

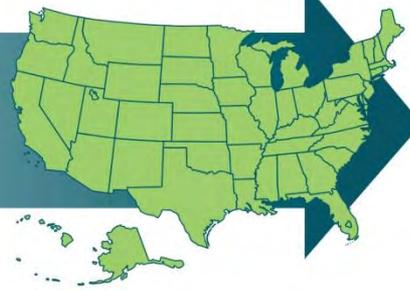


**SEE Action**

STATE ENERGY EFFICIENCY ACTION NETWORK

# **Industrial Energy Efficiency & Combined Heat and Power Working Group Blueprint**

March 25, 2011



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STATE ENERGY EFFICIENCY ACTION NETWORK

The Industrial Efficiency and CHP Working Group of the State Energy Efficiency Action Network is committed to taking action to increase investment in cost-effective energy efficiency. This Blueprint was developed under the guidance of and with input from the Working Group. The document does not necessarily represent an endorsement by the individuals or organizations of Industrial Efficiency and CHP Working Group members.

The Industrial Efficiency and CHP Working Group Blueprint is a product of the State Energy Efficiency Action Network and does not reflect the views, policies, or otherwise of the federal government.

If this document is referenced, it should be cited as: State Energy Efficiency Action Network (2011). Industrial Efficiency and CHP Working Group Blueprint. [www.seeaction.energy.gov](http://www.seeaction.energy.gov)

# Outline

- SEE Action Introduction Working Group Introduction
  - Goals
  - Scope
  - Definitions
  - Baseline
  - Barriers
- Priority Solutions
- Mapping Solutions to Key Stakeholders
- Work Plan
- Appendix



# Today's Challenges

- **Challenges**

- Energy: Rising price of electricity, dependence on imported oil, cost of compliance with environmental regulations
- Environmental: Need to reduce emissions, protect sensitive water bodies
- Economic: Need to create jobs, reduce price of energy

- **Energy Efficiency is critical piece of solution**

- Energy: Diversifies energy mix, lowest-cost resource, reduces demand
- Environmental: Zero emissions
- Economic: Creates jobs (implement efficiency programs)



# Where We Are Today

- Increasing levels of investment in energy efficiency, but not sufficient to achieve all cost-effective efficiency opportunities
- Wide range and variation of state policies
- Now is the time to capitalize on the investments in energy efficiency from ARRA and ensure the benefits from these efforts are sustained
- Many well-documented barriers preventing the capture of efficiency benefits – policy, regulatory, customer, market, program



# State Energy Efficiency Action Network

- State Energy Efficiency Action Network (SEE Action) is a federal-state-local effort to assist state & local governments in:
  - Advancing efficiency policies and programs
  - Removing barriers and disincentives to realizing energy savings through efficiency
  - Growing state-level investments in cost-effective efficiency
- Goal: To help the nation achieve all cost-effective energy efficiency by 2020 through assisting state and local governments in their implementation of energy efficiency policies and programs
- Executive Group
  - Provides visionary leadership, strategic direction , and prioritization
  - Approx. 30 members, representing diverse stakeholders, including state policy makers, business leaders, utilities, NGOs, associations
  - Facilitated & co-chaired by DOE and EPA



# Working Groups



- Eight issue-oriented Working Groups to drive investment in efficiency
- Represent all areas of the economy and infrastructure that can increase energy efficiency
- Chaired by state and local leaders
- Advance consistent approaches, best practices and considerations / recommendations
- Develop Blueprints to chart the course for achieving near- and long-term aggressive goals
- Use Blueprints to guide implementation efforts so stakeholders can work together, given their roles & responsibilities



# Working Group Members

- Two co-chairs
- 17 Members
  - Coordinating organizations
  - Utilities
  - Research/Academia
  - Industry

<b>Co-Chairs</b>	
Todd Currier	Washington State University Extension Energy Office
Greg White	Michigan Public Service Commission
<b>State Programs</b>	
Brian Platt	New York State Energy Research and Development Authority
<b>Coordinating Organizations</b>	
Ron Edelstein	Gas Technology Institute
Neal Elliott	American Council for an Energy-Efficient Economy (ACEEE)
Rich Herweck	Texas CHP Initiative
John Holt	National Rural Electric Cooperative Association
Bruce Lung	Alliance to Save Energy
Rick Marsh	Southeast Energy Efficiency Alliance (SEEA)
Richard Meyer	American Gas Association (AGA)
Lisa Schwartz	Regulatory Assistance Project
Becky Stanfield	National Resources Defense Council
Ed Wisniewski	Consortium for Energy Efficiency
<b>Utilities</b>	
James Earley	Southern Company
Chris Goff	Southern California Gas Company
<b>Research/Academia</b>	
John Cuttica	Energy Resources Center, University of Illinois – Chicago
Dr. Michael Muller	Rutgers University
<b>Industry/End-User</b>	
Stephen Coppinger	CalPortland
Brad Runda	Saint-Gobain
<b>DOE / EPA Leads</b>	
Elizabeth Dutrow	EPA ENERGY STAR for Industry
Bob Gemmer	DOE Industrial Technologies Program
Sandy Glatt	DOE Industrial Technologies Program
Neeharika Naik-Dhungel	EPA CHP Partnership



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# WORKING GROUP INTRODUCTION



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# Approach to Goals and Scope

## Big Picture Questions

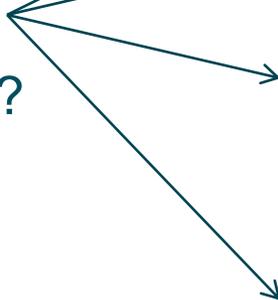
- Where do we want to be?



- Where are we now?



- How do we get there?



## Blueprint Components

1. Set broad goals
2. Define scope and key terms (i.e., including combined heat & power)
3. Outline what meeting the goals will look like (e.g., key factors, level of activity)
4. Assess current baseline of activity
5. Review market barriers
6. Review how current programs/policies are/are not overcoming barriers, identify gaps
7. Identify work and recommendations to address gaps/meet goals and roles for key organizations
8. Show how we will measure progress



# Goals

- IEE/CHP Working Group Goals

- Achieve a 2.5% average annual reduction in industrial energy intensity through 2020
- Install 40 gigawatts (GW) of new, cost-effective combined heat and power (CHP) by 2020

- Background

- Achieving a 2.5% annual reduction in energy intensity and adopting a 40 GW of CHP would save 10.4 quadrillion Btu by 2020.
- Meeting these goals to save 10.4 quadrillion Btu would capture 78% of the total 13.4 quadrillion Btu in estimated potential energy savings in the industrial sector by 2020

NOTE: The 2.5% goal includes waste heat recovery (as defined by the working group). The working group also recognizes that the reduction may not be an annual 2.5% achievement, but a cumulative effort over time that equates to a 2.5% annual reduction, on average, over the next 10 years.



