolution 10-01, which encourages the USDOE and USDA to initiate an active dialogue which will result in the establishment of a formal partnership between State Energy Offices (SEOs) and State Extension Services (SES) for the purposes of enhancing the education of Americans regarding energy efficiency and renewable energy. Based on the above, this "white paper" is known as the State Energy Extension Partnership (SEEP). SEEP will enhance the education of American citizens regarding energy efficiency and renewable energy through the collaborative efforts between SEOs and SES. Resolution 10-01 outlined several recommendations regarding the establishment of a formal agreement between the two agencies, and charged a Task Force to initiate a dialogue with USDOE and USDA in order to pursue the recommendations.

The STEAB Task Force held meetings and conference calls with USDA and USDOE officials in September to gauge interest in the Resolution. Leadership from both groups expressed positive interest in the concept and agreed to participate in a joint meeting to further explore the recommendations. The STEAB Task Force hopes to schedule their next meeting in early November 2010.

Program Objectives and Outcomes – The STEAB Task Force recommends the following ***objectives*** for this joint national effort:

- Educate and provide technical assistance to multiple publics (youth and adults) in energy efficiency and renewable energy for individuals, homes, communities, and businesses;
- Educate individuals about incentives for purchase and use of renewable energy and energy efficient appliances, transportation, and home remodeling expenses;
- Support community (especially smaller units of government, including counties, cities, schools, etc.) learning and actions to effectively leverage State and Federal energy programs (e.g., ENERGY STAR) that support appropriate demonstration projects at the community level;
- Design and carry out energy efficiency and renewable energy program impact evaluations; and
- Facilitate community-based exploration and decision-making processes.

The following ***outcomes*** could be derived from these activities:

- Reduce the use of energy in homes and businesses;
- Increase the number of participants in energy efficiency incentives programs;
- Increase understanding by community leaders about how to participate in energy efficiency programs;

- Increase the number of homes and businesses that utilize renewable energy technologies;
- Increase consumer awareness of energy issues when making large and small purchases;
- Increase the number of ENERGY STAR®-labeled buildings and homes; and
- Increase sales of ENERGY STAR® appliances.

Program Design – The STEAB Task Force recommends that USDOE and USDA establish a joint working group of National Program Leaders to design and manage this effort. Federal resources in the range of $20 - $25M per year would need to be identified, shared in some fashion between the two agencies. Funding would be allocated through the State Energy Offices, and the program would need to be conducted for a minimum of three years in order to be effective.

A "soft" grant approach would be used requiring SEOs and SES to collaborate on a single State proposal that would be submitted to the USDOE / USDA joint working group for evaluation and selection. States not submitting a joint proposal would be ineligible for the grant. It is recommended that USDOE / USDA establish minimum threshold criteria for grant awards, and a formal evaluation would be required. In response, program objectives, activities, and outcomes would need to be clearly identified in each State's proposal.

The funding would be awarded to individual States through their State Energy Office for program implementation. Formal program evaluations would be conducted by the SEO / State Extension Service partnership, and State impacts would be reported back to the USDOE / USDA joint working group.

Initiation – STEAB recommends this joint effort between USDOE and USDA be started as early in Fiscal Year 2011 as is feasible, in order to fully support the current Administration's commitment to help move the Nation to more practical uses of its energy resources.

Further, STEAB is committed to supporting this effort; and they plan to continue their discussions with all parties in order to help move the project forward.

Attachments:

Appendix 1 – State Energy Advisory Board
Appendix 2 – State Energy Programs
Appendix 3 – Cooperative Extension System

APPENDIX 1: STATE ENERGY ADVISORY BOARD

The State Energy Advisory Board was established by Public Law 101-440 (The State Energy Efficiency Programs Improvement Act of 1990) to advise the Department of Energy on operations of its Federal grant programs. The Board's statutory charge is to develop recommendations regarding initiation, design, evaluation, and implementation of energy efficiency and renewable energy programs, policies, and technologies. The Board is legislatively mandated to advise and make recommendations to the Assistant Secretary for Energy Efficiency and Renewable Energy (EERE) on efforts relating to EERE programs, with a specific focus on technology transfer and State issues.

The Board is comprised of State energy directors, Weatherization directors, other State officials, representatives of State and local interests, and recognized experts in energy-related disciplines. In its capacity as an advisory board, STEAB serves as a liaison between individual States and the Department of Energy with regard to energy efficiency and renewable energy programs. STEAB is in an advantageous position due to the fact that, unlike other EERE FACA committees, it is not program specific. They offer a forum for the exchange of ideas and information through which Federal, State, and local voices can be heard at the Department of Energy.

In compliance with STEAB's enabling Statute, the Board submits an annual report to the Secretary, the U.S. Congress, and the General Services Administration (GSA) on the activities carried out within the previous fiscal year. This report contains not only a summary of the Board's activities, but also a copy of all of the Board's Resolutions to the Assistant Secretary during that fiscal year.

APPENDEX 2: STATE ENERGY PROGRAMS

The State Energy Program (SEP) is the only Federally-funded, State-based program administered by the U.S. Department of Energy (USDOE) that provides resources directly to the States for allocation by them for energy efficiency and renewable energy uses. The SEP provides financial and technical assistance to States through both *formula* and *competitive* grants. States use their *formula* grants to develop State strategies and goals to address their individual energy priorities. *Competitive* grant solicitations for the adoption of energy efficiency / renewable energy products and technologies are issued annually, based on available funding. States provide a 20% match under SEP annual *formula* allocations. SEP emphasizes the State's role as the decision maker and administrator for the program activities within the State. The Energy Offices in each State and Territory are a vital resource for delivering energy benefits, addressing national energy goals, and coordinating energy-related emergency preparedness across the Nation.

With SEP funds and the resources leveraged by them, the State and Territory Energy Offices develop and manage a variety of programs geared to increase energy efficiency, reduce energy use and costs, develop alternative energy and renewable energy sources, promote environmentally conscious economic development, and reduce reliance on oil produced outside the U.S., all in the interest of helping to assure energy reliability and strengthening America's competitive position and national energy security.

Additionally, State Energy Offices are involved in administering public benefit funds and emergency preparedness. In this regard, States manage and invest more than $3 billion of their own funds derived from appropriations and system benefit charges each year.

Congress created the State Energy Program in 1996 by consolidating the State Energy Conservation Program (SECP) and the Institutional Conservation Program (ICP). Both programs went into effect in 1975. SECP provided States with funding for energy efficiency and renewable energy projects. ICP provided hospitals and schools with a technical analysis of their buildings, and identified the potential savings from proposed energy conservation measures.

Under the American Recovery and Reinvestment Act of 2009 (Recovery Act), the Department of Energy's (DOE) Office of Energy Efficiency and Renewable Energy (EERE) received $3.1 billion to be distributed through the SEP to stimulate the economy by creating and preserving jobs while increasing energy efficiency and the use of renewable energy. Under the authorizing legislation for the SEP, the 50 States, 5 Territories, and the District of Columbia (States) had a degree of flexibility to design and implement programs that met their specific energy needs and goals. In response to a DOE, the States prepared plans summarizing energy-related programs and projects planned for the SEP Recovery Act funds. After reviewing those plans, EERE awarded Recovery Act funding to the States for approved projects consistent with the goals of the program. The $3.1 billion awarded through the Recovery Act was a dramatic increase over the $25 million appropriated for SEP *formula* grants in Fiscal Year 2009.

APPENDEX 3: COOPERATIVE EXTENSION SYSTEM

All universities engage in research and teaching, but the Nation's more than 100 land-grant colleges and universities have a third critical mission – extension. "Extension" means "reaching out," and – along with teaching and research – land-grant institutions "extend" their resources, solving public needs with college or university resources through non-formal, non-credit programs.

These programs are largely administered through thousands of county and regional extension offices, which bring land-grant expertise to the most local of levels. And both the universities and their local offices are supported by the National Institute of Food and Agriculture (NIFA), the Federal partner in the Cooperative Extension System (CES). NIFA plays a key role in the land-grant extension mission by distributing annual Congressionally-appropriated formula grants to supplement State and county funds. NIFA affects how these formula grants are used through national program leadership to help identify timely national priorities and ways to address them.

NIFA administers funding for Smith-Lever Act services in cooperation with State and county governments and land-grant universities. The Smith–Lever Act of 1914 is a United States Federal law that established a system of cooperative extension services, connected to the land-grant universities, in order to inform people about current developments in agriculture, home economics, and related subjects. In brief, the appropriation for cooperative extension is shared between the States based on a specific formula.

Congress created the extension system nearly a century ago to address exclusively rural, agricultural issues. At that time, more than 50 percent of the U.S. population lived in rural areas, and 30 percent of the workforce was engaged in farming. Fewer than 2 percent of Americans farm for a living today, and only 17 percent of Americans now live in rural areas. Yet, the extension service still plays an important role in American life – rural, urban, and suburban. With its unprecedented reach – with an office in or near most of the Nation's approximately 3,000 counties – extension agents help farmers grow crops, homeowners plan and maintain their homes, and children learn skills to become tomorrow's leaders.

Despite the decline in the population and economic importance of rural America, the national Cooperative Extension System remains an important player in American life. It increasingly addresses urban, suburban, and rural issues; and it has responded to information technology changes in America by developing a national Web presence.

Over the last century, extension has adapted to changing times and landscapes, and it continues to address a wide range of human, plant, and animal needs in both urban and rural areas. Today, extension works in six major areas:

- 4-H Youth
- Agriculture

•Leadership
•Natural Resources
•Family and Consumer Sciences
•Community and Economic Development

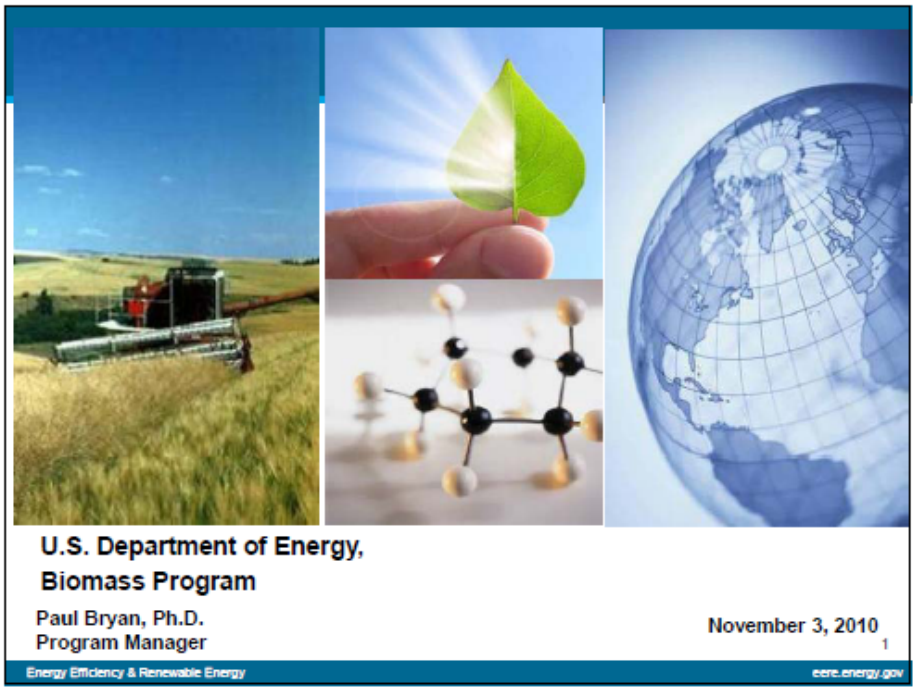
Regardless of the program, extension expertise meets public needs at the local level. Although the number of local extension offices has declined over the years, and some county offices have consolidated into regional extension centers, there remain approximately 2,900 extension offices nationwide. Increasingly, extension serves a growing, increasingly diverse constituency with fewer and fewer resources.

The extension system also supports the eXtension Web site. One of the goals of eXtension is to develop a coordinated, Internet-based information system where customers will have round-the-clock access to trustworthy, balanced views of specialized information and education on a wide range of topics. For customers, the value will be personalized, validated information addressing their specific questions, issues, and life events in an aggregated, non-duplicative approach.

Information on the eXtension Web site is organized into Resource Areas. Each Resource Area includes articles, news, events, and frequently asked questions (FAQs). The information comes from land-grant university system faculty and staff experts. It is based on unbiased research and undergoes peer review prior to publication. Current Resource Areas are organized around many topics, including – but not limited to – energy, community, family, farm, youth, and more. The Energy Resource Area includes communities that address home energy, farm energy, and wood energy.

The eXtension Web site also includes a collection of news stories from partner institutions, a Frequently Asked Questions section, a calendar of extension events, online-learning

Appendix H: Overview of the Biomass Program by Dr. Paul Bryan



U.S. Department of Energy,
Biomass Program

Paul Bryan, Ph.D.
Program Manager

November 3, 2010

Department of Energy Priorities and Goals

Advancing Presidential Objectives

Science & Discovery
- Connecting basic and applied bioscience
- Conducting breakthrough R&D

Economic Prosperity
- Creating jobs and reinvigorating rural economies
- Supporting the emerging U.S. bioenergy industry and market

Climate Change
- Reducing GHG emissions by 60% for cellulosic biofuels and 50% with advanced biofuels
- Validating and demonstrating low-carbon power generation technologies
- Influencing development of criteria and indicators for sustainable biofuel production

Clean, Secure Energy
- Developing & demonstrating advanced biofuels technologies

Biomass Program Mission, Objectives, Goals

Energy Efficiency & Renewable Energy

Develop and transform our renewable and abundant biomass resources into cost competitive, high performance biofuels, bioproducts, and biopower.

