ADVANCED MANUFACTURING OFFICE

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

Better Buildings, Better Plants: How You Can Benefit, plus New Executive Order on Industrial Energy Efficiency

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Today

- **Better Buildings, Better Plants Overview**
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  - Better Buildings, Better Plants Challenge
- **Looking Ahead to 2013**
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  - Enhanced energy intensity baselining and tracking tool
  - New communication materials
- **Executive Order on Industrial Energy Efficiency and Combined Heat and Power**
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    - Regional Industrial Energy Efficiency & Combined Heat and Power Dialogue Meetings
    - Better Buildings, Better Plants
    - “CHP as a Clean Energy Resource” new report
    - State technical assistance
    - CHP assistance: Regional Clean Energy Application Centers

Advancing Energy Efficiency in Manufacturing

Official White House Photo by Pete Souza

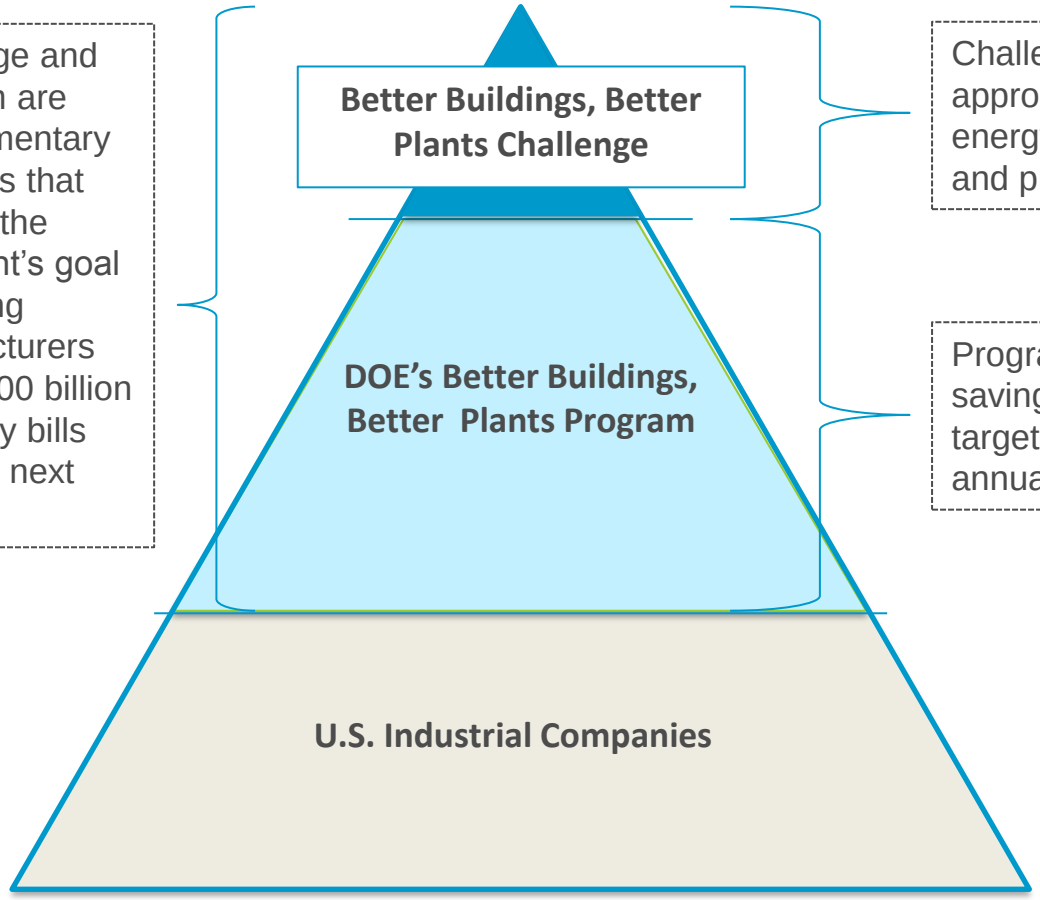
"Of course, the easiest way to save money is to waste less energy. So here's a proposal: Help manufacturers eliminate energy waste in their factories and give businesses incentives to upgrade their buildings. Their energy bills will be $100 billion lower over the next decade, and America will have less pollution, more manufacturing, more jobs for construction workers who need them."