# Meeting the Goal: Key Elements

- Break sector into key market segments
  - Small/medium/large industry
  - Utilities (investor-owned utilities, public, co-op, municipal)
  - Ratepayer-Funded Program Administrators (states, public utility commissions, and federal agencies: Bonneville Power Association, Tennessee Valley Authority)
- Key elements to examine for each segment
  - Investment levels and mechanisms
    - Public financing
    - Private financing
    - Finance reform
  - *Workforce*
    - Some believe that there may be shortages of certain energy or technology skill sets
      - Work with industry and other to identify those needs
    - Training curricula
  - *Programs and policies*
    - Model state and utility programs/state policies/ national energy efficiency policy
    - CHP regulatory policies
    - Interconnection standards
  - *Demand creation*
  - *Tools and resources*
    - Clearinghouse
    - CHP efficiency calculator

*This Blueprint provides an analytical framework*

5-Yr goals for progress	2011	2012	2013	2014	2015
Industrial Energy Efficiency, quads saved	0.5	0.7	0.9	1.3	1.6
New Installed CHP, GW	2	2	3	4	4



# Scope

- Working Group will address:
  - Industrial sector/manufacturing:
    - Large-, medium-, and small-sized industries
    - Varying levels of energy intensity
  - Energy efficiency in terms of systems and processes
    - Energy intensity (as a measure of efficiency)
    - CHP
- Will not address:
  - Building envelope
  - Small commercial\*
  - Other issues that do not affect industrial energy efficiency (EE) / CHP uptake of state and utility programs

\* EIA: Industrial sector includes “all facilities and equipment used for producing, processing, or assembling goods,” whereas the commercial sector is more encompassing and includes “service-providing facilities and equipment of businesses” ([EIA Glossary](#)).



# Impact of Goals and Scope

## Where We Are Today:

According to the Energy Information Administration, gross domestic product (GDP) growth estimates with fixed energy intensity, the industrial sector will consume 41.6\* quads of primary energy in the year 2020 (Business as Usual).

## Working Group Goals:

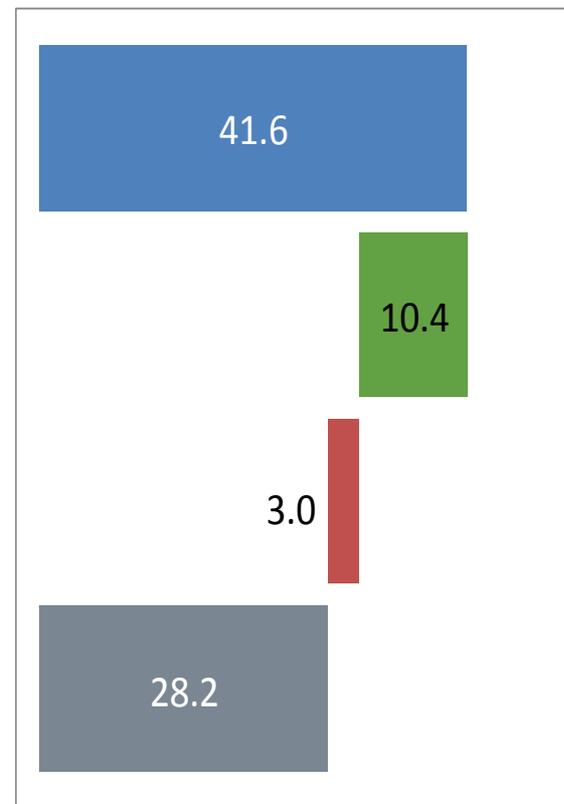
Based on the McKinsey report, 13.4 quads of potential industrial Btu savings by 2020 exist.\*\* The working group's goals to reduce industrial energy intensity by 2.5% annually through 2020 and install 40 GW of new, cost-effective CHP by 2020 will achieve a reduction of 10.4 quads.\*\*\*

## Scope:

Reaching goals would capture 78% of the potential energy efficiency in the industrial sector, leaving 3.0 quads to address through other activities.

**Resulting 2020 energy use if all potential is addressed**

Energy, quadrillion primary Btu



\* Total industrial sector energy consumption includes refining-related efforts.

\*\* The McKinsey non-transportation industrial estimates were used to calculate the potential for the full industrial sector.

\*\*\* 2020 efficiency potential is based on an estimated 25.2% growth in GDP by 2020 (Annual Energy Outlook 2008) and a fixed industrial energy intensity (energy consumption per value of shipments) through 2020.



# Definitions

- **Energy Intensity** – A manner by which to measure overall energy efficiency by energy consumption per unit of GDP. Chosen over solely British thermal units (Btu) consumed because it does not include energy efficiency savings that might occur with industrial downsizing or other market events.
- **CHP**– The simultaneous production of useful thermal and electric energy from a single fuel source.\* Also referred to as *cogeneration*.
- **Waste Heat Recovery (WHR)** – The conversion of otherwise exhausted or wasted heat produced by industrial equipment and processes to useful energy. Depending on the uses of the wasted heat, classified as either an energy efficiency technology or CHP technology.
- **Distributed Energy** – Small power generation technologies that may use one of a variety of conventional or renewable feedstocks for fuel; systems typically located at or near point of consumption. Also termed *distributed generation*. CHP is one form of distributed generation.
- **Fuel Switching** – Displaces one fuel with another for process control, availability, cost control, or fuel-recovery reasons.
- **Model** – A well-defined program, activity, or policy that is being successfully implemented and is achieving measurable success in advancing industrial energy efficiency/CHP at the utility, state, and/or federal level. Not herein meant to imply that one-size-fits-all, preferable to the term “best practice.”
- **National Organizations** – non-governmental agencies and groups, such as non-profits, associations, and other stakeholder entities.
- **Culture of Energy Efficiency** – An environment where an industrial company’s management has embraced the value of energy efficiency at the highest corporate levels to ensure the adoption of the changes necessary to facilitate energy efficiency and achieve the working group’s ambitious goals.



# Baseline

## Promote Efficient Operations & Investment

- ~\$11 billion invested in industrial energy efficiency in 2004 ([ACEEE](#), pg 14)
- Data collection needs for industrial investment currently exist:
  - Separating industrial and commercial data on program investment and savings
  - Identification of sources of IEE/CHP program investment (private or ratepayer)
  - Level of private sector financing avail specifically for industrial EE and CHP
  - Industrial investment by program type (lighting, motor, custom, etc.)
  - EERS impact on industrial sector energy use and efficiency
  - Unknown level of uptake of state tax incentives by industry that impact IEE/CHP

## Build the Workforce

- Since 1977, >2,500 students participated in IAC program; Job postings per year outstrip departing students ([ACEEE](#))
- Industry has identified needs for more qualified workforce
- Identified needs for more qualified workforce, inc. professionals (licensing or certification lacking)
- CHP/WHR included in some form in 12 state RPS and/or EERS ([DSIRE](#))
- 11 states offer energy efficiency tax incentives for industry
- Utilities do not widely support CHP/WHR implementation
- 25% of all utilities offer industrial energy efficiency programs ([SIR Database](#)); 63% of program administrators already offering energy efficiency programs offered a dedicated *industrial* energy efficiency program (2010 CEE Survey)

## Drive Demand for Industrial Energy Efficiency & CHP

## Move the Market

- Eight Clean Energy Application Centers for CHP; Regional Energy Efficiency Alliances
- 26 Industrial Assessment Centers to support small- and mid-sized companies
- State and regional industrial energy efficiency programs and activities
- EPA's ENERGY STAR for Industry; DOE's Industrial Technologies Program

Note: This information is representative of the current activities and resources, not comprehensive.