BIOFUELS TARGETS

- **At a modeled cost for mature technology:**
  - **$1.76/gallon cellulosic ethanol by 2012**
  - **$2.85/gallon renewable gasoline by 2017**
  - **$2.84/gallon renewable diesel by 2017**
  - **$2.76/gallon renewable jet by 2017**
- **Support the Renewable Fuels Standard volumetric requirements**

Research, Development, and Demonstration

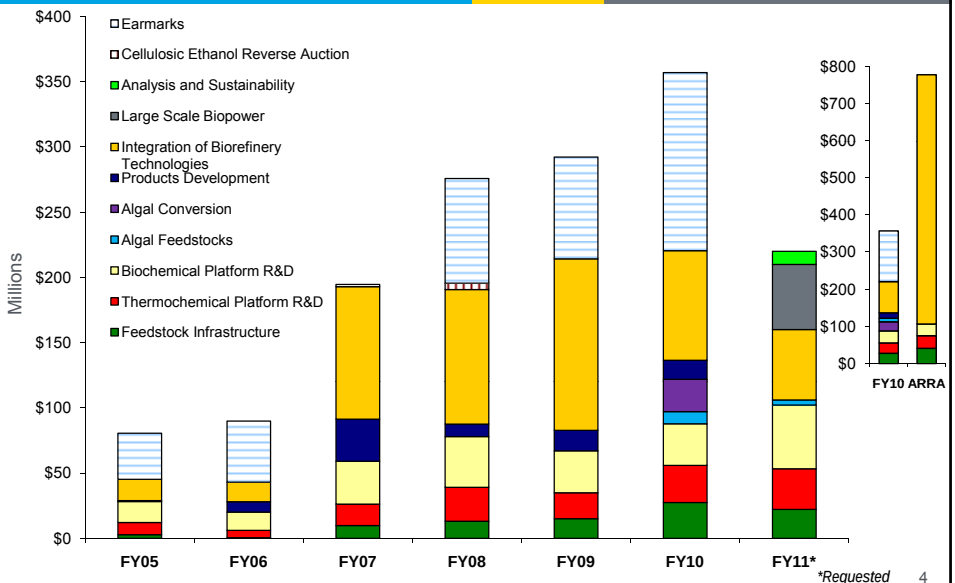
- **Feedstocks**
- **Biochemical and Thermochemical Conversion**
- **Biopower Biofuels Bioproducts**
- **Integrated Biorefineries**
- **Infrastructure**

Crosscutting Activities

Analysis, Sustainability, Strategic Partnerships, Stakeholder Communications and Outreach

Biomass Program Budget & Near-Term Forecast

Energy Efficiency & Renewable Energy

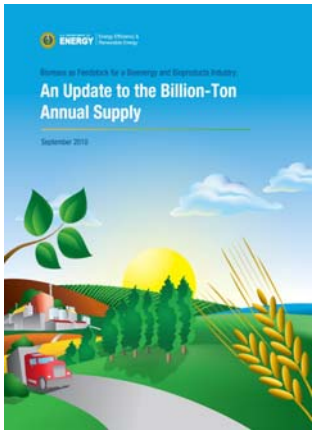


*Requested

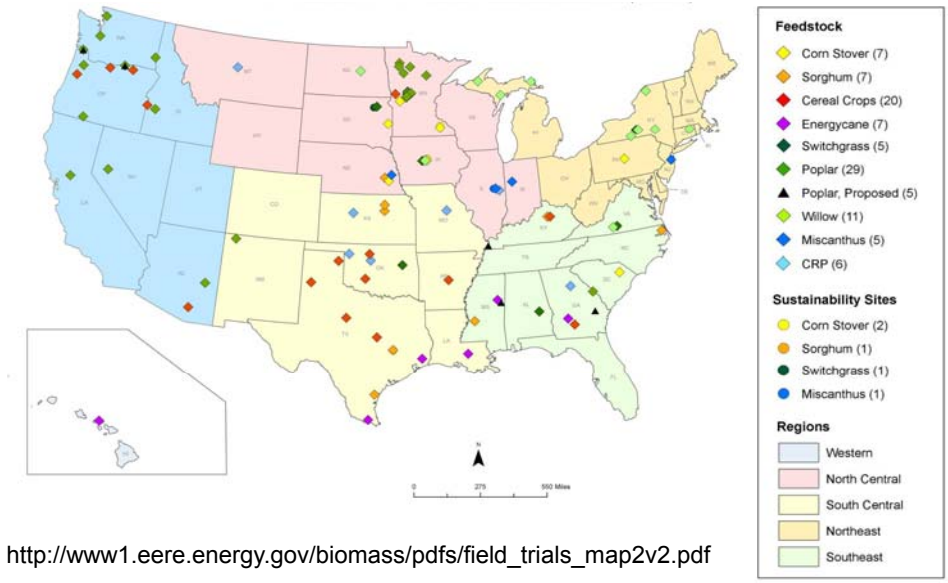
Feedstock Resource Assessment

Update to the 2005 Billion Ton Study

- Baseline and “high yield” scenarios included
- Workshops to gain industry perspective were held in December 2009
- County-level inventory and costs for all major feedstocks
- Used POLYSYS agriculture and new forestry economic models
- Added sustainability criteria
- Data and maps to be available in KDF
- Expected publication in early 2011 (currently undergoing DOE review)



Feedstock Supply R&D
Regional Feedstock Bioenergy Crop Trials



http://www1.eere.energy.gov/biomass/pdfs/field_trials_map2v2.pdf

Algal Biofuels Overview

Benefits of Algal Biofuels

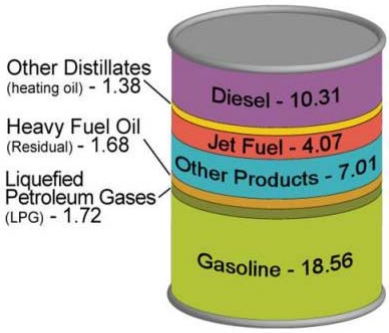
- High productivity
- Minimizes competition with agriculture
- Can use waste and salt water
- Recycles carbon dioxide
- Integrated production of fuels and co-products

Challenges to commercializing Algal Biofuels

- Affordable and scalable algal biomass production
  - Feedstock production & crop protection
  - Energy efficient harvesting and drying
  - Extraction, conversion, and product purification
  - Siting and sustainability of resources

Displacing a Barrel of Crude

Products Made from a Barrel of Crude Oil (Gallons)

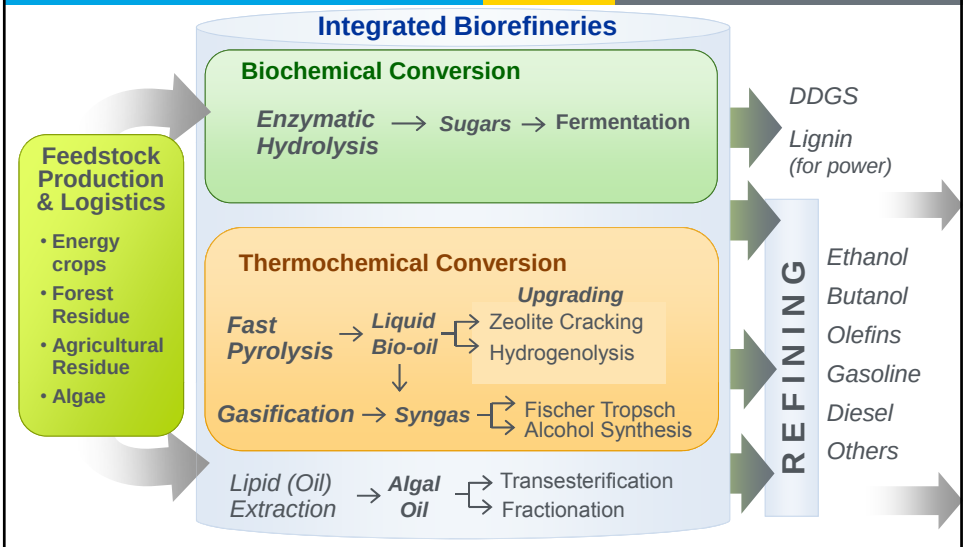


- Advanced biofuels and products are needed to displace the entire barrel
- Heavy duty/diesel and jet fuel substitutes are needed to displace several components of the barrel
- Cellulosic ethanol displaces light duty gasoline

Source: Energy Information Administration, "Petroleum Explained" and AEO2009, Updated (post-ARRA), Reference Case.

Exploring Routes to Convert Biomass

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy



Recovery Act Funding and Initiatives
$800 Million in Funding to Biomass Program

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

$509M 18 R&D, pilot, and demonstration scale biorefinery projects

$82M 1 commercial scale biorefinery project

$107M Fundamental Research
- **$18M:** Integrated Process Development Unit to reduce the cost of feedstock logistics
- **$5M:** Sustainability research
- **$35M:** National Advanced Biofuels Consortium
- **$49M:** National Alliance for Advanced (Algal) Biofuels and Biofuels Products Consortium

$20M Ethanol Infrastructure Research and deployment projects

$14M Expansion of Integrated Biorefinery Research Facility at NREL

$68M SBIR and Program Direction

Integrated Biorefineries

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

- **29 R&D, pilot, demonstration and commercial scale projects selected to validate IBR technologies**
- **Diverse feedstocks represented**
  - Agricultural Residues
  - Energy Crops
  - Algae/CO2
  - Forest Resources
  - Municipal Solid Waste
  - Non-edible oils
- **A variety of transportation fuels, biobased products, and biopower will be developed**
  - Cellulosic Ethanol
  - Butanol
  - Methanol
  - Renewable Gasoline
  - Renewable Diesel
  - Jet Fuel
  - Biodiesel
  - Biobased Chemicals
  - Process heat and steam
  - Electricity

11

Distribution Infrastructure and End Use

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

- Research on the effects of intermediate ethanol blends.
- Deploying E85/blender pumps, storage tanks, and associated infrastructure at retail stations nationwide.
- Research and reporting on multi-modal infrastructure analysis and pipeline feasibility and compatibility issues in coordination with the Department of Transportation.

12

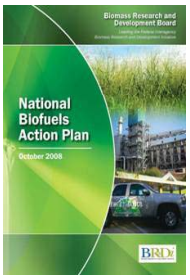
Biopower

Launch a new DOE initiative to accelerate, develop and demonstrate advanced biopower technologies over the next six years. The Initiative will establish partnerships with industry and support efforts to:

- Conduct RD&D on advanced pretreatment and conversion technologies leading to greater percentage biomass co-firing with coal to
  - increase overall efficiency
  - improve environmental performance
  - decrease cost of biopower electricity
- Support pilot scale projects up to 30 MW
- Demonstrate utility scale, biomass repowering with co-firing of up to 20 percent biomass by 2016

Interagency collaborations

Biomass Research and Development Board



Members

- Department of Agriculture (co-chair)
- Department of Energy (co-chair)
- National Science Foundation
- Environmental Protection Agency
- Department of the Interior
- Office of Science and Technology Policy
- Department of Transportation
- Department of Defense

Biofuels Interagency Working Group

- President Obama established the Working Group in 2009
- Co-chaired by DOE, EPA, USDA

Upcoming Funding Opportunities

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Biopower

- Improvements to densify and enhance biomass for efficient combustion – such as by torrefaction
- R&D for integrating densified biomass when combusted with coal in utility boilers at improved efficiency levels

Biomass Research and Development Initiative

- Annual Joint Solicitation between DOE and USDA -- feedstocks development, biofuels and biobased products development, and biouels development analysis

Production Incentives for Cellulosic Biofuels (Reverse Auction)

- Accelerate deployment and commercialization of biofuels and deliver the first billion gallons in annual cellulosic biofuels production by 2015

Information Resources

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

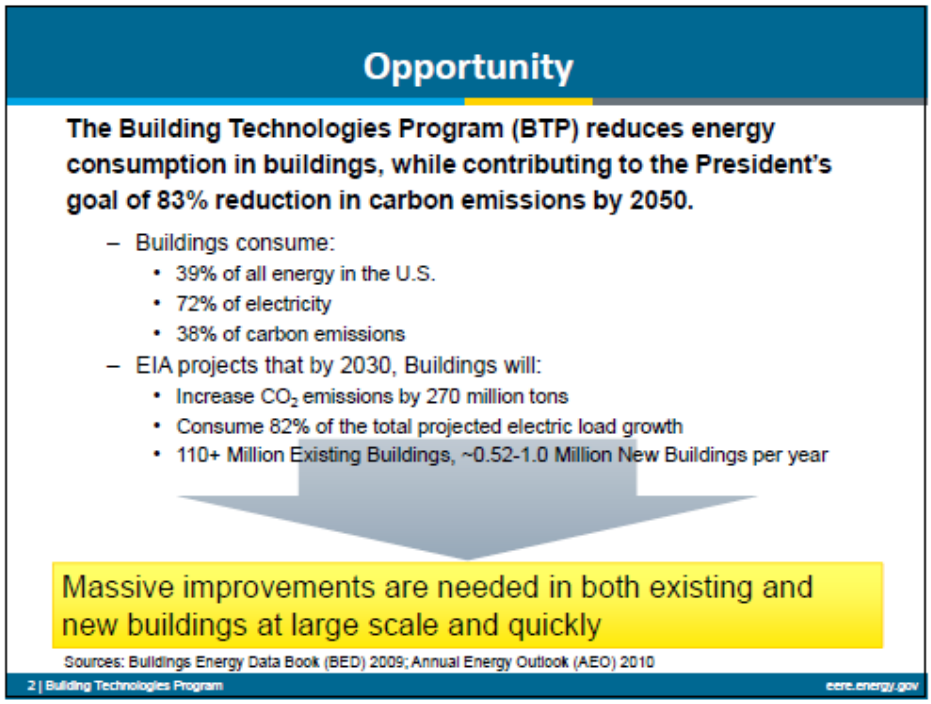
The U.S. Department of Energy Biomass Program produces a variety of publications focused on biomass technologies including factsheets, reports, case studies, presentations, analyses, and statistics.

To learn more visit: www.biomass.energy.gov/pdfs/publications.pdf or the Biomass Publication and Product Library at www.biomass.energy.gov/publications.html

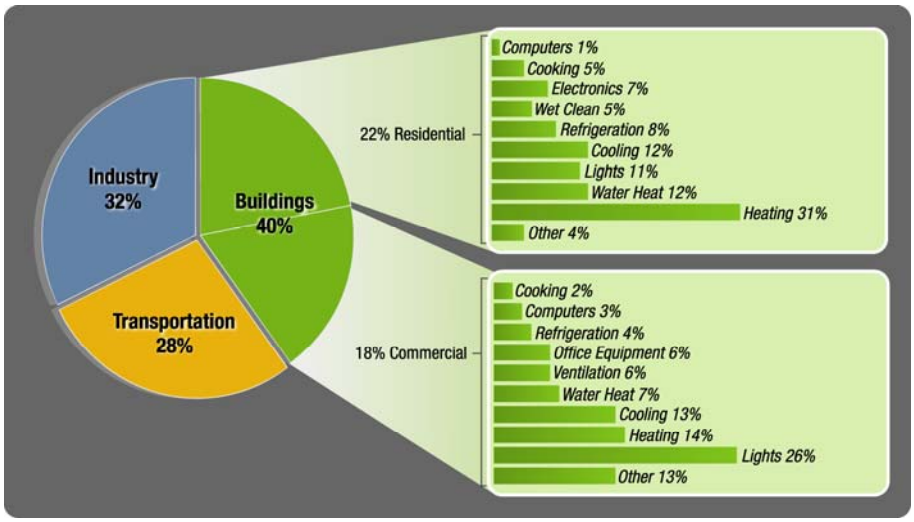
Additional Items of Interest

Biofuels Atlas - http://maps.nrel.gov/bioenergyatlas
Energy Empowers - http://www.energyempowers.gov
DOE on Twitter - http://twitter.com/energy
Secretary Chu on Facebook - http://www.facebook.com/stevenchu
Biomass Program – http://www.biomass.energy.gov
EERE Info Center - www1.eere.energy.gov/informationcenter
Alternative Fuels Data Center - http://www.eere.energy.gov/afdc/fuels/ethanol.html
Bioenergy Feedstock Information Network - http://bioenergy.ornl.gov/
Biomass R&D Initiative – www.biomass.govtools.us
Grant Solicitations - www.grants.gov
Office of Science - http://www.er.doe.gov/
Loan Guarantee Program Office - http://www.lgprogram.energy.gov