—President Obama, 2012 State of the Union Address

Better Buildings, Better Plants Program & Challenge Overview

The Better Buildings, Better Plants Program & Challenge are the industrial components of the Better Buildings Challenge. DOE offers manufacturers two opportunities to engage in Better Plants based on their level of commitment.

Challenge and Program are complementary initiatives that support the President's goal of helping manufacturers save $100 billion in energy bills over the next decade



Challenge partners pursue innovative approaches to overcoming barriers to energy efficiency, showcase solutions, and provide transparency on results

Program Partners pledge energy saving goals consistent with national targets and agree to report progress annually to DOE

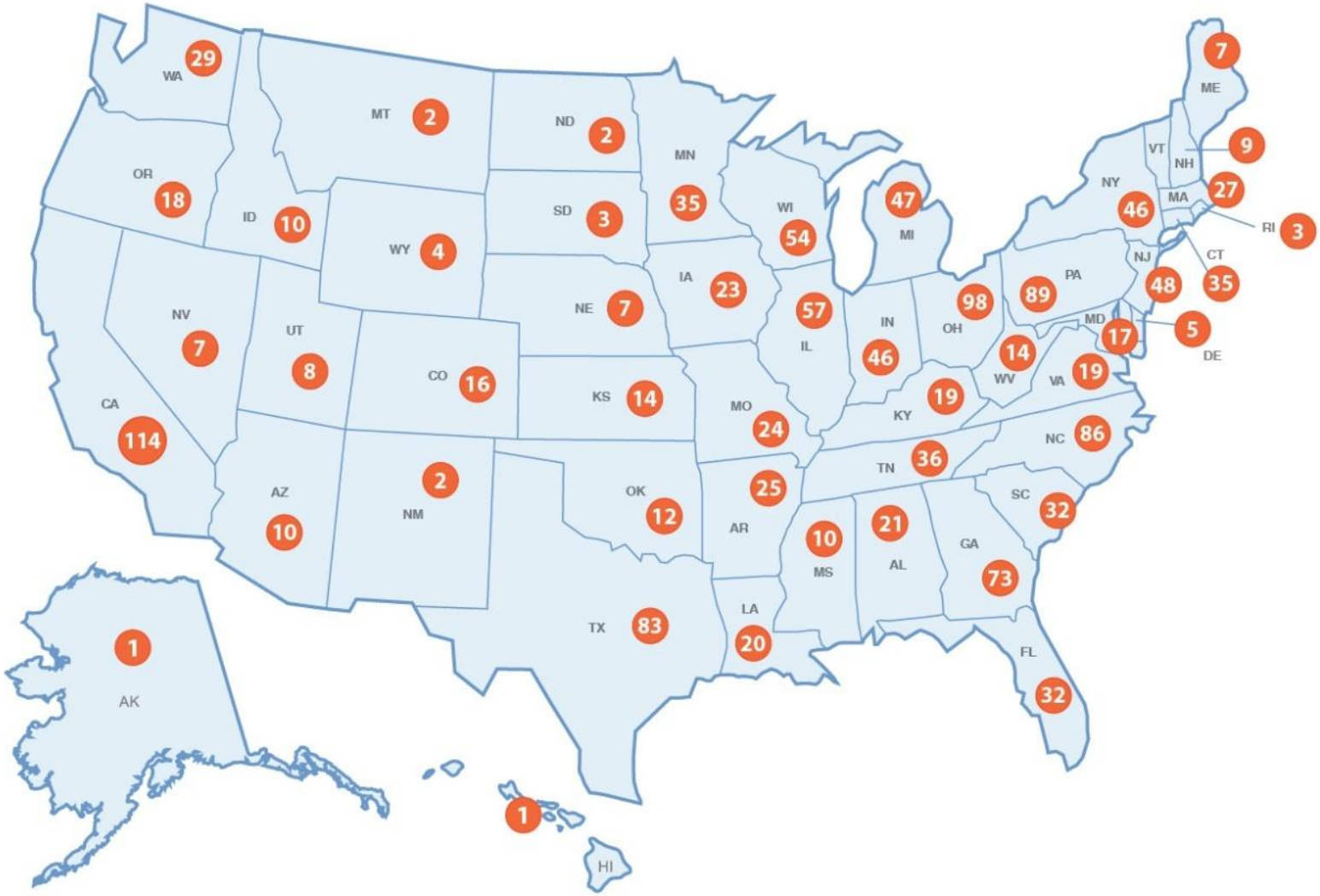
Better Buildings, Better Plants Program Overview