# Barriers

*The industrial sector is unique and faces many challenges. The WG will focus on both well-documented industrial EE and CHP barriers, as well as those that have not been catalogued.*

## **Informational Barriers**

- Many industrial companies are not aware of the total value of energy efficiency and CHP and the return on investment (ROI) that they can offer; energy efficiency is a lower profile energy issue.

## **Financial and Operational Barriers**

- Industry generally has a high hurdle rate for energy efficiency and CHP investment payback ( $\leq 2$  years); more tools are needed to help projects meet that hurdle and improve the cost of technologies.
- Tension between utility programs achieving outside funding and the concern by industry on paying for what they do not receive or overpaying.
- Some Industrials oppose decoupling and other similar ideas that purport to remove utility disincentives for efficiency over program cost-shifting concerns and overall cost run-ups.

## **Technical Barriers**

- Not all incentive programs capture industry's highest needs; financial incentives are not often available for CHP.
- Demand-side management (DSM) products and services are not always offered by utilities; market for industrial EE projects and services is much smaller than residential and commercial technologies.

## **Policy Barriers**

- Unknowns regarding the parameters, requirements, and impacts of federal climate policy have paralyzed some activity; unknown risks for manufacturing also slow action; CHP not included in many state energy efficiency policies or ratepayer-funded energy efficiency programs.

## **Regulatory Barriers**

- Industrial companies face regulatory challenges, such as environmental permitting, which can be very costly and time consuming; changes in production or emissions can preclude permitting and make implementing capital projects difficult.



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# PRIORITY SOLUTIONS



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# Process of Identifying Solutions Actions to Overcome Key Barriers

- Review model policy and program examples
  - McKinsey's *Unlocking Energy Efficiency in the U.S. Economy*
  - Oak Ridge National Laboratory's *Combined Heat and Power: Effective Energy Solutions for a Sustainable Future*
  - American Council for an Energy-Efficient Economy's (ACEEE) fact sheet on *Barriers to Energy Efficiency Investments and Energy Management in the U.S. Industrial Sector*
  - Consortium for Energy Efficiency Industrial Program Summaries
- Provide tools and information on core policy/programs solutions so that key stakeholders can adopt actions
- Incorporate working group feedback to produce final solution set
  - Industrial End-User working group members have identified the need for greater industrial end-user feedback into the barriers/solutions and actions



# Key Solutions & Actions to Achieve the Goal

Achieve an average 2.5% reduction in industrial energy intensity annually through 2020; install 40 GW of new, cost-effective CHP by 2020

## Drive Demand for Industrial Energy Efficiency & CHP

- 1. State, Local, & Utility Programs for Industry**  
Programs that better meet the needs of industry
- 2. State Policy Models**  
Broader adoption of model policies
- 3. National Energy Efficiency Policy**  
Enhance national policy with regard to industrial energy efficiency and CHP
- 4. Education & Outreach**  
Build corporate culture; foster greater understanding of the economic value of industrial energy efficiency and CHP

## Build the Workforce

- 5. Education & Workforce Development**  
Identify industry's needs and workforce needs; develop new programs to address needs
- 6. Develop Training & Academic Curricula**  
From the plant floor to the corporate level
- 7. Licensing & Certification Protocols**  
Certified Energy Manager (CEM); DOE Qualified Specialists; Continuous Energy Improvement, etc.

## Promote Efficient Operations & Investment

- 8. Financing Innovation**  
Loan guarantees, energy service companies (ESCOs), etc.
- 9. Financial Incentives**  
Address industry ROI and refit cycles
- 10. Technical Solutions**  
Improve availability of energy efficiency and CHP information and tools for industry
- 11. Energy Management Programs/Continuous Energy Improvement**  
Ex: ISO 50001, Superior Energy Performance (SEP), ENERGY STAR, and others

## Move the Market

- 12. Technology Demonstration**  
Adoption of existing technologies
- 13. Regulatory Recommendations to Support CHP**  
Offer comprehensive CHP policies
- 14. Reduce Uncertainty Related to State Interconnection**  
Harmonization across broad regions and states
- 15. Financing Reform**  
Depreciation rules and Sarbanes-Oxley Act



# Policy and Program Solutions

## Industrial Energy Efficiency

### Drive Demand for IEE and CHP

1. State, Local, & Utility Programs for Industry
2. State Policy Models
3. National Energy Efficiency Policy
4. Education & Outreach

### Build the Workforce

5. Education & Workforce Development
6. Develop Training Curricula
7. Licensing & Certification Protocols

### Promote Efficiency Operations & Investment

8. Financing Innovation
9. Financial Incentives
10. Technical Solutions
11. Energy Management Programs

### Move the Market

12. Technology Demonstration
15. Financing Reform

## Industrial CHP

### Drive Demand for IEE and CHP

1. State, Local, & Utility Programs for Industry
2. State Policy Models
3. National Energy Efficiency Policy
4. Education & Outreach

### Build the Workforce

5. Education & Workforce Development
6. Develop Training Curricula
7. Licensing & Certification Protocols

### Promote Efficiency Operations & Investment

8. Financing Innovation
9. Financial Incentives
10. Technical Solutions
11. Energy Management Programs/Continuous Energy Improvement

### Move the Market

12. Technology Demonstration
13. Regulatory Recommendations to Support CHP
14. Reduce Uncertainty Related to State Interconnection
15. Financing Reform



# Drive Demand For Industrial Energy Efficiency & CHP

## Solution 1: State, Local, & Utility Programs For Industry

**Adoption and delivery of model industrial energy efficiency and CHP programs that help overcome industry-specific market barriers.**

**Example: Wisconsin Focus on Energy; New York State Energy Research Development Authority (NYSERDA); BPA Energy Smart Industrial (ESI) program**

- Academia and regional and national organizations should consider identifying existing model state, local, and utility energy efficiency programs for replication.
- The Working Group will consider (1) developing a white paper on the core elements that make certain state, local, and utility industrial energy efficiency programs successful, and (2) developing a white paper on the key elements of model CHP programs.
- National organizations, such as the National Association of State Energy Officials (NASEO)/Association of State Energy Research Technology Transfer Institute (ASERTTI), should consider promoting the adoption of model program structures among utilities, states, and local governments.
- The Working Group will consider promoting the adoption of model CHP program structures among utilities, states, and local governments.
- Regulators and utilities in partnership with industry should consider designing incentive programs that will benefit the industrial end-user and reflect who is paying.
- The EM&V Working Group and other organizations could pursue pathways for supporting states and utilities in enhancing data collection and reporting on program and policy metrics in order to improve available data and resources.
- The Working Group will convene utilities and industrial stakeholders in a workshop to discuss the disconnects between model programs and Industrial needs and identify how to move in order to help overcome industry-specific market barriers.



# Drive Demand For Industrial Energy Efficiency & CHP Solution 2 :State Policy Models

Promote existing state policies that facilitate the implementation of industrial energy efficiency and CHP; work with state policy makers and related stakeholders to catalog and replicate these policies.