Appendix I: Update from the Buildings Technology Program (BTP)



Energy and Buildings



Source: Buildings Energy Data Book (BED) 2009

Program Vision

BTP's Program Vision has four planks:

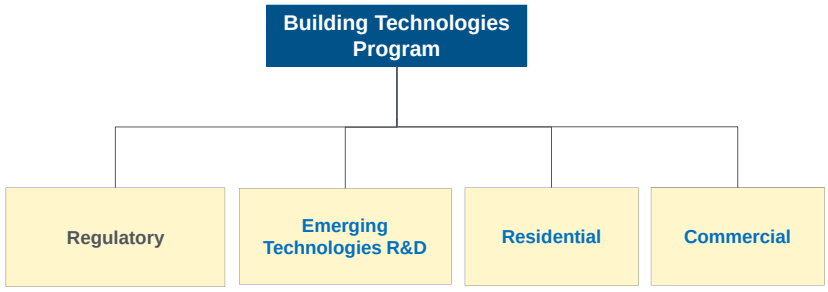
High Impact Innovation: Strategically Focus on High Opportunity Technologies
- Maximize potential energy savings (timing, quantitative results, market acceptance)
- Accelerate the speed and increase the breadth and savings opportunities of codes and standards improvements
- Leverage R&D results to accelerate codes and standards results

Speed and Scale: Deploy Innovative New Programs, Quickly at Scale
- Appliance Rebates, BetterBuildings, Recovery through Retrofit

Capture Hearts and Minds: Increase Focus on Energy Users
- Incorporate economics, markets and behaviors into all BTP Programs
- Communicate effectively to build demand for new technologies, products and markets

Talent: Expand Organizational Capability
- Build technical and leadership skills to sustain long-term momentum

Organization Structure



- Appliance Standards
- Appliance Testing
- Standards Enforcement
- Federal Building Standards
- Building Codes
- ENERGY STAR and Verification
- Super-Efficient Equipment and Appliance Deployment

- Solid State Lighting
- Advanced Heating and Cooling
- Thermal Envelope and Windows
- Solar Heating and Cooling
- Computational Tools
- Sensors and Controls
- Appliances and MELs

- New Homes: Building America
- Existing Homes: BetterBuildings and Technical Support
- Building Rating
- Building Labeling

- Commercial Building Partnerships
- Commercial Building Energy Alliances
- Building Rating
- Building Labeling
- Global Superior Energy Performance(GSEP)

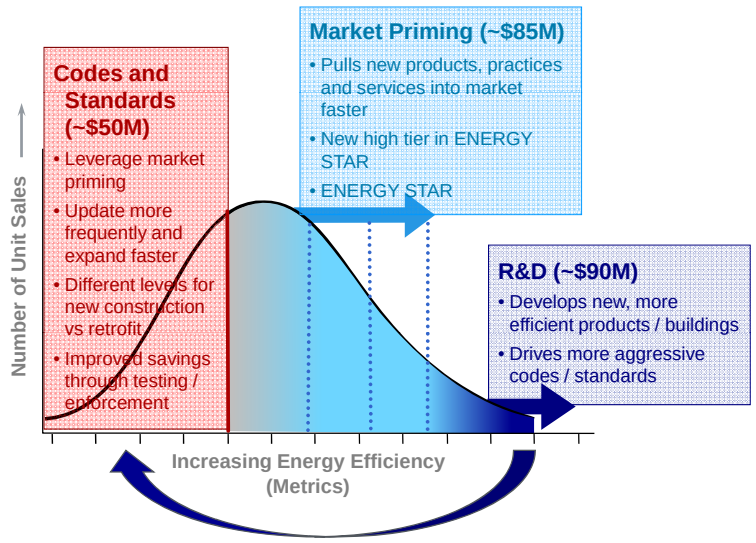
Statutory Requirements

BTP focus is directed by legislation in many areas.

Legislation	Regulatory	Emerging Technologies	Residential	Commercial
DOE Organization Act		●	●	●
EPACT 2005	●	●	●	●
EISA 2007	●	●		●
EPCA, Title III	●			

ILLUSTRATIVE: DOE activities support the legislation that locks in the energy savings. For example, BTP's work on compact fluorescent lights led to the lighting legislation in EISA 2007.

Building Technology Strategy: Speed Technology Innovation and Energy Savings



Program Successes

- Participating in the development of more energy efficient building energy codes that are poised to reach 30% energy savings (90.1-2010 over -2004, IECC-2012 over -2006)
- Publication of 30% and coming soon 50% Advanced Energy Design Guidelines
- Building America and Commercial Building Partnerships
- Accelerated scheduling and publication of Appliance Standards rulemakings while developing a plan to increase the scope
- BetterBuildings demonstrates new approaches for residential retrofits targeting the non-low income market.
- Establishing a new partnership with EPA on ENERGY STAR which includes jointly developing a new higher tier program
- Regional R&D center on integrating buildings technologies and systems – the Buildings HUB

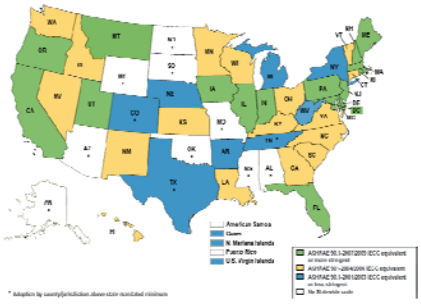
ARRA Funding

- The Recovery Act funding covers the following activities:
  - The Building Energy Codes Program (BECP) -- Expands building code adoption and assists states in their compliance efforts.
  - Appliance Standards Test Procedures -- Accelerates the pace and scope of Appliance Standard test procedure development.
  - Increases the breadth and scope of Energy Star as well as developing a more robust certification and validation process.
  - Commercial Building Partnerships and Specialist Training -- Improve the efficiency of commercial buildings' operations by training 4,000 building operators and commissioning agents.
  - Solar Decathlon

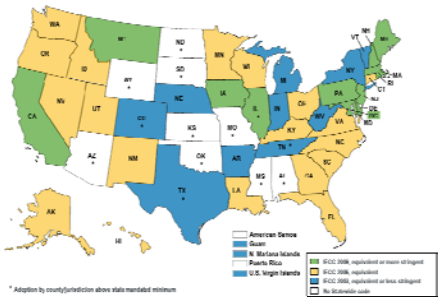
Building Codes » Model Updates

ARRA has aided in States adoption of the 2009 IECC and ASHRAE 90.1-2007.

Commercial Energy Codes



Residential Energy Codes



Building Energy Codes and ARRA Funding

- Current ARRA Funding:
  - Pilots for 90% Code Compliance Assessments and Tools Development
    - Nine states with contracts finalized and pilots in progress
  - Communications platforms are being developed and code compliance gap analysis being performed
  - Residential & Commercial training activities included in Tech. Assistance to States, as well as providing code books
- Codes Solicitation ($7M)
  - PNNL is managing a solicitation funding States / Municipalities to support **Adoption, Training, and Compliance Assessment**
  - Multiple Awards of up to $350K are under contract for each of the three categories for 23 states

Residential and Commercial Integration

Residential and Commercial Integration are working with the marketplace to achieve aggressive deployment goals

- Building America
- State EE Appliance Rebate Program (ARRA)
- BetterBuildings (ARRA)
- Commercial Building Partnerships
- Clean Energy Ministerial: GSEP & SEAD

David Weekley Homes, Palm Harbor Homes, G.W. Robinson Builders, Inc., Ideal Homes, GreenCraft Builders L.L.C.

Residential Partnerships*

Bank of America, Best Buy, CBRE, Forest City, Hilton, Hines, IHG, JCPenney, John Deere, Kohl's, macy's, OPUS, PNC, ProLogis, regency centers, Ryan, Simon, SuperValu, Target, Tishman Speyer, Toyota, Westfield, Whole Foods

Commercial Building Partnerships*

*** Does not include all partnerships**

Residential Buildings Project (Building America and Existing Home Retrofits)

- ***The Residential Buildings Project*** will use Recovery Act funds to increase homeowner energy savings by providing technical support for the Recovery through Retrofit task force, the DOE/EPA MOU, and the DOE/HUD Pilots.
- The Residential Buildings project will implement three primary strategies:
  - Community Retrofits
  - Technical Support
  - Marketing and Outreach
- Train workers and create jobs, developing a new workforce equipped to improve the nation's homes.
- Develop and launch 3 targeted consumer education and outreach campaigns.
- Complete (10) 25% percent+ Energy Savings retrofits
- Complete 4 contractor guidelines reports documenting retrofit best practices.
- Complete 2 DOE/HUD pilot studies establishing a broad basis for qualification of software tools for that establish the cost effectiveness of residential retrofit packages.

Advanced Building Systems Project

- ***The Advanced Building Systems Project*** will address research focused on the systems design, integration, and controls for both new and existing buildings, making them more energy efficient and affordable. Specific funding areas include:
  - Advanced building controls, communications and IT software and hardware
  - Analysis, design and technical tools
  - Building envelope and windows
  - Heating, ventilation, air conditioning (HVAC), water heating, appliances and miscellaneous electric loads (MELs)
  - Solar heating & cooling (SHC)
  - Over 30 separate R&D projects, via national laboratory as well as with the private sector (crosscut competitive solicitation) to develop more efficient technologies contributing to 70% energy savings.

SEEARP Savings Projections Summary

Snapshot:

56 states and territories offering 554 different rebates
24 types of home appliances, HVAC equipment and water heaters

2 million products to be rebated
$265 million in rebates offered

Projection:

$2.2 billion in consumer spending ($8.20 spending per $1 of rebate)
$121 million in sales tax revenue ($0.46 tax generated per $1 of rebate)

Most Popular:

Clothes Washers (47 States/Territories)
Refrigerators (47 States/Territories)

SEEARP Results as of June 30

$98 million paid for **689,536** rebates
$849 million in consumer spending
$45 million in sales tax revenue

Most Popular Appliances:

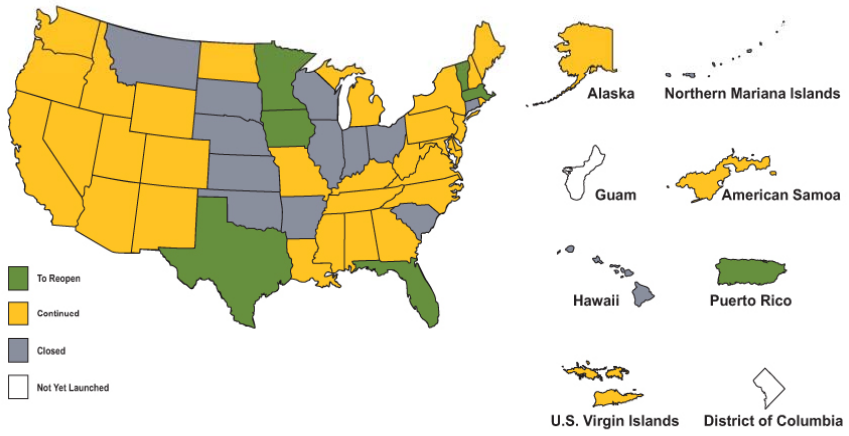
Clothes Washers (251,000 units)

$17.8 M in energy and water savings/year

Refrigerators (212,000 units)

$2.4M in energy savings/year

SEEARP Status as of October 4, 2010



Better Buildings Program

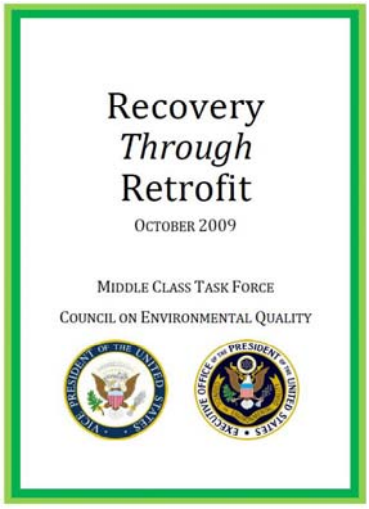
- $486M of ARRA funds
- Topic 1: 3-year grants to 25 local and state governments: $5M-$40M
  - Awarded June 2010
- Topic 2: 3-year grants to 10 local governments and NGOs: $1M-$5M
  - Awarded August 2010
- July 2010: Kick-Off Implementation Workshop, Washington, DC
- July 2010: Changed our identity
- September 2010: Implementation Workshop, Chicago
- October 2010: First programs launched; first retrofits completed

Retrofit Ramp-Up → BETTER BUILDINGS

BetterBuildings Localities Served

Implementing Parallel to RTR

- Recovery Through Retrofit (RTR) Issued in Oct. 2009 by the White House Middle Class Task Force
- BetterBuildings programs are tackling issues idenfitied in RTR:
  - Access to Information
    - Testing home energy performance measures
    - Testing energy performance labels for homes
  - Financing Mechanisms
    - Developing revolving loan funds, loan loss reserves, Title I loan product
  - Skilled workforce
    - Requiring workforce certifications & implementing standards



BetterBuildings Goals

BetterBuildings expects that grantee partners will:

- Retrofit 200,000 buildings by fall 2013
- Use the $486 million grants to leverage $2.8 billion in additional resources
- Create or retain approximately 30,000 jobs during the next three years
- Reduce the cost of retrofit program delivery by 20% or more
- Achieve 15-30% energy savings from energy efficiency upgrades
- Save consumers approximately $50 million per year on energy bills by 2013
- Develop sustainable energy efficiency retrofit programs

DOE will:

- Help grantee partners meet their targets
- Infuse a business-based approach to operating retrofit programs
- Capture and disseminate best practices and lessons learned

BetterBuildings Program Elements

- Notable Approaches:
  - Neighborhood sweeps
  - Door-to-door
  - Community organizations (churches, foundations)
  - Major events
  - Web-based approaches
  - One stop shops
  - Labeling systems
  - Retail store partnerships
  - Grass-roots campaigns
  - Community colleges & universities