- The Better Buildings, Better Plants Program builds on the success of previous DOE partnership programs
- Partners:
  - Set a 10-year, 25% energy intensity improvement target for all U.S.-based manufacturing operations
  - Develop energy management plans
  - Track and report energy data annually to DOE
  - Receive national recognition for their achievements
  - Receive support from technical account managers on energy intensity baselining, energy management planning, and project identification
  - Participate in In-Plant Trainings

Energy Savings from Program Level Partners

	2010	2011	2012	Cumulative
Number of companies	95	106	114	NA
Number of plants	1,377	1,394	1,402	NA
Energy intensity improvement (%)	2.84%	3.15%	TBD	NA
Energy savings	14.9 TBTUs/yr	15.7 TBTUs/yr	TBD	45.6 TBTUs
Cost savings (million dollar)	$80.7/yr	$81.6/yr	TBD	$240.5

Better Plants Locations



Better Buildings, Better Plants Challenge Overview

Make commercial and industrial buildings 20% more efficient by 2020; save over $40 billion annually for U.S. organizations; create American jobs

Challenge Partners Agree to:

Commit

- Establish energy efficiency goal
- Announce innovations/market solutions

Take Action

- Showcase project within 9 months
- Organization-wide plan, schedule and milestones within 9 months

Report Results

- Share information and implementation models
- Share portfolio wide energy performance annually
- Quarterly updates on progress on showcase projects, other

President Obama and former President Clinton take a tour of the upgrades of the Transwestern Building in Washington, Dec. 2, 2011

(Official White House Photo by Lawrence Jackson)

Who are the Current Partners and Allies?

100+ public, private and non-profit organizations:

- 23 Commercial Partners
- 10 Better Buildings, Better Plants Partners
- 36 Community Partners
- 17 Education Partners
- 13 Financial Allies
- 2 Utility Allies

Together, they represent:

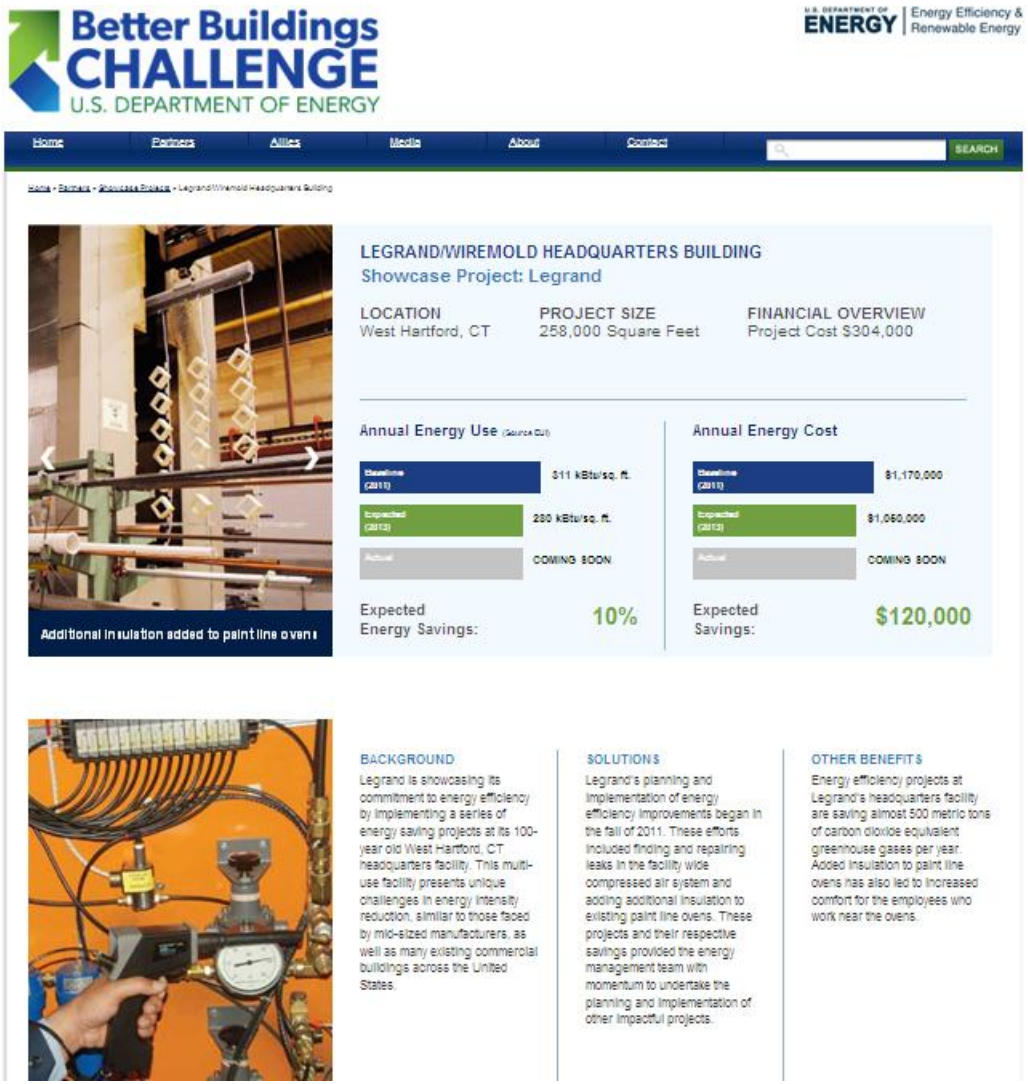
- ~2 billion square feet of commercial and industrial space committed
- 300 manufacturing plants
- ~$2 billion in private sector financing