**Example: Massachusetts EERS; Oregon's Industrial Energy Tax Credits; North Carolina CHP Investment Tax Credit**

- Academia and regional and national organizations should consider identifying existing state policies that successfully promote energy efficiency and CHP implementation in the industrial sector.
- The Working Group will consider developing (1) a white paper on the core elements that make state policies on industrial energy efficiency successful, and (2) a white paper on the core elements that make state policies on CHP successful, such as offering financing, tailored resources, and workforce-development support.
- States should consider cooperating on energy efficiency standards and definitions and programs, and consider regional initiatives to increase industrial energy efficiency and CHP.
- State and local governments should consider implementing model policies through the most appropriate vehicle.



# Drive Demand For Industrial Energy Efficiency & CHP

## Solution 3: National Energy Efficiency Policy

Promote the development of new national energy policies and programs that include strong support for industrial EE and CHP incentives, financing, and workforce development. Acknowledge and support key aspects of existing, working national policies and programs.

### **Example: Federal CHP Investment Tax Credit; DOE/ITP; EPA/ENERGY STAR for Industry**

- NASEO/ASERTTI, regional organizations, states, utilities, and industry should consider identifying critical elements of the current successful federal/national programs and policies to deliver industrial energy efficiency and CHP and endorse their continuation and expansion.
- The Working Group will consider conducting analyses on the economic and environmental benefits of strong national production and investment tax credits for industrial energy efficiency and CHP.
- The Working Group will consider developing, analyzing, and delivering policy proposals that identify national energy policies that more strongly support industrial EE and CHP, including policies that recognize contribution of the industrial sector to GHG reduction as well as policies that more seamlessly integrate federal, state, and local industrial EE and CHP policy and programs.
- State agencies involved in CHP system oversight should consider resolving the ownership of GHG emissions reductions credits, as well as changes in site emissions
- The Working Group will consider cataloging successful national programs and continuing to expand those that industry has identified as valuable.



# Drive Demand For Industrial Energy Efficiency & CHP

## Solution 4: Education & Outreach

Strengthen end-user demand for industrial energy efficiency and CHP by fostering a greater understanding of the economic value of each and by initiating a broad shift in corporate culture.

**Example: DOE/ITP LEADER Showcases, Exchanges, Summits; ACEEE Summer Study on Energy Efficiency in Industry; SEEA Industrial Coalition; Regional Governor Association Agendas; Clean Energy Application Center Technical Outreach Activities; ENERGY STAR Peer-to-Peer Industry Dialogues, IETC**

- States should consider developing tools and resources that address the importance of a corporate culture in industrial energy efficiency and CHP investment.
- Industrial companies should consider participating in industrial energy efficiency and CHP educational and outreach events and serving as leaders and models for others within their sphere of influence - both inside and outside of their operating sector.



# Build the Workforce

## Solution 5: Education & Workforce Development

Identify needs in education, training, and workforce programs for industrial EE and CHP. Develop new federal, university, community college, vocational technical institutes, and technical training programs that will help build skills that are currently in short supply in the industrial workforce.

**Example: DOE IACs; DOE ITP Tool Suite Training, ENERGY STAR Training; Pacific Gas & Electric (PG&E) Energy Efficiency Classes; Clean Energy Center Training Webinars**

- Industry and educational institutions should consider partnering to identify needs in technical and non-technical skills and knowledge regarding industrial energy efficiency and CHP systems, processes, and regulations.
- Utilities should consider expanding industrial technical trainings on energy efficiency and CHP taking place on the plant floor and in classroom formats.



# Build the Workforce

## Solution 6: Develop Training & Academic Curricula

Develop academic curricula that requires/promotes education, training, and standardized-materials development for industrial energy efficiency and CHP.

### Example: DOE ITP Industrial Assessment Centers

- Universities, national organizations, and state/local government institutions should consider partnering to develop technical training materials and courses for the plant floor, formal curricula for energy management professionals, and executive-level trainings that foster corporate culture shifts.
- Universities and community colleges should consider offering industrial engineering training programs that include broader use of industrial energy efficiency management concepts.
- Universities should consider expanding both undergraduate and graduate curriculums to include both Industrial energy efficiency and CHP/WHR



# Build the Workforce

## Solution 7: Licensing & Certification Protocols

Identify programs and protocols that could promote and standardize licensing and certification for EE service professionals, engineers, etc.

### **Example: ANSI; Certified Practitioners/Auditors for SEP; Association of Energy Engineers CEM**

- Universities and community colleges should consider expanding industrial engineering certification and licensing beyond CEM.
- National organizations should consider creating accepted protocols across licensing and certifications for professionals in the market to help ensure the quality of service - both for industrial energy efficiency and CHP.
- Universities and other engineering training bodies should consider incorporating energy efficiency and CHP criteria into their engineering specifications education and certification curriculum.



# Promote Efficient Operations & Investments

## Solution 8: Financing Innovation

Policies and programs that require/promote the innovative financing of industrial EE and CHP projects through credit enhancement (e.g., loan guarantees), Energy Service Performance Credits/ESCO financing, and revolving loans.

### **Example: DOE Loan Guarantee Program; Arkansas Energy Technology Loan Fund**

- National organizations should consider identifying effective financing models in the public and private sectors that could be expanded or altered to better promote the adoption of industrial energy efficiency and CHP.
- National organizations should consider cataloging the private equity that is currently available for industrial energy efficiency and CHP.
- Utilities should consider designing innovative financing approaches that assist the industrial sector in overcoming aggressive ROI requirements for EE and CHP project implementation.
- State and local governments should consider establishing and providing funding for revolving loan funds.



# Promote Efficient Operations & Investments

## Solution 9: Financial Incentives

Identify financial incentives for industrial EE and CHP that seek to overcome industry ROI thresholds. Work with state and local governments and utilities to encourage the replication of these model incentive programs.

### **Example: BPA ESI program; Energy Efficiency and Renewable Energy State Energy Program Formula Grants**

- States and utilities should consider promoting awareness of currently available incentives for EE and CHP.
- Utilities should consider designing innovative financing incentives that assist the industrial sector in overcoming aggressive ROI requirements for EE and CHP project implementation.
- State and local governments should consider expanding the number of financial incentive programs and the types of eligible industrial applications/projects that they offer for supporting the implementation of EE and CHP in the industrial sector.
- The Working Group will characterize and capture the magnitude of investment from IEE / CHP financing mechanisms to further inform policy and program decisions in order to better understand the current state of IEE investments.



# Promote Efficient Operations & Investments

## Solution 10: Technical Solutions

Develop low-cost avenues for sharing information on overcoming technical, informational, and economic barriers to industrial EE and CHP, as well as the implementation of supporting programs and policies.

**Example: EPA ENERGY STAR for Industry Technical Assistance (TA); DOE/ITP LEADER TA; Clean Energy Application Center Technical Assistance Program**

- State and local government agencies; national and regional organizations; and utilities should consider promoting the business case for industrial EE and CHP through the development and expansion of informational and technical solutions.
- National organizations and utilities should consider providing technical expertise to support policymakers and practitioners in utilizing model methodologies for calculating the value of CHP's efficiency improvements and standardizing the calculations.
- The Working Group or national organizations could create an information clearinghouse to make resources more accessible in order to develop low-cost avenues for sharing information and overcoming barriers to industrial EE and CHP.



# Promote Efficient Operations & Investments

## Solution 11: Energy Management Programs/Continuous Energy Improvement

Encourage industrial energy management programs that promote continuous energy improvement and CHP adoption.