See program summaries at: **www.betterbuildings.energy.gov**

Programs Launching Sept-Nov

Grantee	Demand Creation	Workforce Quals	Financing	Quality Assurance	Audit & Data Tools	Key Milestones
Austin, TX ($10M) *RES*	•Targeted mailing •Utility bill stuffers	•BPI certified •HPwES vendors	•Testing loan interest rate elasticity	•100% double audit & inspection	•*Gathering info*	•Launch (Oct) •Evaluate outreach (Nov) •Kick-off multi-family (Dec)
Bainbridge, WA ($4.9M) *RES*	•Community-based outreach & education •Store front	•BPI certified •HPwES standards	•Loan loss reserve via credit union •Rebates	•*Gathering info*	•CSG Real Home Analyzer •MS Hohm	•Workforce (Sept-Oct) •Soft launch (Oct) •Start audits & retrofits (Nov) •Official launch (Dec)
Boulder, CO ($25M) *RES*	•Design social mobilization plan •Leverage community & business orgs •School-based outreach	•Pre-qualified contractor list •"Concierge service" energy experts	•No interest microloans •TBD for larger loans	•At least HPwES inspection requirments	•*Gathering info*	•Residential pilot and "Concierge Service" launch (Oct) •Finance launch (Oct-Dec)
Kansas City, MO ($20M) *RES*	•Neighborhood associations •Energy CSR	•BPI certified •Grants to training centers	•Loan loss reserve •On-bill repayment	•5% inspection / contractor / quarter	•*Gathering info*	•Finalize contractor lists; lender agreements (Oct) •Program launch (Nov) •Audits begin (Dec)
Lowell, MA ($5M) *COMM*	•Community outreach meetings •Press release, web	•Contractors from regional utility+	•CDFI financed loans	•Benchmarking & retro-commiss'g	•Portfolio Manager	•Launch / Solicited RFIs (Sept) •Finance program launch (Oct) •First audit (Nov)
Michigan ($30M) *RES / COMM*	•Neighborhood Sweeps •Neighborhood – based outreach	•BPI, RESNET, or Weatherization Program	•Residential: LLR, EEM, secured loans •Commercial: EPCs	•Pre- and post-install audits •Owner survey	•Utility bill collection •TBD (NYC Wkshp)	•Program launch (Oct) •First audit (Nov) •Sweep kick-off in Ferndale (Nov) •Commercial, institutional projects begin (Dec)

Grantee Programs Launching Sept-Nov

Grantee	Demand Creation	Workforce Quals	Financing	Quality Assurance	Audit & Data Tools	Milestones
Missouri ($5M) *AG*	•Rural Electric Coops •County Soil and Water Districts •Extension Services	•BPI certified •University Extension staff for farm audits •Manufacturers and dealers	•LLR, interest rate buy down •Audit fee, with rebate	•*Gathering info*	•FEAT •Rural electric coops will share utility bill data	•Outreach launch (Sept) •First audit (Oct) •Retrofits begin (Nov)
Philadelphia PA ($25M) *RES*	•Traditional media, with support from Mayor's office •www.energyworksgreaterphila.org	•BPI certified •Contractor recruitment •Assess existing workforce infrastructure	•Two-tier loans, incentives for residential •Commercial loan tied to life of upgrades	•100% pre- and post- BPI audit	•Hired data programmer for robust data collection	•Soft launch loan product; public program launch (Oct) •Begin audits, loan tracking (Oct) •Retrofits begin (Nov)
Seattle, WA ($20M) *RES / COMM*	•Traditional media, Web site •RFP out for demand creation support	•BPI certified •HPwES standards •RFP out for contractors	•Residential: on-bill repayment •Commercial: ESCOs •Matching funds from 4 hospitals	•WSU for EM&V	•WSU for data •Enterprise Cascadia & Portland on IT platform	•Commercial / hospital program launch (Oct) •Announce residential contractor pool (Nov) •Commercial / hospital audits & retrofits (Nov-Dec)
West Rutland County, VT ($4.5M) *RES*	•Traditional grassroots (e.g., volunteer telethon)	•BPI certified	Developing unsecured loan product	•Pre- and post-install audits	•VEIC tools	•Soft launch (Sept) •Financing product in place (Nov)

Commercial Building Partnerships

- Per the provisions of the Energy Independence and Security Act of 2007 (EISA) , the goal of the CBP is to realize net-zero energy performance in all of America's new commercial buildings by 2030, in 50% of all, both new and existing, commercial buildings by 2040, and in all commercial buildings by 2050.
- The Recovery Act funding will allow BTP to:
  - Partner with more than 75 Partnerships, an increase from today's 23 Partnerships.
  - Work with Solar Technologies to develop training material for installers of solar equipment .
  - Add private companies (architectural, engineering, and consulting firms) with experience in the design, construction, retrofitting, commissioning and operations of low energy buildings.
  - Target the energy performance of Partnerships' entire portfolios of new and existing buildings, as opposed to the current focus on a few buildings.
- The CBP projects will involve improving the energy efficiency of a new or existing building by 50% or 30%, respectively, or the adoption of energy efficiency measures across building portfolios.
- A principal strategy for achieving the CBP goals is very active partnering with major "Partnerships" - companies or organizations that design, build, own, manage, or operate large fleets of buildings.

Research Planning » The HUB

On February 12, 2010, the Obama Administration announced a multi-agency funding opportunity to support an Energy Regional Innovation Cluster (E-RIC).

- Six Federal agencies are working together to leverage funding and resources to promote regional growth (DOE, DOC/NIST,DOC/EPA, SBA, DOL, DOEd)
- Holistic, systems approach to science and technology and will act as an integrator of basic and applied R&D
- Develop and demonstrate sustainable and efficient models for attaining national strategic objectives
- Multidisciplinary team of researchers to speed R&D and shorten path to technological development and commercial deployment

Current Program Challenges

- Increasing Code Adoption & Compliance
- Increasing the rate of retrofitting existing homes and buildings
- Increasing the breadth of the Appliance Standards coverage and the efficiency levels of covered equipment
- Making energy efficient technologies more cost efficient

Overcoming Challenges

- STEAB can help the BTP overcome these challenges by supporting programs that develop:
  - Materials which demonstrate the savings from fully compliant homes built to the most stringent code
  - New lower cost training approaches for code officials and other industry stakeholders
  - Outreach strategies to aid States in adopting not only the latest energy codes bit also stretch codes
  - New revenue models for States to fund increased energy code staff

Overcoming Challenges – cont.

- STEAB can help support technology transfer and State involvement relating to BTP by:
  - Developing and supporting programs which make technology more cost efficient to the consumer (ie. SEEARP)
  - Encouraging States to adopt the latest energy codes, as well as stretch codes, both of which will help drive efficient technology to market

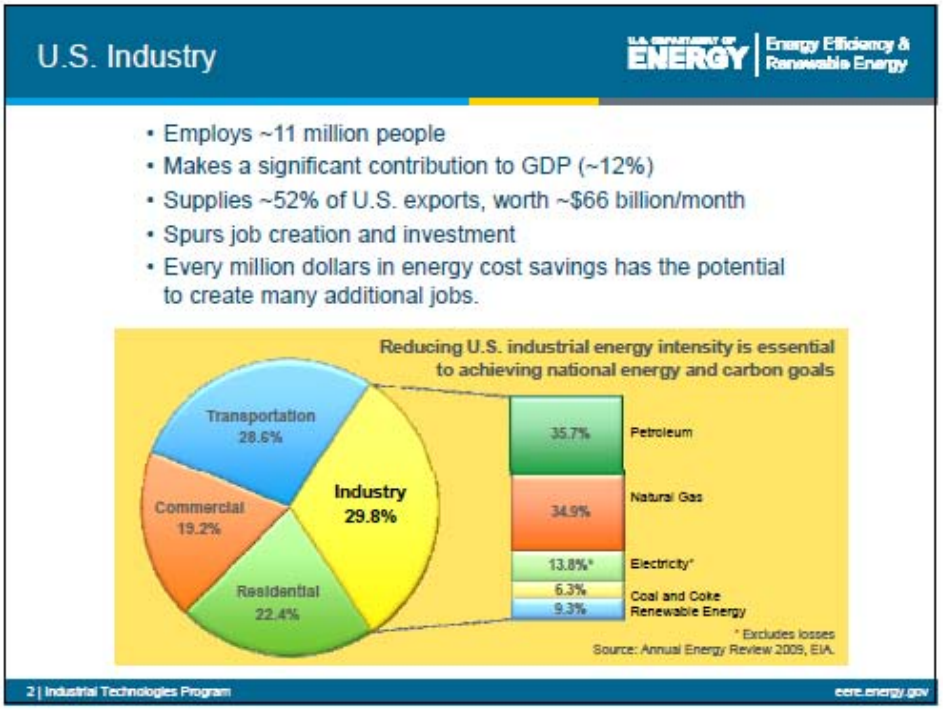
Contact

Saralyn Bunch, Building Energy Codes Program Manager

saralyn.bunch@ee.doe.gov

http://www.eere.energy.gov/buildings/

Appendix J: Update from the Industrial Technologies Program (ITP) by Isaac Chan

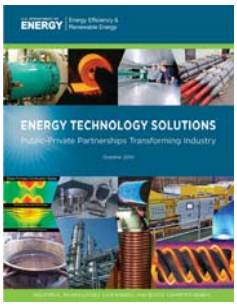


ITP Successes

ITP: Delivering Results For 30 Years

Working with industry, we have successfully developed and moved cutting-edge technologies and energy-saving measures into practice.

- Produced >220 commercialized technologies
- Obtained 215 patents between 1994 and 2009
- Received 51 prestigious *R&D 100* awards since 1991
- Reached more than 33,000 industrial plants
- Saved 9.3 quads and reduced emissions by 755 million metric tons of CO_2



Harness Scientific Ingenuity → Spur Innovation → Leverage Resources → Change Corporate Culture

New Publications: State Policy Series

Completed a series of policy analyses to inform state regulators and policy makers on successful industrial energy efficiency designs:

- Public Benefit Funds
- Energy Efficiency Portfolio Standards
- Tax Incentives
- Natural Gas Revenue Decoupling

These analyses provided inputs for the barriers and best practices of the SEE Action Network.

http://www1.eere.energy.gov/industry/states/technical_reports_analyses.html#State

Upcoming Launch: Superior Energy Performance

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Superior Energy Performance

- A **market-based, ANSI-accredited plant certification program** that promotes continual improvement in energy efficiency while boosting competitiveness.
- Uses **ISO 50001** standard as a foundational tool
- Establishes a **tiered program** that provides entry points for companies at all levels of experience with energy management
- Creates a **verified record** of energy intensity/efficiency improvement.
- Potentially **creates value** for corporate energy savings and carbon reductions in utility, state, regional, national, and international trading markets

SEP will be launched nationwide in 2011.

Global Superior Energy Performance (GSEP) Partnership

- A **global network** to harmonize national certification program to provide a transparent, globally accepted system for validating energy savings and energy management.
- Includes implementation of an **energy management standard**, such as ISO 50001, to identify pathways to reduce energy use

ISO International Organization for Standardization

State Resources and the SEE Action Network

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

- **State Energy Efficiency (SEE) Action Network**
  - Led by DOE and EPA
  - Promote policies and programs supportive of industrial energy efficiency at the state and local levels
  - Better understand the needs and goals of stakeholders
  - Leverage state and utility programs and resources
  - Expand channels for information dissemination
  - Promote coordinated approaches among state, utilities, industry and academia
  - Leverage contact base to identify key strategic partners
- **The Industrial Efficiency / CHP Working Group**
  - One of eight WGs under SEE kicked of in June 2010
  - 25 participating organizations
  - Completed Blueprint anticipated soon

SEE Action
STATE ENERGY EFFICIENCY ACTION NETWORK

SEE Action Working Groups

ITP Recovery Act Projects: Technical Support

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

ARRA CHP and Industrial Equipment Funding: $156 million

Nine awards for deployment projects estimated to save almost 14 trillion Btu

ARRA Technical Support Funding: $10 million*

Local technical support for industry through university-based Industrial Assessment Centers, state agencies, regional partnerships, and a national technical assistance provider

32 awards provide technical and financial support for **local businesses and manufacturing facilities**:

- 15 Industrial Assessment Centers ($1.87 million total)
- 11 State Agencies ($3.84 million total, approximately $350,000 awarded to each state)
- 5 Regional Partnerships ($2.5 million total, $500,000 awarded per region)
- National Technical Assistance Provider ($1.4 million)

* Funding includes costs for administration and SBIR requirements.

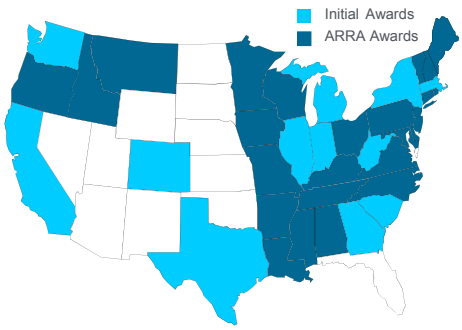
State/Regional Industrial Energy Efficiency Programs

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

ITP provided seed funding (base funds and ARRA) for 23 new state and regional industrial energy efficiency programs in FY09. These programs began delivering energy saving results across 28 states in FY10.

- Offering plant assessments
- Hosting trainings and workshops
- Conducting project demonstrations
- Demonstrating Superior Energy Performance and ISO 50001
- Disseminating best practice information
- Developing M&V protocols
- Offering financial assistance

Using local resources to address local needs



Technical Assistance

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Path Forward:

- *Leverage* public and private resources to maximize impacts
- Inspire U.S. companies to embrace a *corporate culture* that places value on good energy management
- Build technical and *workforce capacity* at state and local levels
  - Establish a lasting *local infrastructure* to support industrial energy management/savings
- Recognize significant, verified *energy savings*
  - Target energy savings in alignment with national goals for energy security and climate

Technical Assistance Strategy

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Create an environment conducive to increasing industrial energy efficiency

Build demand for energy efficiency savings

- Corporate culture that values energy efficiency
- Framework for continuous improvement in energy management
- Supply chain engagement to broaden impact
- Recognition of corporations based on verified energy savings

Build supply of energy efficiency services

- Metrics, technical knowledge, and best practices
- Trained, qualified workforce
- Analytic tools, training, benchmarks, protocols, and limited technical assistance
- Expanded delivery channels leveraging federal and state agencies, regional and local stakeholders

Build a supportive market environment

- Partnership among states/utilities/industry
- Supportive state and local policies and regulations
- Supportive utility programs

Continuous Energy Improvement | **Workforce Development & Technical Assistance** | **Partnership Leveraging**

How can the State help?

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

State involvement is critical to success:

- Corporate engagement
  - Outreach to C-level executives to promote energy efficiency from the top
- Cost share efforts to expand workforce development and technical assistance
  - Develop local knowledge and skills to meet current and future industry needs (training)
  - Support technical assistance to small and medium-sized manufacturers to promote economic growth and jobs (e.g., IAC assessments)
- Superior Energy Performance
  - Promote SEP as an important tool for industry to manage energy
  - Partner and cost share regional training
- SEE Action Network
  - Inform ITP of state and local priorities and promote environment conducive to industrial energy efficiency
- Disseminate resources and provide referrals

Thank You

State/Regional Accomplishments

Awardees		
Alabama	Louisiana	Ohio
California	Maryland	Pennsylvania
Colorado	Massachusetts*	South Carolina
Georgia*	Michigan	Texas
Idaho	Minnesota	Washington*
Illinois*	Mississippi	West Virginia*
Indiana	New Jersey	Wisconsin
Kentucky	New York	* Indicates Regional Awards

Accomplishments to Date

- 15 States participating in SEP demo/pilot
- Delivered 66 assessments
- Identified $19.23 million in energy cost savings
- Trained 453 people through 38 training sessions
- Recruited companies to participate

Highlights:

- **Idaho:** Identified annual cost savings of $4.1M; co-funding a 100 MW CHP feasibility study
- **Illinois:** Supporting six energy management demonstrations to pilot SEP plant certification
- **Indiana:** Transitioning ITP trainings into four online modules
- **Kentucky:** Employing a five-tier recognition program for participating companies
- **Massachusetts:** Delivered 5 training sessions with 215 participants
- **Pennsylvania:** Providing technical assistance to 20 separate plants
- **West Virginia:** World Kitchen committed to SEP and goal of becoming a Certified Partner.