Better Buildings Challenge Partners & Allies

Better Buildings, Better Plants Challenge Partners

Showcase Projects

- Nissan is making a $200 million investment in a new paint plant that will improve energy efficiency by about 30% compared to the plant it is replacing
- Cummins is making a $9 million, multi-year investment in a strategic, facility-wide energy system upgrade
- Alcoa is making a $21 million investment in a new energy efficient recycling plant



Implementation Models

Examples:

- 3M established a special fund devoted solely to energy efficiency projects that do not get approved through the normal budgeting process
- Delaware State University will secure construction financing via the Delaware Sustainable Energy Utility's Energy Efficiency Construction Bonds for an energy services performance contract across 26 buildings that will result in 25 percent energy savings
- University of California, Irvine will share the Smart Labs program, which has successfully reduced energy consumption in lab space by more than 50 percent using advanced occupancy and air quality sensors to reduce the amount of conditioned air exhausted into the atmosphere when conditions permit

Looking ahead to 2013

In-Plant Trainings

- In-Plant Trainings (INPLTs) develop energy efficiency expertise within companies
- Events range 3-4 days and are led by energy experts who train participants on how to conduct assessments, use DOE tools, develop energy management systems, and implement projects
- Participants can come from plants from the same company, from peer or regionally-based companies, suppliers, and others
- Energy assessments are a component of the INPLTs, but the training events put greater emphasis on:
  - Training
  - Replication
  - Implementation
  - Advancing sustainable energy management systems

DOE energy expert Greg Harrell and an Alcoa employee at a recent INPLT event

In-Plant Trainings

- In 2012, DOE conducted 11 INPLTs covering: steam, compressed air, process heating, pumps, and fans. Through these events, DOE:
  - Trained over 200 participants
  - Helped identify close to 750 billion BTUs in energy savings and almost $4.5 million in cost savings
- In 2013, DOE plans to conduct about one INPLT per month
  - Application period will open October 15 and close November 12. DOE will make awards in late November/early December.
  - A second application period will be held in 2013

Enhanced Energy Intensity Baselining Tool

- Third iteration of DOE's Energy Performance Indicator tool will be released this fall
- The tool allows plant and corporate energy managers to create normalized energy consumption baselines and track progress over time
- Regression analysis is employed to allow for "apples-to-apples" comparisons, normalizing energy use for variations in critical variables over time, such as:
  - Weather, e.g. HDDs, CDDs, humidity, etc.
  - Production, e.g. product output, moisture content, raw materials, etc.
  - Space utilization, e.g. changes in conditioned floor space in a building
- The tool is designed to accommodate multiple users including Better Plants Program and Challenge Partners, Superior Energy Performance participants, and non-manufacturing facilities such as data centers

Enhanced Energy Intensity Baselining Tool

Inputs

- Energy data
- Variables that affect energy consumption at a facility (ex: heating degree days, cooling degree days, production, moisture content, etc.)