### **Example: SEP; EPA ENERGY STAR for Industry; DOE/ITP Energy Management Demonstration Projects**

- State and local government agencies, utilities, and industry should consider supporting energy management standards testing and demonstration.
- National organizations should consider integrating implementation of CHP into energy management standards and practices, as well as into CEM certification portfolios.
- Utilities should consider offering more technical resources that support industry in adopting comprehensive energy management programs.
- State and local governments should consider delivering programs that support the adoption of energy management standards in the industrial sector.
- Industry should consider adopting energy management standards and practices.
- Industrial trade associations should consider promoting the adoption of energy management standards and practices to their members.



# Move the Market

## Solution 12: Technology Demonstration

Policies and programs that promote the demonstration of emerging industrial energy efficiency and CHP technologies and practices.

**Example: DOE/ITP Technology Showcases and *Save Energy Now* State/Regional Demonstrations; EPA Technology Demonstrations; NIST/MEP demo projects**

- Universities, laboratories, and industry should consider conducting demonstrations of emerging industrial energy efficiency and CHP technologies that have not reached commercialization.
- Utilities should consider partnering with state and local governments to test emerging technologies and developing a mechanism to easily share results (good and bad) across utilities, states, and localities.



# Move the Market

## Solution 13: Regulatory Recommendations to Support CHP

Offer recommendations related to emissions and utility regulations that recognize the energy efficiency and environmental benefits of CHP.

### **Example: ACEEE CHP Regulatory Efforts; DOE/ITP RACs; EPA CHP Partnership; U.S. Clean Heat and Power Association Policy Efforts**

- National organizations should consider identifying national and state model CHP policies that support CHP accessibility, implementation, and reasonable rate structures, including states that currently have the highest installed CHP capacity (while recognizing other factors beyond policy have an influence).
- States, local governments, utilities, and public utility commissions (PUCs) should consider best practices and model CHP tariffs and regulations..
- National organizations and states should consider supporting the formulation of a State Policy Subcommittee under the U.S. Clean Heat & Power Association to support the adoption of model CHP policies.



# Move the Market

## Solution 14: Reduce Uncertainty Related to State Interconnection

Adopt harmonious processes and technical requirements for interconnection standards across broad regions and states to facilitate the adoption of CHP in the industrial sector by reducing uncertainty related to grid connection and preventing project approval delays that CHP systems can encounter.

**Example: Interstate Renewable Energy Council *Model Interconnection Procedures*; EPA *Clean Energy-Environment Guide to Action*; Mid-Atlantic Distributed Resources Initiative Interconnection Procedures**

- National organizations should consider cataloging federal and state interconnection issues that impact CHP adoption.
- The Working Group will consider assisting PUCs/states in adopting model interconnection procedures and facilitate regional initiatives to harmonize state interconnection standards.



# Move the Market

## Solution 15: Financing Reform

Reform industrial energy efficiency and CHP financing practices such that the terms of lending and allocation of capital encourage industry to pursue industrial energy efficiency and CHP projects.

### **Example: Sarbanes-Oxley Act Reform**

- State and local governments and utilities should consider industrial project implementation cycles (the time it takes to complete a project and verify savings) in comparison to financial/technical rebate cycles and equipment depreciation schedules.



# MAPPING SOLUTIONS TO KEY STAKEHOLDERS



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# Drive Demand for Industrial Energy Efficiency & CHP

		Stakeholder				
		State Government Agency/Entity	Industry	Utility	Regional Organization/ Association	National Non-Governmental Organization (NGO)
<b>Solutions</b>	<b><u>Solution 1</u></b> <i>State, Local, &amp; Utility Programs for Industry</i>	Implement programs	Provide feedback and engagement on what is needed and what works	Implement programs	Promote program adoption	Promote program adoption
	<b><u>Solution 2</u></b> <i>State Policy Models</i>	Implement model state policies via state legislature	Provide feedback and engagement on what is needed and what works		Promote state model policies	Promote state model policies
	<b><u>Solution 3</u></b> <i>National EE Policy</i>	Implement model policies	Provide feedback and engagement on what is needed and what works		Promote state model policies	Promote state model policies
	<b><u>Solution 4</u></b> <i>Education &amp; Outreach</i>	Continue to deliver on industry's stated preference for peer-to-peer dialogue and develop tools and resources that address the importance of corporate culture in industrial EE & CHP investment	Participate in industrial EE and CHP educational and outreach events and serve as leaders within their sphere of influence		Develop tools and resources, such as case studies and webinars, that address the importance of a corporate culture in industrial EE and CHP investment	Develop tools and resources, such as case studies and webinars, that address the importance of a corporate culture in industrial EE and CHP investment



# Build the Workforce

		Stakeholder			
		State Government Agency/ Entity	Utility	Regional Organization/ Association	National NGO
Solutions		Information, Outreach, and Tools			
	<b>Solution 5</b> <i>Education &amp; Workforce Development</i>	Serve as a state-level facilitator OR endorse and support the regional-level facilitator of dialogues	Provide feedback and engagement on what is needed and what works	Support the dialogue facilitator by assisting with outreach to end users and the execution of dialogue sessions	Facilitate dialogues , including determining topics, organizing audience, and tracking metrics of success
	<b>Solution 6</b> <i>Develop Training &amp; Academic Curricula</i>	Expand IAC programs to include new curricula development for understanding core industrial EE and CHP principles		Develop training materials and formal curricula; offer engineering training programs with industrial EE management concepts	Develop training materials and formal curricula
	<b>Solution 7</b> <i>Licensing &amp; Certification Protocols</i>	Promote professional certification, including industry use of certified practitioners		Expand industrial engineering certification and licensing beyond CEM	Create industrial EE and CHP licensing and certification protocols for professionals to ensure quality of service



# Promote Efficient Operations & Investment

		Stakeholder				
		State Government Agency/ Entity	Industry	Utility	Regional Organization/ Association	National NGO
<b>Solutions</b>	<b>Solution 8</b> <i>Financing Innovation</i>	<b>Incentives and Programs</b>				
		Adopt innovative financing approaches	Provide feedback on what is needed and what works; utilize financing solutions	Design financing approaches that assist industry in achieving desired ROI	Provide inputs in identifying effective financing methods	Catalog private equity currently available and identify financing models for industrial EE and CHP
	<b>Solution 9</b> <i>Financial Incentives</i>	Promote and expand financial incentives	Utilize currently available incentives	Offer financial incentives	Research and provide effective incentives	Research and provide effective incentives
	<b>Solution 10</b> <i>Technical Solutions</i>	Promote the business case for industrial EE and CHP; provide expertise in utilizing model methodologies for calculating the value of CHP	Provide feedback on what is needed and what works	Identify inputs and calculations for Pro Forma development and Clearinghouse	Identify inputs and calculations for Pro Forma development and Clearinghouse; gather information and resources, develop success metrics, and promote the use of CHP efficiency calculation	Catalog technical resources currently available for industry to increase their use and identify needs
	<b>Solution 11</b> <i>Energy Management Programs/Continuous Energy Improvement</i>	Deliver programs that support the adoption, testing, and demonstration of energy management standards	Adopt energy management standards and practices	Offer technical resources for adopting CEM programs	Implement CHP into energy management standards and practices	