State Awards

***Save Energy Now* State Awards deploy ITP assessments, technologies, and local industrial efficiency program resources and tools to expand ITP's reach.**

	Recipient	Federal Funding	Recipient Cost Share	Total	Projected End Date
12 State Awards	Georgia	$1,241,304	$42,000	$1,283,304	10/31/2012
	California	$900,000	$432,634	$1,332,634	10/31/2012
	Washington	$840,652	$0	$840,652	6/30/2012
	West Virginia	$733,015	$225,416	$958,431	10/31/2012
	Colorado	$900,000	$750,000	$1,650,000	10/31/2012
	New York	$900,000	$0	$900,000	10/31/2012
	Massachusetts	$900,000	$0	$900,000	12/31/2012
	South Carolina	$898,908	$141,383	$1,040,291	9/29/2012
	Illinois	$898,537	$0	$898,537	7/31/2012
	Indiana	$900,000	$142,900	$1,042,900	10/31/2012
	Michigan	$760,550	$70,000	$830,550	9/29/2012
	Texas	$899,418	$181,177	$1,080,595	6/30/2012
	Total	**$10,772,384**	**$1,985,510**	**$12,757,894**	

State and Regional ARRA Awards

	Recipient	Period One Federal Funding (ARRA)	Federal based NON-ARRA	Recipient Cost Share	Total
11 ARRA State Awards	Alabama	$350,000	$550,000	$0	$900,000
	Minnesota	$349,985	$525,583	$46,684	$922,252
	Ohio	$349,977	$541,569	$420,000	$1,311,546
	Mississippi	$350,000	$516,742	$274,651	$1,141,393
	Idaho	$350,000	$550,000	$0	$900,000
	Louisiana	$344,293	$253,188	$293,293	$890,774
	Pennsylvania	$350,000	$497,257	$0	$847,257
	Wisconsin	$350,000	$545,000	$284,000	$1,179,000
	Kentucky	$349,976	$549,885	$0	$899,861
	Maryland	$350,000	$383,765	$0	$733,765
	New Jersey	$350,000	$550,000	$0	$900,000
	Total	$3,844,231	$5,462,989	$1,318,628	$10,625,848
5 ARRA State Regional Awards	Massachusetts	$500,000	$0	$0	$500,000
	Georgia	$500,000	$0	$33,000	$533,000
	Illinois	$500,000	$0	$0	$500,000
	West Virginia	$500,000	$0	$0	$500,000
	Washington	$500,000	$0	$0	$500,000
	Total	$2,500,000	$0	$33,000	$2,533,000

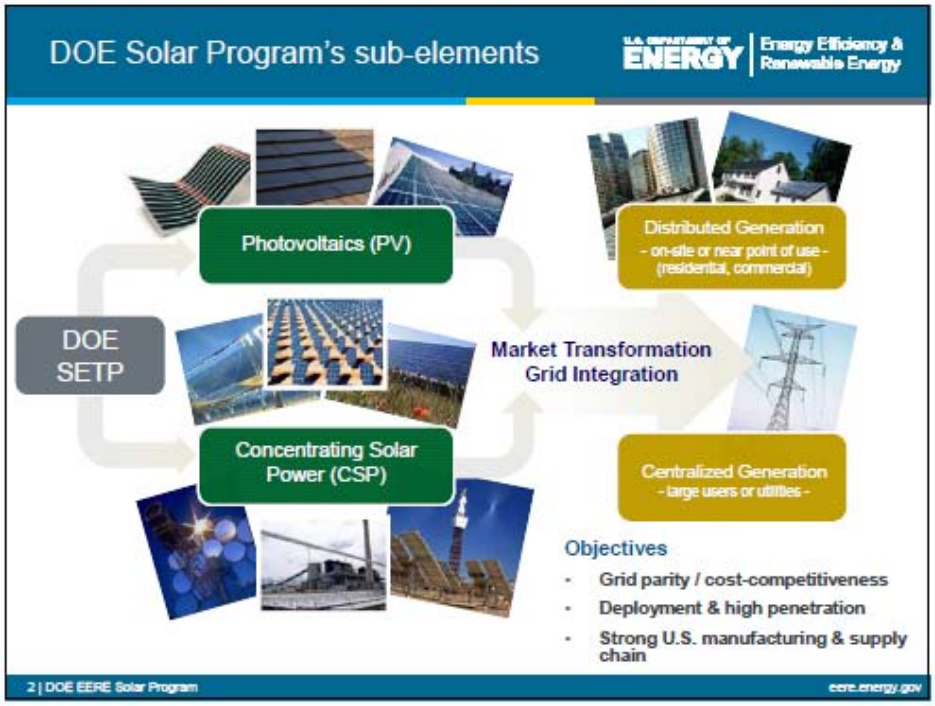
Superior Energy Performance

Workforce Development

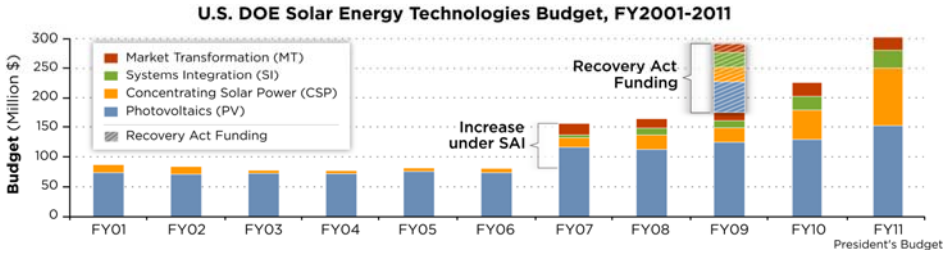
Superior Energy Performance requires conformance to ISO 50001 energy management standard *and* verified achievement of energy savings. Trained personnel will be needed to verify conformance and achievements.

- ANSI-accredited **Certified Practitioners** provide plant support:
  - Assist in implementing ISO 50001
  - Conduct system-specific assessments according to protocol and establish procedures for continuous system savings
- Third-party **Certified SEP Validation Specialists** and **SEP Lead Auditors** to verify plant conformance to Superior Energy Performance requirements

Appendix K: Update from the Solar Energy Technology Program by Mr. John Lushetsky



U.S. DOE's Solar Energy Technologies Program



Note: Data for FY10 excludes $22 million in funding for the Fuels from Sunlight Energy Innovation Hub

Solar Energy Technologies Program's Recovery Act Projects ($117.6 million)

Majority of Recovery Act funding supported technology development

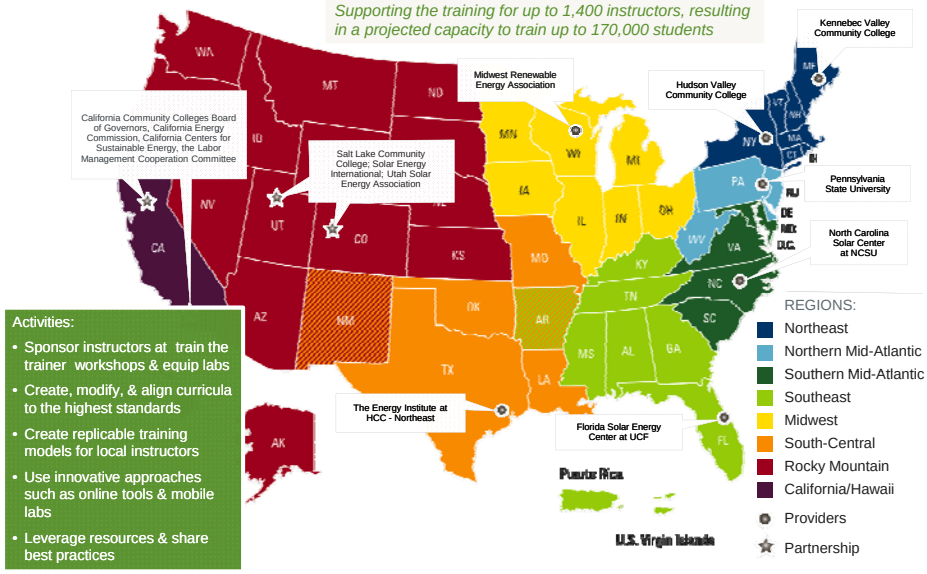
- **PV Supply Chain ($22.0 million)**
  - 24 industry & university projects; over $50 million in matching funds
- **PV Pre-Incubator/Incubator ($16.5 million)**
  - 13 industry projects bridging the gap between concept verification & prototype development with manufacturing costs less than $1/W
- **PV/CSP Laboratory Call ($18.3 million)**
  - Next generation PV, supply chain technologies, CSP materials & concentrators
- **CSP Laboratory Facilities Upgrade ($20.3 million)**
  - Upgrade Sandia National Laboratory facilities for thermal storage & advanced system testing; decommission Solar Two site for future CSP development
- **High-Penetration PV ($25.5 million)**
  - Develop monitoring/control systems & modeling tools; demonstrate PV & energy storage for smart grid applications
- **Solar Market Transformation ($15.0 million)**
  - Scale-up innovative Solar America City projects; "train the trainer" consortium/projects to address the shortage of installers

Solar Instructor Training Network

$27 million over 5 years (includes $10 million in Recovery Act funding)

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Supporting the training for up to 1,400 instructors, resulting in a projected capacity to train up to 170,000 students



Activities:

- Sponsor instructors at train the trainer workshops & equip labs
- Create, modify, & align curricula to the highest standards
- Create replicable training models for local instructors
- Use innovative approaches such as online tools & mobile labs
- Leverage resources & share best practices

High Penetration Solar Deployment

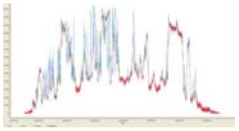
$24.7M in Recovery Act Funding

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

-

-

power with PV, without PV, and with both PV and energy storage



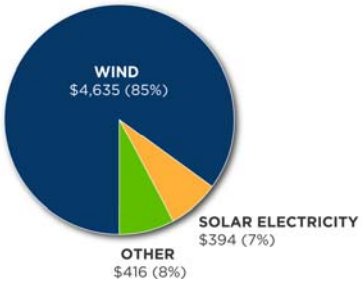
- **Florida State University** - Identify the need for technical solutions to address any issues identified with high-penetration levels of grid-connected photovoltaics including protection, control strategies, and technologies
- **National Renewable Energy Laboratory** - Utilize modeling and simulation, laboratory testing, and field demonstrations to determine the effect of high penetrations of up to 500 MW of mostly commercial scale rooftop PV systems on electrical distribution systems
- **Sacramento Municipal Utility District** - Determine the value of advanced metering infrastructure, PV, and the additional value of storage
- **University of California San Diego** - Develop advanced modeling tools and electric power control strategies to optimize electric power value and to mitigate the impact of PV-sourced electricity on existing microgrids and the SmartGrid
- **Virginia Polytechnic Institute and State University** - Evaluate both existing and prototype power conditioners designed at Virginia Tech to identify cost-effective approaches to address issues associated with high-penetration PV systems

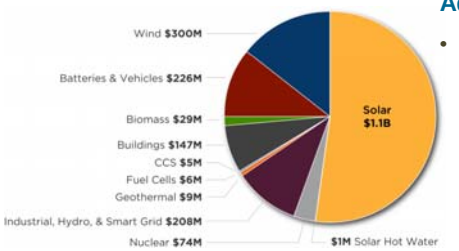
Key Parts of the U.S. Recovery Act Supporting Solar Deployment

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Grant in Lieu of the Investment Tax Credit

- Grant for 30% of renewables' installed cost available within weeks of a project entering service
- As of late-October 2010, $5.4 billion awarded to all technologies, with $394 million to solar energy projects
  - Represents **$1.3 billion** of total solar project investment





Advanced Energy Manufacturing Tax Credit

- **$2.3 billion** competitively awarded as a 30% tax credit to 183 major clean energy manufacturing projects across 43 states
  - Solar energy projects received roughly 50% the funding, representing a total investment of **$3.8 billion** in solar manufacturing projects

Sec. 1603: Other includes: Biomass (Closed & Open Loop), Combined Heat & Power, Fuel Cell, Geothermal (Electricity & Heat Pump), Hydropower, Landfill Gas, Microturbine, Solar Heating, & Solar Lighting, Source: U.S. Treasury Database (10/27/10)
Sec. 48C: 160 of 183 selections are shown, representing over $2B

DOE Loan Guarantee Program

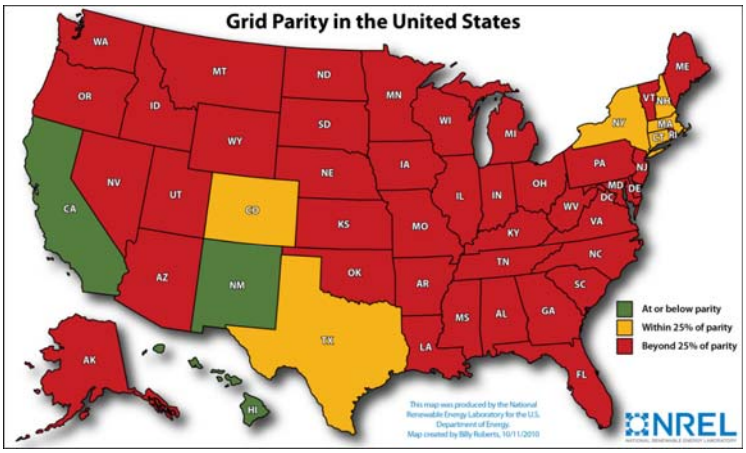
$3.8 billion in Awards for Solar Projects & Manufacturing

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Residential PV Electricity Cost & Electricity Rates in 2010

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

- In 2010, Electricity from PV is not yet broadly competitive in much of the U.S.
  - ➢ However, **significant** improvements allowing a lower installed cost & Levelized Costs of Electricity (LCOE) are achievable in the coming years



- Includes Federal, State, Local, & Utility incentives available to a homeowner as of 10/8/10. Incentives from the largest utility in each state was used.
- Assumed an installed system cost of $6.50/$W_{DC}$, a 4.4 kW residential system, & an 86% conversion factor between DC & AC module capacity.
- Assumed rebate payments to be non-taxable income that decreased the cost basis for any applicable investment tax credits.
- Assumed a 28% federal income tax rate, a 7% state income tax rate, a 0% sales tax rate, & a 0% impact on property taxes.
- Utilized statewide average residential retail electricity rates from the most recent EIA Electric Power Annual. The data were adjusted for changes in real & nominal prices based upon the EIA Annual Energy Outlook.