Outputs

- All possible models for each energy source
- Regression stats for each model such as variable P-values, R-squared values
- Facility level % energy performance improvements
- Facility level savings (MMBtu/year)
- Corporate level % energy performance improvements
- Corporate level savings (MMBtu/year)

Challenge and Program Logos

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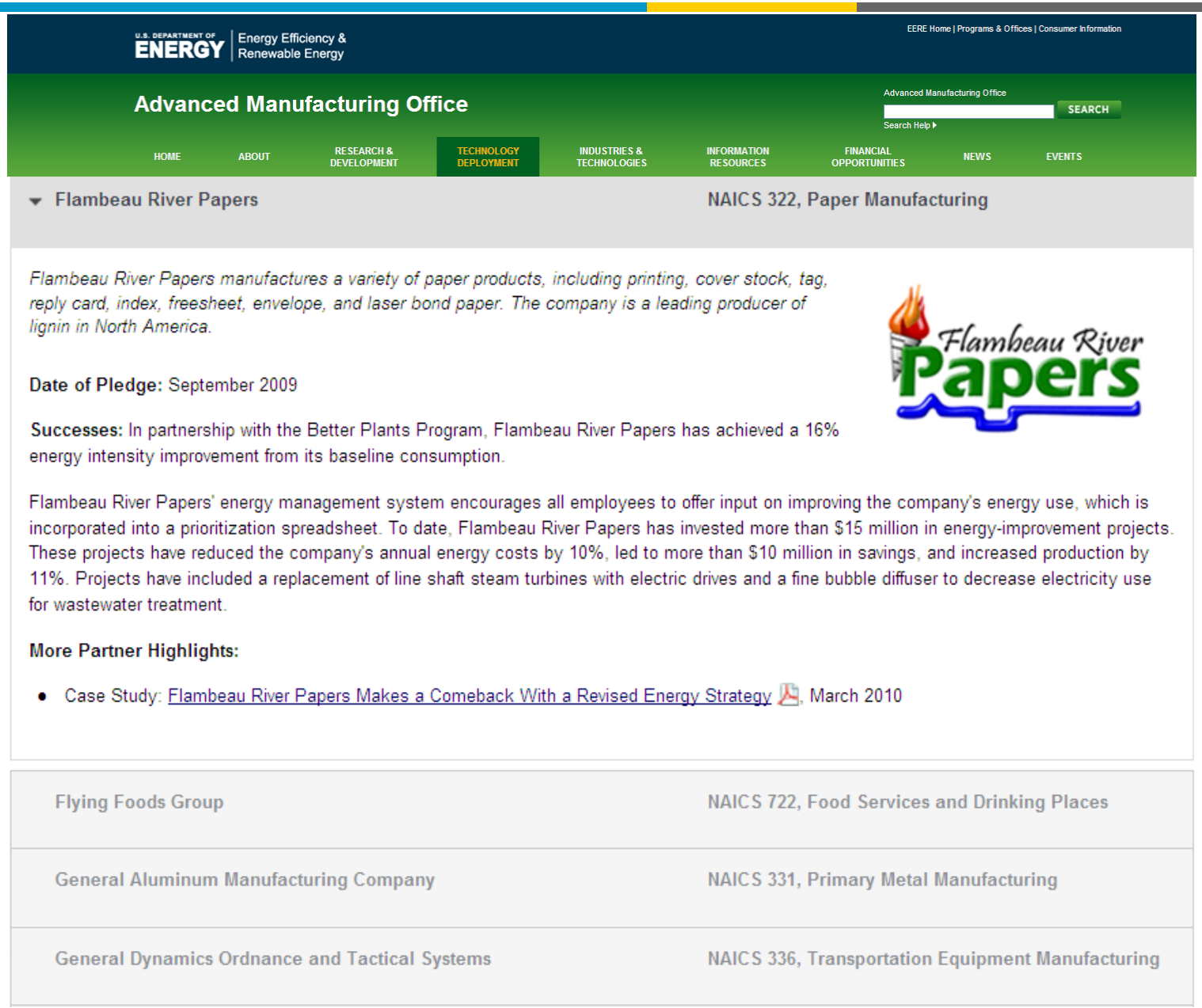
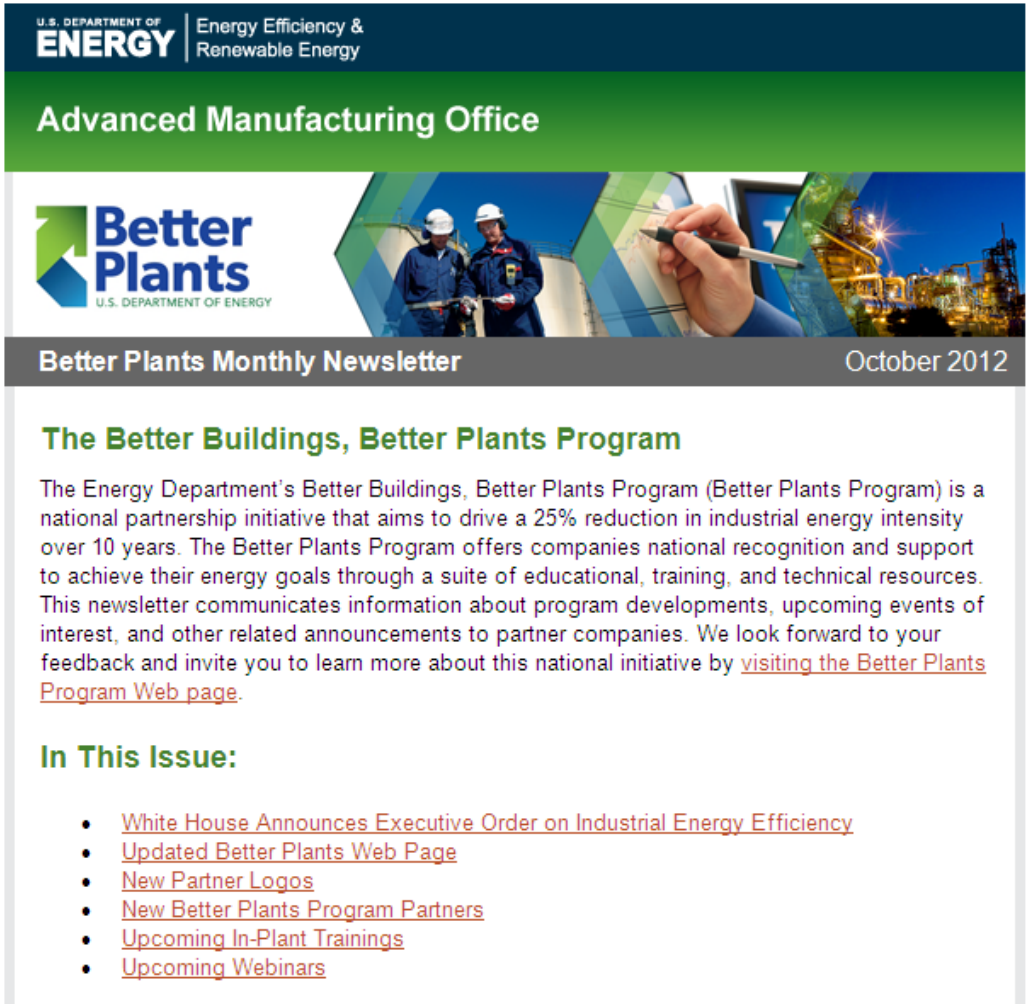
New Partner Web Profiles