# Move the Market

		Stakeholder				
		State Government Agency/ Entity	Industry	Utility	Regional Organization/ Association	National NGO
Solutions		<b>Incentives and Programs</b>				
	<b>Solution 12</b> <i>Technology Demonstration</i>	Offer more technology showcases and expos that demonstrate the value of industrial EE and CHP technologies; conduct demonstrations of emerging industrial EE and CHP technologies	Conduct demonstrations of emerging industrial EE and CHP technologies; adopt demonstrated technologies	Partner with state and local governments to test emerging technologies	Provide inputs in identifying technology that needs demonstrated	Provide inputs in identifying technology that needs demonstrated
	<b>Solution 13</b> <i>Regulatory Recommendations to Support CHP</i>	Implement model CHP policies via state legislatures and PUCs; continue to fund industry and regional partnerships	Provide feedback and engagement on what is needed and what works	Identify and foster coalitions that support CHP policies	Hold workshops on CHP policies and foster coalitions that support these policies	Support the formulation of a State Policy Subcommittee under USCHPA to support the adoption of model CHP policies
	<b>Solution 14</b> <i>Reduce Uncertainty Related to State Interconnection</i>	Develop and implement interconnection standards	Provide feedback and engagement on what is needed and what works	Conduct outreach to industry on CHP interconnection	Catalog federal and state interconnection issues that impact CHP adoption	Catalog federal and state interconnection issues that impact CHP adoption
	<b>Solution 15</b> <i>Financing Reform</i>	Consider industrial refit cycles in comparison to financial/technical rebate cycles and equipment depreciation schedules; promote the reform of the Sarbanes-Oxley Act		Consider industrial refit cycles in comparison to financial/technical rebate cycles and equipment depreciation schedules		

Green = Industrial Energy Efficiency and CHP solution  
Purple = CHP only solution

# DOE and EPA Role

- While SEE Action is focused on guidance and resources for non-federal entities, success will require that all parties work to complement each other. Generally, the federal role will include:
  - Convene stakeholders to identify needs
  - Collaborate with stakeholders on program design/ development
  - Provide technical assistance
  - Ensure that programs document and share results and performance data
  - Develop tools and programs
  - Develop/update case studies
  - Promote outreach efforts
  - As appropriate, elevate cross-agency policy issues to senior management



# WORK PLAN



**SEE Action**  
STATE ENERGY EFFICIENCY ACTION NETWORK

[www.seeaction.energy.gov](http://www.seeaction.energy.gov)

# Priority Work Activities Part 1: Create Resources

## General SEE Action Activities

- To assist in the roll out of SEE Action, the Working Group will develop outreach / communications materials for all Working Group and stakeholder participants to utilize to convey priorities, goals, and activities

## Drive Demand for Industrial Energy Efficiency and CHP

- (1,2) To promote the adoption of model state, local, and utility industrial EE and CHP programs, the Working Group will develop two white papers that capture the key elements of successful, existing programs
- (2) To promote implementation of IEE and CHP, the Working Group will create a Guide to implementing model state programs and policies
- (3) To evaluate effective national IEE / CHP programs and policies, as well as policy needs, national organizations could develop, analyze, and deliver effective and new policy proposals

## Build the Workforce

- (6) To expand IEE / CHP education and standardize materials development, universities/community colleges should consider developing new curricula and training programs



# Priority Work Activities Part 1: Create Resources (cont'd)

## Promote Efficiency Operations & Investment

- (8,9) To better understand the current state of IEE investments, the Working Group will characterize and capture the magnitude of investment from IEE / CHP financing mechanisms to further inform policy and program decisions
- (10) To develop low-cost avenues for sharing information and overcoming barriers to industrial EE and CHP, the Working Group could create an information clearinghouse to make resources more accessible

## Move the Market

- (13) To facilitate CHP accessibility and implementation, regional organizations should consider continuing to identify model CHP policies
- (14) To reduce CHP implementation barriers, states should consider developing standardized grid connection approval processes that do not delay CHP projects



# Work Plan Part 1: Create Resources

Industrial EE/CHP Key Work	Role for Stakeholder Groups							First Year Schedule				At End of 1 Year
	Federal	State	Research Academia	Industrial Users	National Organizations	Utilities	PUCs	Q1	Q2	Q3	Q4	
To assist in the roll out of SEE Action, the Working Group will develop outreach / communications materials for all Working Group and stakeholder participants to utilize to convey priorities, goals, and activities	X							X				Complete outreach / communications materials
(1,2) To promote the adoption of model state, local, and utility industrial EE and CHP programs, the Working Group will develop two white papers that capture the key elements of successful, existing programs	X	X	X	X	X	X					X	Complete 2 White Papers
(2) To promote implementation of IEE and CHP, the Working Group will create a Guide to implementing model state programs and policies	X	X	X	X	X	X	X			X		Complete research on state policy models; Develop Guide
(3) To evaluate effective national IEE / CHP programs and policies, as well as policy needs, national organizations could develop, analyze, and deliver effective and new policy proposals	X	X		X					X			Identify working national/federal programs and needs in regulatory and tax structures
(6) To expand IEE / CHP education and standardize materials development, universities/community colleges should consider developing new curricula and training programs	X	X		X	X	X					X	2 new university, 2 new community college training programs and associated curricula

Green = IEE and CHP solution  
Purple = CHP only solution



# Work Plan Part 1: Create Resources (cont'd)

Industrial EE/CHP Key Work	Role for Stakeholder Groups							First Year Schedule				At End of 1 Year
	Federal	State	Research Academia	Industrial Users	National Organizations	Utilities	PUCs	Q1	Q2	Q3	Q4	
(8,9) To better understand the current state of IEE investments, the Working Group will pursue data analysis activities particularly to fill areas where existing data collection is not sufficient	X	X	X		X	X					X	Complete a data collection needs analysis
(10) To develop low-cost avenues for sharing information and overcoming barriers to industrial EE and CHP, the Working Group could enhance its cataloging of technical resources and develop and expand informational and technical solutions			X	X		X				X		Begin cataloging technical resources and complete CHP efficiency calculations and clearinghouse
(13) To facilitate CHP accessibility and implementation, regional organizations should consider continuing to identify model CHP policies	X			X	X					X		Identify model CHP policies
(14) To reduce CHP implementation barriers, states should consider developing standardized grid connection approval processes that do not delay CHP projects	X	X		X		X	X				X	States engage utilities and PUCs on interconnection policies

Green = IEE and CHP solution  
Purple = CHP only solution



# Priority Work Activities Part 2:

## Communicate Concepts

### **Drive Demand for Industrial Energy Efficiency and CHP**

- (1,4,13) To enhance key stakeholders' understanding of implementing IEE and CHP, the Working Group will hold a utility-industry workshop on overcoming barriers and model programs and policies
- (1,2) To improve available data and resources, the Working Group and academia could pursue pathways for supporting states and utilities in enhancing data collection and reporting on program and policy metrics
- (3) To ensure broad delivery of IEE and CHP incentives, financing, and workforce development, national organizations should consider promoting valuable national energy policies and programs

### **Build the Workforce**

- (5) To bolster education, training, and workforce programs, states, regional organizations, and utilities should consider developing appropriate trainings on IEE and CHP for industry
- (7) To increase adoption of standardized licensing and certification for energy efficiency service professionals, national and regional organizations, states, and utilities should consider promoting accepted protocols