Residential PV: LCOE Projection

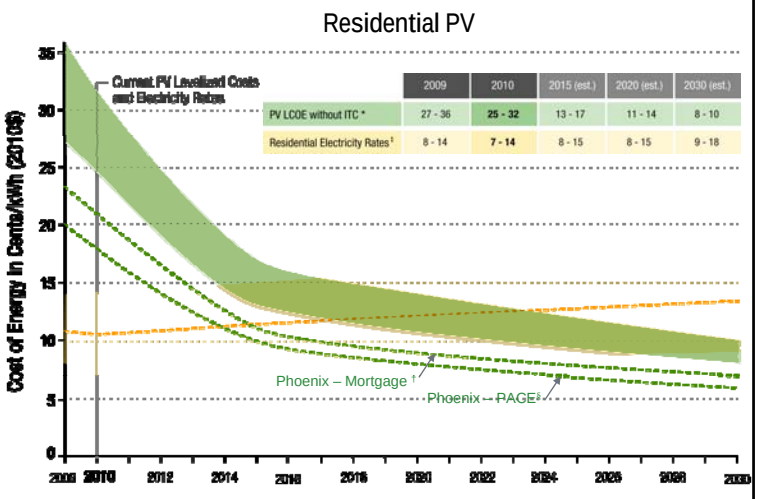
U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Financing Mechanism
- Cash purchase (no debt financing) with 6.0% nominal discount rate

Geographic Locations
- Phoenix, AZ
- Kansas City, MO
- New York, NY

2015
- Without the ITC, PV is competitive with high residential electricity rates under good insolation conditions

2030
- Without the ITC, PV has levelized costs in all insolation conditions that are lower than most residential electricity rates



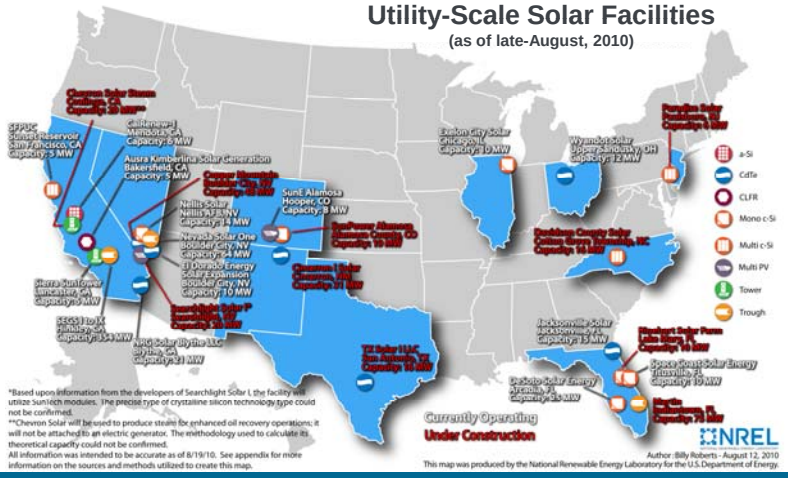
	2009	2010	2015 (est.)	2020 (est.)	2030 (est.)
PV LCOE without ITC *	27 - 36	25 - 32	13 - 17	11 - 14	8 - 10
Residential Electricity Rates‡	8 - 14	7 - 14	8 - 15	8 - 15	9 - 18

* No state, local or utility incentives are included. The range in residential PV LCOE is due to different insolation conditions. For a complete list of assumptions, see DOE Solar Cost Targets (2009 – 2030), in process.
‡ The electricity rate range represents one standard deviation below and above the mean U.S. residential electricity prices.
† Mortgage assumes 80% financing with a home mortgage at 6.0% interest and a 30-year payback schedule.
§ Property Assessed Clean Energy (PACE) Financing assumes 100% financing at 5.0% interest with a 20-year payback schedule.

Utility-Scale Solar Deployment

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

- Large growth in the U.S. Utility-Scale market in 2011 is expected due to:
  - Declining International Incentives, Recovery Act Start of Construction Requirements, & Continuing Progress to Decrease Regulatory & Non-Market Barriers



Utility PV: LCOE Projection

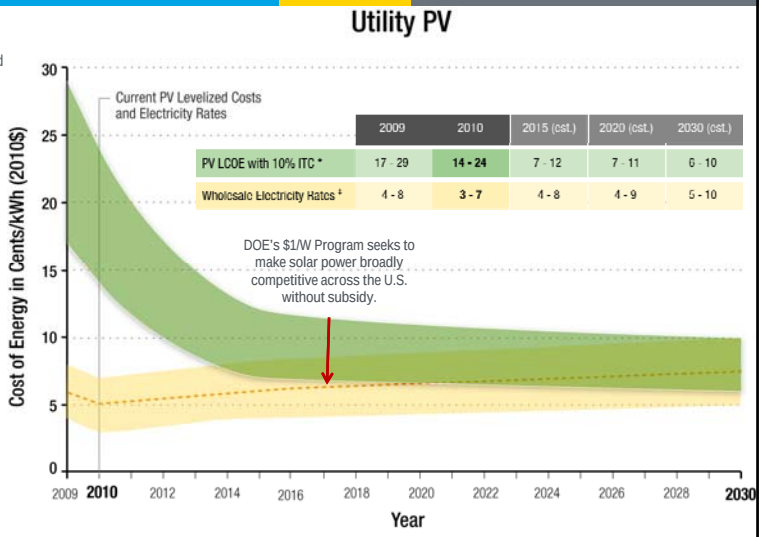
U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Financing Conditions
- Low: 8.2% after-tax Weighted Average Cost of Capital (WACC)
- High: 9.9% after-tax WACC

Geographic Locations
- Phoenix, AZ
- Kansas City, MO
- New York, NY

2015
- With the 10% ITC, PV is competitive with high wholesale electricity rates under the best insolation and financing conditions

2030
- With the 10% ITC, PV is broadly competitive with wholesale electricity rates under all financing and insolation conditions



	2009	2010	2015 (est.)	2020 (est.)	2030 (est.)
PV LCOE with 10% ITC *	17 - 29	14 - 24	7 - 12	7 - 11	6 - 10
Wholesale Electricity Rates ‡	4 - 8	3 - 7	4 - 8	4 - 9	5 - 10

* Assumes IOU or IPP ownership of PV, and thus the LCOE includes the taxes paid on electricity generated. Includes 5-year MACRS but not state or local incentives. The range in utility PV LCOE is due to different insolation and financing conditions. For a complete list of assumptions, see DOE Solar Cost Targets (2009 – 2030), in process.

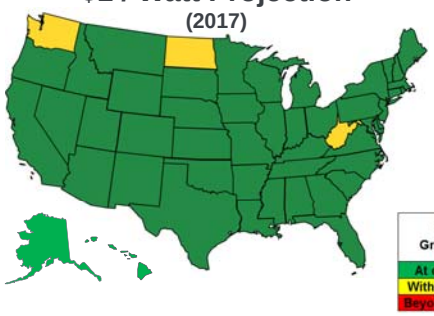
‡ The electricity rate range represents one standard deviation below and above the mean U.S. wholesale electricity prices.

$1/Watt Initiative

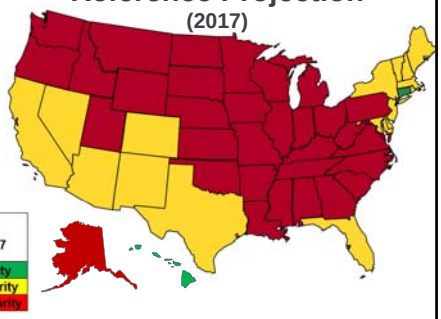
U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

The $/Watt initiative is intended to significantly decrease solar energy's installed cost, which would massively accelerate its deployment & market penetration

$1 / Watt Projection (2017)



Reference Projection (2017)



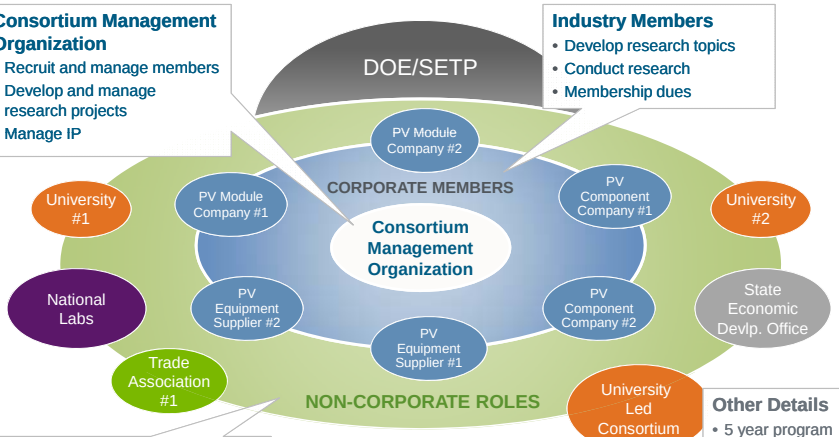
- The range in Grid Parity is due to due to different insolation conditions & different residential retail electricity rates. For a complete list of assumptions, see DOE Solar Cost Targets (2009 – 2030), in process.
- Assumes no Federal ITC & no State, Local, or Utility incentives for a system installed in 2017.
- Reference Projection assumes an installed system cost of $3.25/Watt$_{DC}$ by 2017.
- $1.00/Watt Projection assumes an installed system cost of $1.00/W$_{DC}$.
- Both cases assume a 4.4 kW residential system & an 86% conversion factor between DC & AC capacity.
- Assumes a 28% federal income tax rate, a 7% state income tax rate, a 0% sales tax rate, & a 0% impact on property taxes.
- Utilizes statewide average residential retail electricity rates from the most recent EIA Electric Power Annual. The data were adjusted for changes in real & nominal prices based upon the EIA Annual Energy Outlook.

PV Manufacturing Initiative: Industry-Focused Consortium Model

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Consortium Management Organization
- Recruit and manage members
- Develop and manage research projects
- Manage IP

Industry Members
- Develop research topics
- Conduct research
- Membership dues



Other Members
- Includes universities, trade associations, others
- Provide input on research projects
- Membership dues

Other Details
- 5 year program
- $25M per year total DOE funding
- >50% cost share
- Consortium owned IP or as agreed to by parties.

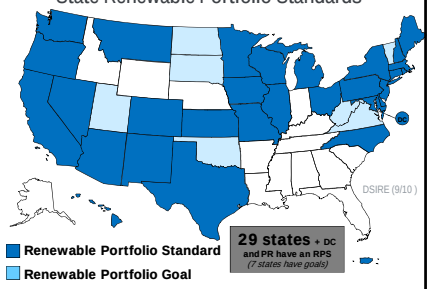
Issues Affecting Solar Deployment Even With Cost Declines

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

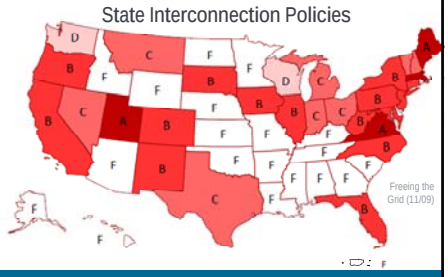
Even with substantial cost reductions, solar energy will still contend with significant non-market barriers:

- Incentive programs & regulatory requirements need to be properly structured to ensure effective implementation & stability over time
  - *RPS, Capacity Based Incentives, Feed-in Tariffs (FITs)*
  - *State Interconnection & Net Metering Standards*
  - *Siting & Permitting of Large-Scale Solar Facilities*
  - *Local Permitting & Inspection Requirements*
- Better understanding of High-Penetration effects from the perspective of Electric Utilities
- Ensure the development of a well-trained downstream solar energy workforce, including installers & code officials

State Renewable Portfolio Standards



State Interconnection Policies



U.S. DOE - NARUC Technical Assistance Partnerships

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

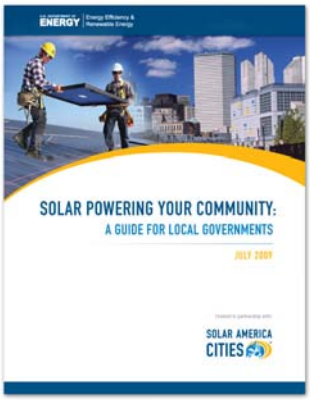
- **Initiated in FY2010 to provide technical assistance & national labs expertise to State Public Utilities Commissions**
- **FY2010: 11 awards to 9 PUCs**
  - PV Resource & Economic Characterization
    - *Colorado, Georgia, Kentucky, Michigan, Missouri, Ohio, Tennessee*
  - Feed-in Tariff Analysis & Modeling
    - *Colorado, Hawaii, Michigan, Washington*
- **FY2011: 10 awards to 10 additional PUCs**
  - PV Resource & Economic Characterization
    - *Alabama, Arkansas, Michigan, Montana*
  - Interconnection rule development
    - *Arizona*
  - Development of common online incentive application platform
    - *District of Columbia, Maryland, Delaware*
  - Participation in development of model PV integration/valuation study
    - *Kentucky*
  - Technical review of transmission & distribution models assessing PV's role
    - *New York*

Solar Guide for Local Governments

Published: July'09, New Version Expected: November'10

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Solar Powering Your Community:
A Guide for Local Governments



Provides policy & program descriptions, implementation tips & options, & real life examples in areas of:

- Organizing & strategizing efforts
- Accelerating demand through policies & incentives
- Updating & enforcing local rules & regulations
- Engaging utilities
- Creating jobs & supporting economic development
- Accelerating demand through outreach & education
- Leading by example with installations on government properties

www.solaramericacities.energy.gov/resources

Challenges Facing Solar & How STEAB Can Help

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

- Industry and Program Challenges:
  - Sustainable and predictable incentive policies for solar technologies
  - Consistent regulatory requirements & implementation across state lines
    - Especially related to ensuring support from electric utilities (e.g. issues ranging from rate base calculation & decoupling to avoided electricity cost)
    - Streamlining the project development process to better attain economies of scale
  - Understanding of high penetration grid impact on utility operations
  - Helping to address regulatory & financial barriers that market development
  - Balancing resources among applied and early stage research priorities
- How STEAB can help overcome challenges & facilitate a robust solar energy market:
  - Supporting efforts to inform state policy makers on effective solar policies and programs
  - Support and provide feedback for state engagement efforts focused on overcoming technological advancement & deployment barriers
  - Engaging utilities to help address technical concerns & accelerate the integration of solar energy into their business models
  - Improving R&D collaboration among States & with DOE to leverage & pool technology investments
  - Leading by example, promoting solar and other renewable energy and energy efficiency practices at the State level

Vision for the Future


DOE's Solar Program efforts to accelerate the research, development & deployment of solar energy:

- Working to support the U.S. solar industry & create clean energy jobs
- Aggressively funding research & discovery of fundamentally new technologies
- Fueling the growth of the solar market by addressing key market barriers