Monthly Newsletter

- Monthly newsletter designed to keep partners up to speed on new program developments
- Topics may include:
  - New tools and documents
  - Upcoming events, including in-plant trainings, webinars, regional meetings
  - New partners
  - Partner success stories
  - Completed showcase projects, implementation models
  - Applicable R&D funding opportunities
- First edition sent out Oct. 3



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Better Plants
U.S. DEPARTMENT OF ENERGY

Better Plants Monthly Newsletter — October 2012

The Better Buildings, Better Plants Program

The Energy Department's Better Buildings, Better Plants Program (Better Plants Program) is a national partnership initiative that aims to drive a 25% reduction in industrial energy intensity over 10 years. The Better Plants Program offers companies national recognition and support to achieve their energy goals through a suite of educational, training, and technical resources. This newsletter communicates information about program developments, upcoming events of interest, and other related announcements to partner companies. We look forward to your feedback and invite you to learn more about this national initiative by visiting the Better Plants Program Web page.

In This Issue:

- White House Announces Executive Order on Industrial Energy Efficiency
- Updated Better Plants Web Page
- New Partner Logos
- New Better Plants Program Partners
- Upcoming In-Plant Trainings
- Upcoming Webinars

Executive Order:
Accelerating Investments in Industrial Energy Efficiency

Executive Order

- August 30th, 2012: President Obama signed an Executive Order to accelerate investments in industrial energy efficiency (EE), including combined heat and power (CHP) with the goal of bringing together all stakeholders to seize this opportunity and ensuring that Federal agencies are taking the maximal steps to support private sector investment in this space.
- The Executive Order is part of the President's efforts to both Revitalize American Manufacturing and to pursue an All-of-the-Above energy strategy.
- Since the beginning of 2010, the U.S. manufacturing sector has added over 500,000 jobs - the first sustained job growth in the sector since the 1990s.
- Often barriers exist that prevent otherwise economic investments in industrial EE and CHP from occurring.
- The Administration believes it is important to accelerate investment in industrial energy efficiency in a way that benefits all stakeholders.

What Is the Urgency?

- Investments in industrial energy efficiency, including combined heat and power, offer significant benefits to manufacturers, utilities and communities across the country, including:
  - *Improving U.S. manufacturing competitiveness*
    - By accelerating these investments, manufacturers could save at least $100 billion in energy costs over the next decade;
  - *Creating jobs now through investments upgrading our manufacturing facilities*
    - Meeting the goal of 40 GW of new CHP over the next decade would mean $40 to $80 billion of new capital investment in American manufacturing facilities. Most of these efficient technologies are made in the U.S.;
  - *Offering a low-cost approach to new electricity generation capacity to meet current and future demand*
    - Investments in IEE, including CHP, cost as much as 50% less than traditional forms of delivered new baseload power;
  - *Significantly lowering emissions*
    - Improved efficiency can meaningfully reduce nationwide GHG emissions and other criteria pollutants; and
  - *Enhancing grid security*
    - Investments in industrial energy efficiency reduce the need for new electricity infrastructure (transmission and distribution) and improve overall electric reliability.

What the Executive Order Does

- Sets a national **goal of 40 GW** of new **combined heat and power** installation over the next decade;
- Directs DOE and EPA to convene stakeholders through ongoing **regional workshops to foster a national dialogue** to identify, develop, and encourage the adoption of **best practice policies and investment models**;
- Directs EPA to provide **assistance to States** on accounting for the potential emission reduction benefits of CHP and other energy efficiency policies when developing State Implementation Plans (SIPs) to achieve national ambient air quality standards;
- Directs EPA to employ **output based approaches as compliance options** in power and industrial sector regulations, as appropriate, to recognize the emissions benefits of highly efficient energy generation technologies like CHP;

What the Executive Order Does cont'd

- Directs DOE to expand participation in and create additional tools to support the **Better Buildings, Better Plants program**, which is working with companies to help them achieve a goal of reducing energy intensity by 25 percent over 10 years, as well as utilizing existing partnership programs to support energy efficiency and CHP;
- Directs all Federal agencies to support and encourage efforts to accelerate investment in industrial energy efficiency and CHP by:
  - Providing general **guidance, technical analysis and information**, and financial analysis on the value of investment in industrial energy efficiency and CHP to States, utilities, and owners and operators of industrial facilities;
  - Improving the usefulness of Federal **data collection and analysis**; and
  - Assisting **States in developing and implementing State specific best practice policies** that can accelerate investment in industrial energy efficiency and CHP.

DOE Activities in Support of Executive Order

- Regional Industrial Energy Efficiency & Combined Heat and Power Dialogue Meetings
- Better Buildings, Better Plants
- “CHP as a Clean Energy Resource” new report
- State technical assistance
- CHP assistance: Regional Clean Energy Application Centers

DOE Regional Dialogue Meetings

- Upcoming DOE Regional Industrial Energy Efficiency & Combined Heat and Power Regional Dialogue Meetings
  - In-person, one day dialogue meetings that focus on developing and implementing state best practice policies and investment models that address the multiple barriers to greater investment in industrial energy efficiency and CHP.