# Priority Work Activities Part 2: Communicate Concepts (cont'd)

## Promote Efficiency Operations & Investment

- (8) To advance IEE / CHP investment by industry, states and national and regional organizations should consider promoting CHP financing
- (9) To advance IEE / CHP project implementation, states and utilities should consider promoting awareness of relevant incentives
- (10) To support policy development for IEE and CHP, the Working Group could provide technical expertise to policymakers

## Move the Market

- (13) To advance regulatory reform for CHP systems, the Working Group and states could conduct outreach to USCHPA about formulating a new State Policy Subcommittee
- (14) To support harmonious state interconnections, the Working Group could conduct outreach to PUCs/states on interconnection standards on implementing model approaches



# Work Plan Part 2: Communicate Concepts

Industrial EE/CHP Key Work	Role for Stakeholder Groups							First Year Schedule				At End of 1 Year	
	Federal	State	Research/ Academia	Industrial Users	National Organizations	Utilities	PUCs	Q1	Q2	Q3	Q4		
(1,4,13) To enhance key stakeholders' understanding of implementing IEE and CHP, the Working Group could hold a utility-industry workshop on overcoming barriers and model programs and policies	X	X		X	X	X	X		X				Hold a Utility-Industry Workshop
(1,2) To improve available data and resources, the Working Group and academia could pursue pathways for supporting states and utilities in enhancing data collection and reporting on program and policy metrics	X		X		X		X					X	Engage states and utilities on enhanced data collection and reporting
(3) To ensure broad delivery of IEE and CHP incentives, financing, and workforce development, national organizations should consider promoting valuable national energy policies and programs	X	X		X	X							X	Begin promotion of identified valuable policies
(5) To bolster education, training, and workforce programs, states, regional organizations, and utilities should consider developing appropriate trainings on IEE and CHP for industry	X	X	X		X			X					At least 5 utilities agree to host new industrial EE/CHP trainings
(7) To increase adoption of standardized licensing and certification for energy efficiency service professionals, national and regional organizations, states, and utilities should consider promoting accepted protocols	X	X			X	X				X			Begin the promotion of identified valuable licenses and certifications

Green = Industrial Energy Efficiency and CHP solution  
Purple = CHP only solution



# Work Plan Part 2: Communicate Concepts (cont'd)

Industrial EE/CHP Key Work	Role for Stakeholder Groups						First Year Schedule				At End of 1 Year	
	Federal	State	Research/ Academia	Industrial Users	National Organizations	Utilities	PUCs	Q1	Q2	Q3		Q4
(8) To advance IEE / CHP investment by industry, states and national and regional organizations should consider promoting CHP financing	X	X			X					X		Engage 5 to 7 states to begin promotion
(9) To advance IEE / CHP project implementation, states and utilities should consider promoting awareness of relevant incentives	X	X		X	X	X					X	Conduct outreach to industry on available incentives
(10) To support policy development for IEE and CHP, Working Group could provide technical expertise to policy makers	X		X		X							
(13) To advance regulatory reform for CHP systems, the Working Group and states could conduct outreach to USCHPA about formulating a new State Policy Subcommittee		X	X	X	X	X					X	USCHPA formulation of new State Policy Subcommittee
(14) To support harmonious state interconnections, the Working Group could conduct outreach to PUCs/states on interconnection standards on implementing model approaches	X	X			X		X				X	Contact 5 to 7 states with recommendations on how to harmonize their interconnection standards

Green = Industrial Energy  
Efficiency and CHP solution  
Purple = CHP only solution



# Beyond Year One: Activities

- (8,9,15) To assist industry in overcoming ROI and investment barriers, national organizations could catalog private equity and other financing channels
- (12) To promote expanded implementation of emerging technologies and practices, industry should consider participating in technology demonstrations
- (15) To facilitate industry's adoption of IEE / CHP projects in a financially sound manner, national organizations should consider promoting reform of the Sarbanes-Oxley Act



# Opportunities for Action

## Next Steps

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- Develop resources according to work plan
- State and local government associations develop process for sharing draft resources with membership for feedback
- Collaborate across activities where necessary
- Coordinate outreach and communication internally and with other working groups
- As materials are created or refined, use them as subject of outreach to target stakeholders
- Track progress in outreach and engagement
- As target stakeholders are engaged, provide connection to resources and tap other parties as necessary to support adoption and implementation of solutions



# SEE Action Rollout

## Potential Venues

- **Presentation and promotion of SEE Action and the IEE/CHP Working Group's priorities, goals, and activities at near-term events:**
  - ITP's All-States Summit
    - DATE: Apr 12-13 in Golden, CO
  - U.S. Clean Heat and Power Association: Spring CHP Forum
    - DATE: May 5-6 in Washington, DC
  - IETC 2011
    - Date: May 17-19, New Orleans, LA
  - NASEO 2011 Annual Meeting
    - DATE: Sept 11-14 in San Antonio, TX
  - ACEEE Energy Efficiency as a Resource Conference
    - DATE: Sept 25-27 in Denver, CO
  - U.S. Clean Heat and Power Association: Annual Conference
    - DATE: Oct 6-7 in Washington, DC
  - National Governors Association 2011 Annual Meeting
    - DATE: July 15-17 in Salt Lake City, UT



# APPENDIX



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# Working Groups Interactions/Gaps

	Residential Retrofit	Commercial Building Retrofit	Industrial EE/CHP	Financing	Utility Motivation	Customer Information & Behavior	EM&V	Building Codes
Building Codes								
EM&V			EM&V WG will <u>not</u> address issues for industrial EE					
Customer Information & Behavior								
Utility Motivation			Industrial WG will work with Utility Motivations group as appropriate on areas of common concern; de-coupling, PBFs and Opt-Out topics					
Financing			Industrial WG will address industrial financing and coordinate w/ finance group					
Industrial EE/ CHP		Some IEE/CHP WG recommendations are common to both groups						
Commercial Retrofit								
Residential Retrofit								

 Gap



# Solution 1: State, Local, & Utility Programs for Industry

Needed Resources	Audience	Existing Resources	Additional Resources Needed
Model program case studies	<ul style="list-style-type: none"> <li>State and local governments</li> <li>Utilities</li> <li>Industry</li> </ul>	<ul style="list-style-type: none"> <li><i>Save Energy Now</i> LEADER</li> <li>Wisconsin Focus on Energy</li> <li>ENERGY STAR Challenge for Industry</li> <li><a href="#">ACEEE State Energy Efficiency Scorecard</a></li> <li>DOE Clean Energy Application Centers</li> </ul>	<ul style="list-style-type: none"> <li>Industry needs to identify the key elements of best used programs</li> <li>Case studies on successful programs</li> <li>More utility incentive programs</li> </ul>
Program development guidance	<ul style="list-style-type: none"> <li>State and local governments</li> <li>Utilities</li> <li>Industry</li> </ul>	<ul style="list-style-type: none"> <li>ENERGY STAR for Industry: Guidelines for Energy Management and other ENERGY STAR supporting guidance</li> <li><a href="#">ISO 50001</a></li> <li>Consortium for Energy Efficiency Industrial Program Planning Committee</li> </ul>	<ul style="list-style-type: none"> <li>Develop standard guidelines for successful programs</li> </ul>
Funding	<ul style="list-style-type: none"> <li>State and local governments</li> <li>Utilities</li> <li>Industry</li> </ul>	<ul style="list-style-type: none"> <li>State Energy Program</li> <li>EE grants and loans</li> <li>State and utility incentives</li> <li><i>American Recovery and Reinvestment Act of 2009</i> (ARRA)</li> <li>State and Regional <i>Save Energy Now</i> programs</li> <li>Industrial Energy Efficiency Grand Challenge</li> <li>State tax incentives</li> <li><a href="#">Council of Development Finance Agencies</a></li> </ul>	<ul style="list-style-type: none"> <li>Provide guidance to states and utilities on how to fund programs efficiently and effectively</li> </ul>