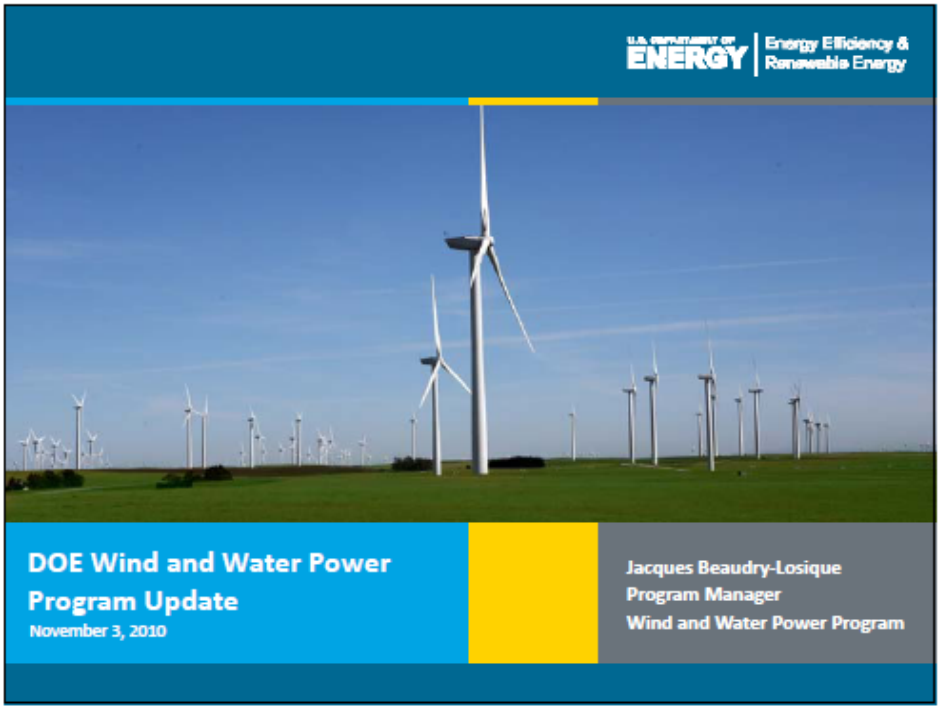


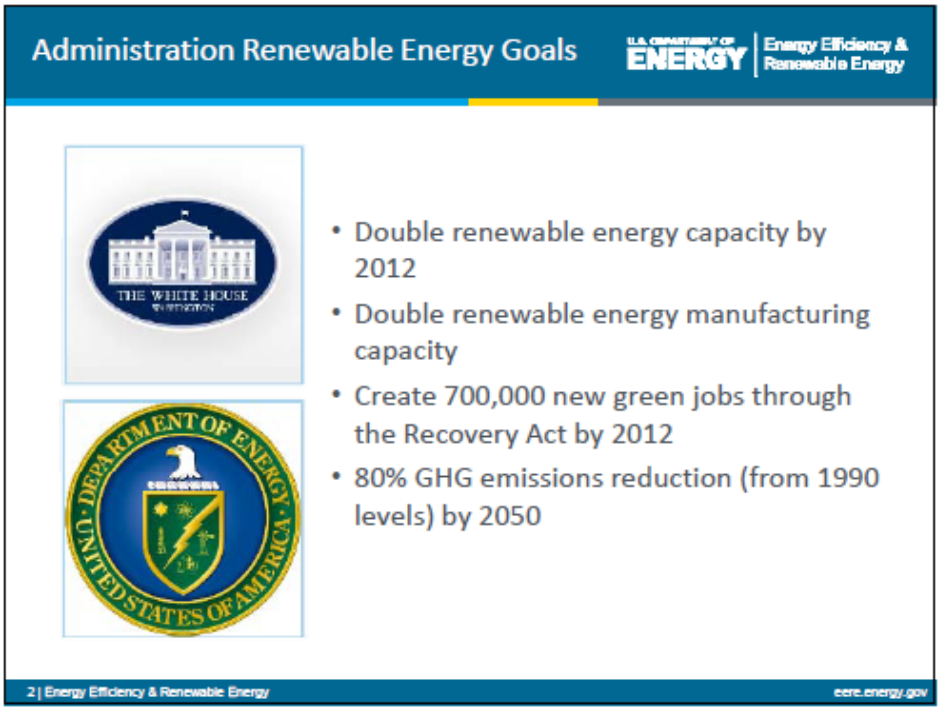



Thank You

John Lushetsky
Program Manager
Solar Energy Technologies Program
U.S. Department of Energy
john.lushetsky@ee.doe.gov
202-287-1685
www.solar.energy.gov

Appendix L: Update from the Wind and Water Program by Mr. Jacques Beaudry-Losique



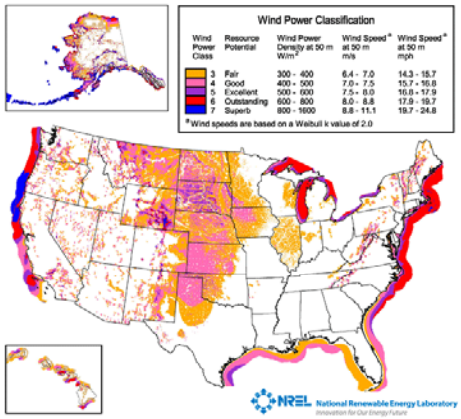


Wind Program Overview

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

FY 2011 Budget Request: $122.5 M (+53% FY2010)

Wind Energy Resource Potential



Market Status:

U.S. installed capacity is 36,698 MW, including over 10,010 MW installed in 2009

Wind power is the leading source of new renewable energy capacity

U.S. investment in wind power was close to $20B in 2009

Wind Program RD&D Goals and Focus:

Facilitate wind energy's rapid market expansion

Improve cost, performance and reliability of wind turbine technology

Supporting U.S. manufacturing and workforce development

Reducing barriers to deployment

Supporting grid interconnection

Facilitating offshore wind power deployment

Water Power Overview

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

FY 2011 Budget Request: $40.5 M (-19% FY2010)

Market Status:

U.S. ocean power industry still in early technology development stages; no clear cost and performance data; high capital costs

U.S. wave & current resource estimated at 51 GW of extractable energy; Global OTEC resource = 3–5 TW

Remaining conventional hydropower potential is large (>50 GW), but limited by licensing and regulatory barriers, as well as environmental concerns

Water Power Program RD&D Goals and Focus:

- Reduce the barriers to deployment for marine and hydrokinetic technologies through technology development and testing, resource assessments, and environmental impact studies.
- Wave, current, tidal technologies:
  - Device and component development and testing
  - Resource assessments
- Conventional hydropower:
  - Efficiency and capacity upgrades
  - Licensing and environmental impacts
  - Resource assessments for non-powered dams, small hydropower facilities

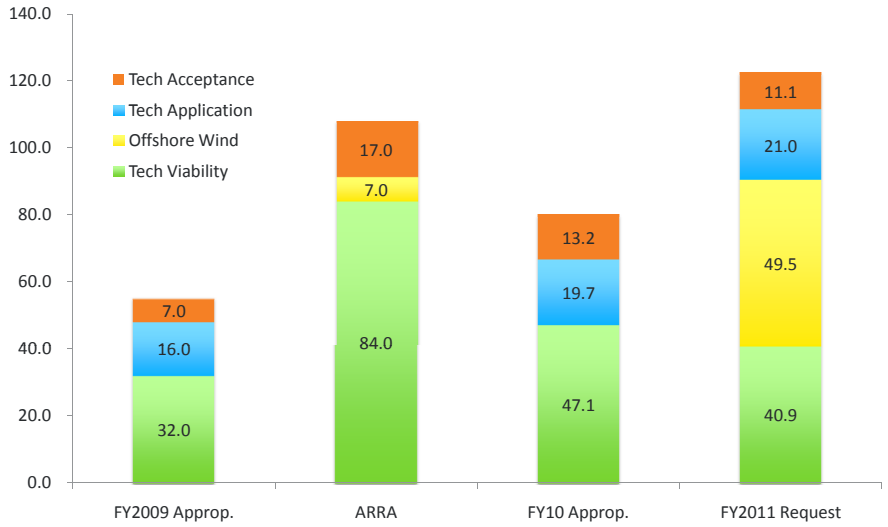
Land-Based Wind Barriers

Barriers	Solutions
Transmission	
Integration/Planning	Development of transmission grid model for large wind integration
Capacity/Characterization	Interagency collaboration for development of wind forecasting
	Technical expert support and EERE independent info source for wind integration
Reliability	Reliability Collaborative
	Design of shared technology solutions
	Collection of failure data and analysis
	Development of non-destructive quality assurance techniques
	Development of next-generation materials, codes & standards
Siting & Permitting	
Radar	Interagency collaboration
	Development of next-generation design solutions & mitigation options
Environmental	Interagency collaboration
	Environmental analysis & development of mitigation options
Permitting	Development of streamlined permitting process
	Technical assistance on permitting issues
Public / Utility Acceptance	Support decision-making and address misinformation
Policy	Development of consistent policy: tax & manufacturing incentives

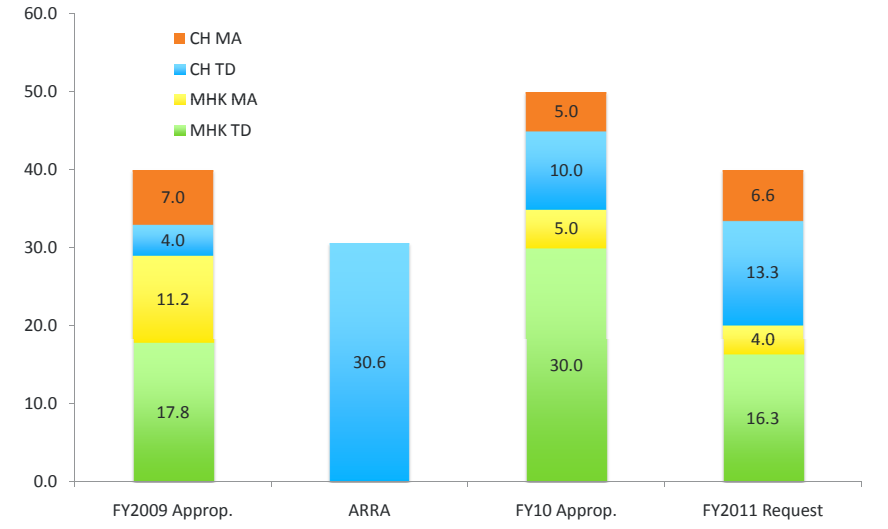
Offshore Wind Barriers

Barriers	Solutions
Cost of Energy	Demonstration project to reduce risk & related capital cost
	Advanced turbine design for marinization & reliability
	Improved blades to increase capacity performance
	Innovative low-cost deepwater foundations
	Models for improved turbine performance & lower costs
Regulatory & Permitting	Interagency collaboration; standards development
Siting - Radar	Development of next-generation design solutions & mitigation options
Siting - Environmental	Technical expert support and EERE independent information source
	Environmental assessment & integration
Transmission	
Integration/Planning	Development of transmission grid model for large offshore wind integration
Capacity/Characterization	Development of offshore wind forecasting
	Technical expert support and independent info for wind Integration & operations
Reliability	
	Reliability Collaborative: EERE, industry, academia, national laboratories
	Collection of failure data and analysis
	Development of non-destructive QA techniques & next-generation materials
	Design of shared technology solutions and codes & standards
Infrastructure	Development of US manufacturing and marine infrastructure for installation, transportations and maintenance & operations
Public / Utility Acceptance	Technical expert support and EERE independent information source (to overcome significant inaccurate information in public domain)
Policy	Development of consistent policy: tax & manufacturing incentives, loan guarantees

Wind Program Budget



Water Power Budget



New Program Initiatives

1. National offshore wind energy research and deployment initiative
2. Improving the reliability of the current wind turbine fleet
3. Addressing national-scale siting challenges: radar, wildlife, public perceptions
4. Facilitating growth in the domestic supply chain for wind equipment

Recovery Act Projects

Project	Funding	State	Recent activities
Wind Turbine Testing Facilities			
Large Wind Turbine Drivetrain Testing Facility	$45 M	SC	Facility groundbreaking on 10/28
Large Blade Testing Facility	$25 M	MA	Near completion of building siding and roofing
NWTC Dynamometer Upgrade	$10 M	CO	Awarded contracts for Gearbox and VSD on 10/21
University-Led Wind Research Consortia			
University of Maine	$7 M	ME	Released RFP for scale-model design selection
University of Minnesota	$8 M	MN	Interconnection negotiations underway
Illinois Institute of Technology	$8 M	IL	Concluded purchase of GE 1.5MW from Invenergy
Wind Technology R&D Partnerships	$14 M	19 states	28 awards for turbine R&D, grid integration
Hydropower Modernization Projects			
Alcoa, Inc.	$13 M	NC	Half of project equipment ordered
Alabama Power Company	$6 M	AL	Vendors Selected for Lay and Bouldin projects
City of Tacoma	$4.7 M	WA	General Construction RFP out; Dec. Selection.
Incorporated County of Los Alamos	$4.6 M	NM	Delivery and installation of equipment underway
City of Boulder	$1.2 M	CO	Generator RFP to be awarded this Month
Minnesota Power	$800 K	MN	Award negotiations
City of North Little Rock	$500 K	AR	Undergoing Army Corps final design review

Recent Program Accomplishments

- Signed Memoranda of Understanding to spur interagency collaboration on offshore wind energy and on hydropower
- Hosted workshops on major issues of interest: offshore wind, transmission, turbine reliability, wind forecasting, radar interference, distributed wind, etc
- Published major reports: *2009 Wind Technologies Report* and
- Started offshore wind research and deployment initiative
- Prepared a wind program technology roadmap
- Peer Reviewed the program's R&D projects

Challenges

- Lack of transmission to wind resource areas
- Implementing offshore wind strategy to reduce offshore cost of energy, reduce deployment timelines
- Improving wind turbine performance and reliability
- Addressing major nationwide siting concerns:
  - Radar
  - Wildlife
  - Public perceptions
- Quantifying the value of hydropower to the electric grid
- Developing reliable, cost-effective ocean power technologies