- **Southeast** Industrial Energy Efficiency & Combined Heat and Power Regional Dialogue Meeting
- January 24, 2013, Little Rock, Arkansas
  http://www1.eere.energy.gov/manufacturing/newsandevents/events_detail.html?event_id=7304

- **Northeast / Mid-Atlantic** Industrial Energy Efficiency & Combined Heat and Power Regional Dialogue Meeting
- March 13, 2013, Baltimore, Maryland
  http://www1.eere.energy.gov/manufacturing/newsandevents/events_detail.html?event_id=7305

New DOE / EPA CHP Report

- "*Combined Heat and Power: A Clean Energy Solution*" – DOE / EPA report in support of the Executive Order & national CHP challenge goal
- Achieving the 40 GW of new CHP goal would:
  - Increase total CHP capacity in the U.S. by 50 percent in less than a decade
  - Save energy users $10 billion a year compared to current energy use
  - Result in $40 - $80 billion in new capital investment in manufacturing and other U.S. facilities over the next decade
  - Save one quadrillion (Quad) Btu's of energy, equal to 10^{15} Btu - the equivalent of 1 percent of all energy use in the U.S.
  - Reduce emissions by 150 million metric tons of CO_2 annually - the equivalent to the emissions produced from over 25 million cars

http://www1.eere.energy.gov/manufacturing/distributedenergy/pdfs/chp_clean_energy_solution.pdf

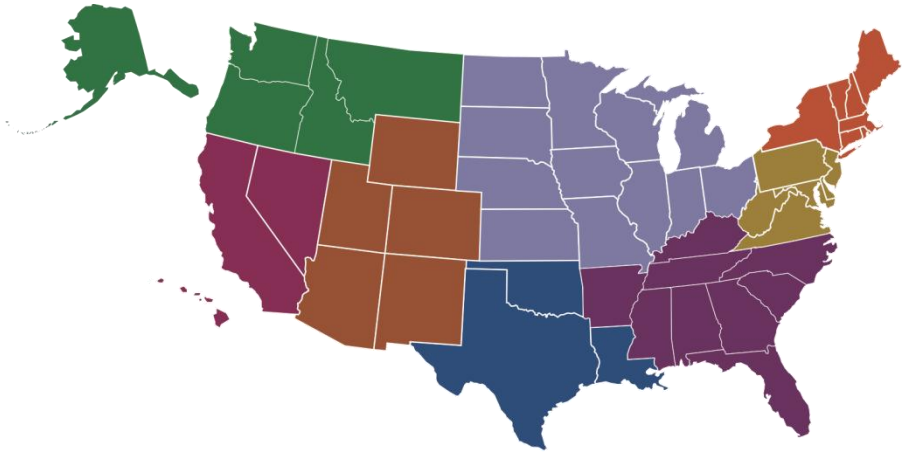
DOE State Technical Assistance

- Significant opportunities exist for DOE to support states efforts to address state and local barriers to accelerate investment in Industrial EE and CHP.
- DOE is working closely with the State of Ohio, providing a host of state-specific technical assistance, including piloting Boiler MACT technical assistance effort and supporting the Public Utilities Commission of Ohio as they consider opportunities to remove barriers and raise awareness of CHP.
- Opportunities exist for states that want to partner with DOE, identify opportunities at the state level, and develop best practices that can be implemented around the country.

DOE CHP Assistance:
Regional Clean Energy Application Centers (CEACs)

Eight Regional CEACs & International District Energy Association

- **Market Assessments:** Analyses of CHP market potential in diverse sectors, such as health care, industrial sites, hotels, & new commercial and institutional buildings.
- **Education and Outreach:** Providing information on the benefits and applications of CHP to state and local policy makers, regulators, energy end-users, trade associations and others.
- **Technical Assistance:** Providing technical information to energy end-users and others to help them consider if CHP makes sense for them. Includes performing site assessments, producing project feasibility studies, and providing technical and financial analyses.



http://www1.eere.energy.gov/manufacturing/distributedenergy/ceacs.html

Thank You!

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- **Better Buildings, Better Plants:** http://www1.eere.energy.gov/manufacturing/index.html
- **Better Buildings Challenge**: http://www4.eere.energy.gov/challenge/

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- **Executive Order**: http://www.whitehouse.gov/the-press-office/2012/08/30/executive-order-accelerating-investment-industrial-energy-efficiency
- **Regional Industrial EE and CHP Dialogue Meetings:** http://www1.eere.energy.gov/manufacturing/newsandevents/events.html