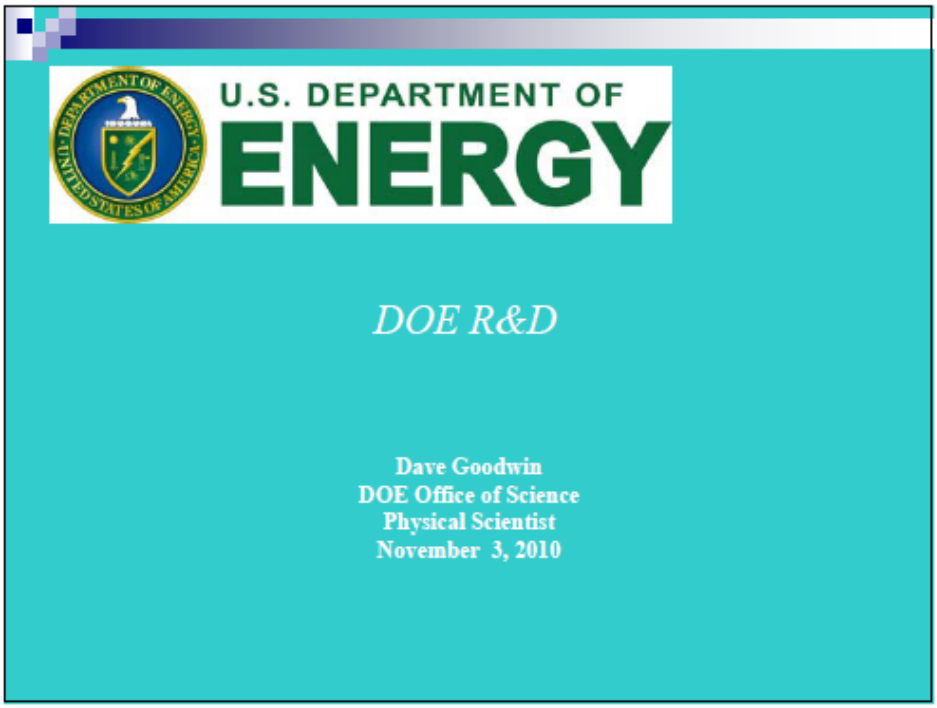
Opportunities for STEAB collaboration

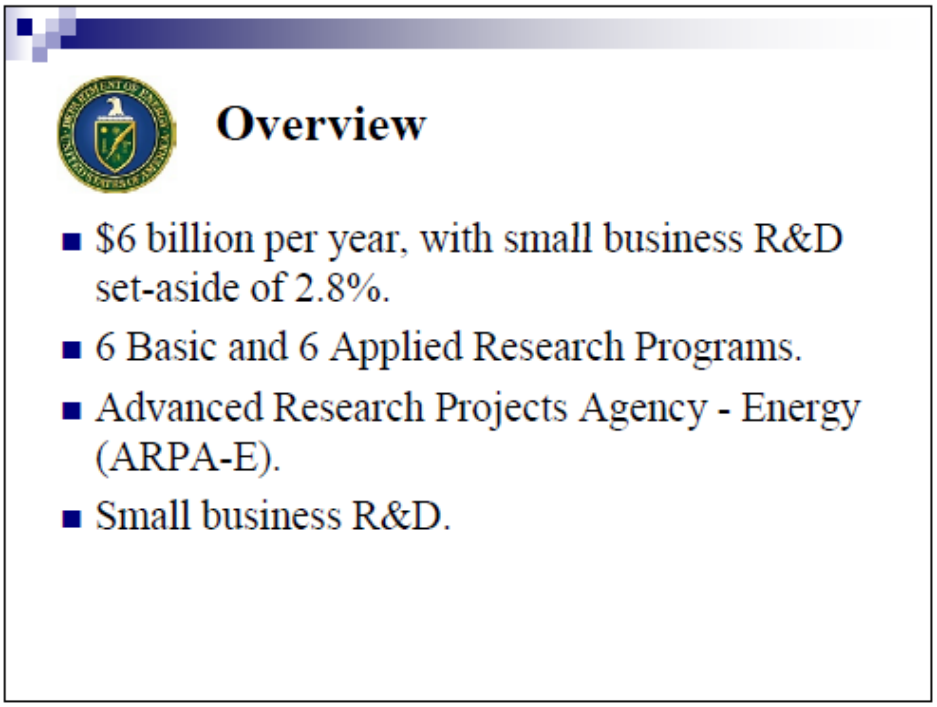
- Participation in Wind Powering America network
  - Provide information to decision-makers on wind energy
  - Share best practices for wind deployment with other states
- Promoting offshore renewable energy in National Ocean Council's regional coastal & marine spatial planning initiatives
- Region-wide collaborative approach to planning and managing wind deployment:
  - Transmission planning and payback
  - Cross-state siting issues, including wildlife and radar
  - Regional supply chain for wind energy equipment

Questions?

Jacques Beaudry-Losique
Program Manager
Wind and Water Power Program
Jacques.Beaudry-losique@ee.doe.gov

Appendix M: Review of the SBIR/STTR Program by Mr. David Goodwin





High Energy Physics (HEP) and Nuclear Physics (NP)

- http://www.science.doe.gov/hep.
- http://www.sc.doe.gov/np.
- Techs: detectors and accelerators (including HEP superconducting magnets and high current for industrials apps).
- http://www.sc.doe.gov/np/nsac.
- NP: **Critical** need to produce and separate medical isotopes due to worldwide shortages.

Basic Energy Sciences (Chemists)

- http://www.sc.doe.gov/bes.
- 5 Nanoscience Centers (surface chemistry).
- 4 X-ray Sources and 2 Neutron sources.
- Techs: Membranes for industrial apps and batteries, Electric Vehicle energy storage, fission reactor materials.

Biological, Environmental Research, and Computing

- http://www.sc.doe.gov/ober.
- Techs: Climate measurements and modeling.
- http://www.em.doe.gov.
- Techs: Cleanups of nuclear weapons sites.
- http://www.sc.doe.gov/ascr.
- Techs: Hardware and software, including industrial apps.

Fossil, Fission, and Fusion Energy

- http://www.fossil.energy.gov.
- Techs: CO2 capture, Fuels from CO2, H2 from coal.
- http://www.ne.doe.gov.
- Techs for advanced fuel cycles; e.g., safety and radwaste.
- http://www.science.doe.gov/ofes.
- Techs: Materials and diagnostics.

Electricity Delivery

- http://www.oe.energy.gov.
- Smart Grid.
- Hubless flywheels for energy storage; e.g., from renewable energy sources.

National Nuclear Security Administration

- http://nnsa.energy.gov.
- Defense Programs; i.e., safety and reliability of nuclear weapons.
- 10% of electricity.
- Non-proliferation techs: Nuclear Detonation Detection, radmonitoring and Safeguards sensors (e.g., for IAEA).

Renewable Energy

- http://www.eere.energy.gov.
- R&D Roadmaps: click on “Plans” (twice), then subject, and then Multi-Year R&D Plan.
- Biomass: Cellulose ethanol.
- Geothermal: 10 kilometer deep Demo.
- Fuel Cells: 300 mile range.
- Solar: Photovoltaics (PVs) and Solar Thermal.

Renewable Energy

- Wind: More reliable large turbines and more cost-effective smaller turbines.
- Techs: Waste heat recovery, bioenergy, hydrogen/fuel cells, energy efficiency for manufacturing and buildings (e.g., solid state lighting), solar, water (e.g., ocean), wind (e.g., offshore).

ARPA-E

- http://arpa-e.energy.gov.

- DARPA like; i.e., App-driven basic and applied R&D; high tech risk.
- $400 million ARRA and $300 million per year requested, starting in FY11.
- Not supplement DOE.

ARPA-E Awards (examples)

- Algal butanol.
- Fuel from solar, carbon dioxide, and water.
- GigaWatt Photovoltaics.

- Superconducting Magnetic Energy Storage.
- Flywheel Energy Storage.

ARPA-E Awards (2 of 2)

- Permanent magnets for Electric Vehicles.
- Nanotech ultracapacitors for energy Storage.
- Nanotech for sequestration.
- Nanotech thermoelectrics for waste heat capture.

Small Business Innovation Research (SBIR)/Small Business Tech Transfer (STTR)

- $167 million per year.
- SBIR: Tech transfers from small businesses.
- STTR: Small businesses assist tech transfers from universities and National Labs.
- **September** Requests For Proposals (RFP) – proposals due Nov 15th.
- Grants only (same as university grants; i.e., final report[**s**], Phase II progress report).

General Info

- Phase I: ≤ $150K Feasibility, ≤ 9 months.
- Phase II: ≤ $1 million – R&D, 2 years.
- **Hybrid**: Buy products (like DoD) and fund research without buying (like NSF).
- Request for Proposals includes 254 techs.
- "Other" related techs.
- Grants.gov (and related Guidance).

General Info (2 of 2)

- External peer reviewers (3), by email, from National Labs, universities, and private sector; i.e., not Feds (except Fossil Energy).
- Commercial reviewer for Phase II.
- Average about 2 proposals per company.
- Average nearly 2 awards per company.
- Not retain Data Rights for Government Use.

Peer Review Criteria (Accept Tech Risk)

1. **Scientific/Technical Approach**; e.g., unique ?, thoroughly presented ?

2. **Ability to carry out Cost-Effectively**; e.g., staff qualifications, adequacy of equipment and facilities.

3. **Impact** (equal weight, except ½ weight for ARRAs); e.g., benefits, likelihood marketable.

   Note: Evidence of Commercial Potential (Phase II Only)

Input to DOE

- Annual analysis of each specific tech (241 in FY10); ≥ 10 proposals, ≥ 2 fundable* (choices), ≥ 1 award.

  *Top 2 levels of 7 level peer review.

- Can suggest techs to the Program Managers (71 listed in FY10 RFP) from all 12 DOE research Program Offices – **Incentive**.

Success Rates (3-Year Annual Average)

- Phase I: **20%** of proposals received a grant
  Note: Excludes 20% declined for being non-responsive, not R&D, already funded (insufficient literature search), and insufficient info to review.
- Phase II: **50%** of proposals received a grant (must have DOE Phase I award).
- In FY09, Awards Made in **32** States.
- Minorities and Women-owned Phase IIs.

FY09 Phase I

- 27% were **First-time** DOE Grantees.
- 43% of which were **First-time** DOE Applicants.
- 66 grants included universities and 37 included DOE National Labs.

American Recovery and Reinvestment Act (ARRA)

- > $97 million of one-time funding.
- > $73 million for EERE (> 75% versus < 16% of set-aside) for 132 Phase I and 57 Phase II.
- Solar, water (e.g., tidal, wave), energy efficient buildings (e.g., cool roofs) and industrial processes (e.g., desalination), batteries, and biofuels.
- Abstracts on DOE SBIR/STTR webpage.

Contact Info

- Web: www.science.doe.gov/sbir (**RFP**, **Abstracts**, and Success Stories).
- Email: sbir-sttr@science.doe.gov
- Phone: 301-903-1414.
- Technical Assistance Program (TAP): http://doecapreg.foresightst.com and www.t2plus.com.
  (401) 273-4844 ext. 33.
  Note: Some TAP without award/proposal.
  We want you to succeed.

TAP (1 of 11)

- **Three-Part Approach (mostly private sector tools):**
  - Basic SBIR Proposal Prep and Commercialization Training
  - Resource-Intensive Data Repository
  - Assessments and Marketing Tools
- **Web-Based TAP:** Pre-Phase I, Phase I, and Phase II Awardees
  - Self-Help/Self-Paced Tools and Assistance
- **Non Web-Based TAP:** Phase I & Phase II Awardees
  - Assessments

TAP (2 of 11)

Centralized Resources: Repository of R&D-Specific Industry Data

- **Market Overviews** – (Open to All)
  - Market Information Summaries for a Number of Industries
- **Technology Roadmaps** – (Open to All)
  - Documents Developed by Government, Industry, Associations, and Other Authoritative Groups (e.g., Advisory Committees)
  - Provide Consensus Tech Objectives Needed to Sustain Short-, Mid-, and Long-term Progress for Specific Applications

TAP (3 of 11)

- **Regulations and Standards Applicable to SBIR** – (Phase I/II)
  - Searchable List of Standards - By Promulgators or Topics Across a Wide Range of Industries and Technologies.
- **Venture Capital Contacts – (Phase I/II)**
  - Venture Contacts: Searchable by State and Investment Fields.
- **Pipeline Partners – (Phase II)**
  - Catalogue of Companies and Key Individuals Interested in Licensing New Tech.

TAP (4 of 11)

- **K2™: Know-How Knowledge Basecamp – (Phase II)**
  - Collaborative Wiki-Format, Knowledge-Sharing Site
  - "Tricks of The Trade . . . If We Do Not Capture It, It Gets Lost"
- **Data Warehouse – (Phase I/II)**
  - Over 3,000 reports (and growing) on Individual Techs, including a Large Number of Energy-related Techs

TAP (5 of 11)

- **Go/NoGo™ Assessment –** (Open to All)
  - Leads You Through Data that Answers Both Questions of Uniqueness & Usefulness of Your Tech
  - Tutorials, Sample Assessment, and Help File to Improve a Phase I/II Proposal and,
  - How to Use & Build Upon Your Go/NoGo™ to Write a Better Phase I Proposal

TAP (6 of 11)

- **Marketing Fact Sheet –** (Open to All)
  - Marketing Material Template For Potential Phase III Commercialization Partners, Experts, End-users, and Other Stakeholders
  - It Can Be Attached To Emails, Mailed Separately, or Handed-Out at Trade Fairs or Other Marketing Venues
- **Commercialization Template & Help File** – (Phase I, II)
  - Business Plan-Like Format by which to Communicate Your Commercialization Data and Analysis

TAP (7 of 11)

- **Comm101™ -** (Open to All)
  - E-training Course - Commercializing New Techs
- **A Basic Primer on SBIR R&D Commercialization** – (Open to All)
  - *"What Every Researcher Needs to Know About Commercialization"*
    - How to improve your tech's commercialization prospect; and how deals are really done

TAP (8 of 11)

- **SBA's Phase I Proposal Preparation Handbook –** (Pre-Phase I)
  - Primer on SBIR Proposal Preparation.
- **Improving Your SBIR Phase I (and II) Proposal** – (Phase I/II)

TAP (9 of 11)

- **Trailblazer™ Assessment –** (Phase I)
  - Identifies Major Market Niches for Commercialization
  - Develops a Value for the Tech ("Quick & Low Cost")
  - Identifies Commercialization Vehicles & Maps-Out Market Path

- **TNA™ Assessment –** (Phase II)
  - Assesses Potential Applications for an Innovation or Tech
  - Individualized Market Entry Strategy & Launch Tactics

TAP (10 of 11)

- **Deal Advisories™ –** (Initiated Late Phase II)
  - Brief Deal-Focused Overview of Current Market
  - Introduction to Potential Licensee Ready to Sign a Non Disclosure Agreement
  - Third-Party Term Sheet with Recommended Offer
  - Analysis of Risk Factors Affecting Deal and How to Mitigate

TAP (11 of 11)

- Live Support via Online Chat (Phase I/Phase II)
- Foresight S&T Blog (Open to All)
- TAP Discussion Board (Open to All)
- **FAQs** (Open to All)
- **Calendar** of DOE SBIR/STTR Events (Open to All)

Appendix N: STEAB's "Priorities Through 2012"

STEAB's Priorities through 2012

To actively support energy efficiency and renewable energy market growth throughout the United States:

- Enhance State / Regional EE & RE capacity:
  - Financial
  - Intellectual
  - Manufacturing
  - Technology
- Facilitate the development of more active relationships between DOE and State / local programs
- Understand common issues facing other organizations and become of value to these organizations, perhaps through partnering (e.g., U.S. Conference of Mayors; NGA; NARUC; NASCUA; etc.)
- Support successful implementation and deployment of EERE Programs
- Promote consumer education efforts
- Encourage the implementation of EE and RE technologies and services
- Propose and support strategies to maintain State activities after the ARRA funding is no longer available
- Accelerate development of "green" jobs at State / local levels

Adopted by the Board on 4-15-10