# Solution 2: State Policy Models

Needed Resources	Audience	Existing Resources	Additional Resources Needed
Model ordinance/law	<ul style="list-style-type: none"> <li>State and local governments</li> <li>Industry groups</li> </ul>	<ul style="list-style-type: none"> <li>NYSERDA Industrial Program</li> <li>DOE ITP state policy series</li> <li><a href="#">ACEEE State Energy Efficiency Policy Database</a></li> <li>ITP <a href="#">State roles in energy</a></li> <li>DOE Clean Energy Application Centers State Policy Programs</li> </ul>	<ul style="list-style-type: none"> <li>State prioritization of industrial EE and CHP in energy policy planning and development.</li> <li>Identification and replication of successful policies</li> </ul>
Technical expertise	<ul style="list-style-type: none"> <li>State and local governments</li> <li>Industry groups</li> <li>Utilities</li> </ul>	<ul style="list-style-type: none"> <li>NASEO industrial programs</li> <li><i>Save Energy Now</i> LEADER</li> <li>PUCs</li> <li>ENERGY STAR for Industry</li> </ul>	<ul style="list-style-type: none"> <li>For each industrial sector, identify EE and/or CHP needs and capabilities</li> </ul>



# Solution 3: National Energy Efficiency Policy

Needed Resources	Audience	Existing Resources	Additional Resources Needed
<p>Nation-wide prioritization of energy savings available in the industrial sector</p>	<ul style="list-style-type: none"> <li>• NGOs</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Energy Policy Act of 2005</i></li> <li>• <i>Energy Independence and Security Act of 2007</i></li> <li>• ARRA</li> </ul>	<ul style="list-style-type: none"> <li>• New national policies that bolster resources and focus on EE and CHP in the industrial sector</li> </ul>



# Solution 4: Education & Outreach

Needed Resources	Audience	Existing Resources	Additional Resources Needed
Peer-to-peer dialogues	<ul style="list-style-type: none"> <li>• Utilities</li> <li>• PUCs</li> <li>• Industry groups</li> </ul>	<ul style="list-style-type: none"> <li>• Regional exchanges and summits</li> <li>• ACEEE Summer Study</li> <li>• SEEA Industrial Coalition</li> <li>• DOE/ITP LEADER Showcases</li> <li>• DOE Clean Energy Application Center Outreach Programs</li> <li>• ENERGY STAR Peer-to-Peer Industry Dialogues</li> </ul>	<ul style="list-style-type: none"> <li>• Framework for results-yielding peer-to-peer dialogue format</li> <li>• Tools and resources that teach corporate culture change</li> </ul>
Information tools and resources	<ul style="list-style-type: none"> <li>• State and local governments</li> <li>• Utilities</li> <li>• Industry groups</li> <li>• NGOs</li> </ul>	<ul style="list-style-type: none"> <li>• DOE corporate case studies</li> <li>• EPA ENERGY STAR for Industry tools</li> </ul>	<ul style="list-style-type: none"> <li>• Industry leaders teach others model approaches</li> <li>• Technical and university training on industrial and CHP implementation (how-to)</li> </ul>



# Solution 5: Education & Workforce Development

Needed Resources	Audience	Existing Resources	Additional Resources Needed
Training presentations/materials	<ul style="list-style-type: none"> <li>Industry groups</li> <li>Utilities</li> </ul>	<ul style="list-style-type: none"> <li>ENERGY STAR for Industry</li> <li>Save Energy Now LEADER</li> <li>IACs</li> <li>ITP trainings</li> <li>Utility Webinar Series</li> </ul>	<ul style="list-style-type: none"> <li>Develop training curricula to fulfill needs and reach both professional and academic participants</li> </ul>
Fact sheets and other informational materials	<ul style="list-style-type: none"> <li>Industry groups</li> <li>Utilities</li> </ul>	<ul style="list-style-type: none"> <li>ENERGY STAR for Industry</li> <li>Save Energy Now LEADER</li> <li><a href="#">Critical Workforce Needs in Energy</a> (IAC Presentation)</li> <li>DOE Clean Energy Application Center Tech Profiles Program</li> </ul>	<ul style="list-style-type: none"> <li>Case studies on effective industrial EE and CHP training programs</li> </ul>
Peer-to-peer dialogue	<ul style="list-style-type: none"> <li>Industry groups</li> <li>Utilities</li> <li>National organizations</li> <li>State and local governments</li> </ul>	<ul style="list-style-type: none"> <li>Save Energy Now State and Regional Exchanges</li> <li>ENERGY STAR Peer-to-Peer Industry Dialogues</li> <li>SEEA Industrial Coalition “model” for regional Peer-to-Peer Networking</li> </ul>	<ul style="list-style-type: none"> <li>Create opportunities for peer-to-peer dialogues to occur</li> </ul>



# Solution 6: Develop Training & Academic Curricula

Needed Resources	Audience	Existing Resources	Additional Resources Needed
Training materials and courses for plant floor	<ul style="list-style-type: none"> <li>Industry groups</li> <li>Utilities</li> </ul>	<ul style="list-style-type: none"> <li>IACs and Clean Energy Application Centers</li> </ul>	<ul style="list-style-type: none"> <li>New curricula and education on industrial EE and CHP to support each rung of the career ladder</li> <li>New training materials to reflect curricula</li> </ul>
Industrial engineering training programs	<ul style="list-style-type: none"> <li>Industry groups</li> <li>Utilities</li> </ul>		<ul style="list-style-type: none"> <li>Identify critical industrial EE knowledge</li> </ul>



# Solution 7: Licensing & Certification Protocols

Needed Resources	Audience	Existing Resources	Additional Resources Needed
Industrial engineering certification and licensing	<ul style="list-style-type: none"> <li>• National organizations</li> <li>• Industry groups</li> <li>• Utilities</li> </ul>	<ul style="list-style-type: none"> <li>• SEP</li> <li>• ISO 50001</li> <li>• AEE CEM</li> </ul>	<ul style="list-style-type: none"> <li>• Partner with NGOs and industry groups to identify a platform for expanded licensing</li> </ul>
Protocols across licensing and certifications	<ul style="list-style-type: none"> <li>• National organizations</li> <li>• Industry groups</li> <li>• Utilities</li> </ul>		<ul style="list-style-type: none"> <li>• Standardized certification protocol for industrial EE and CHP</li> </ul>



# Solution 8: Financing Innovation

Needed Resources	Audience	Existing Resources	Additional Resources Needed
Model financing agreements	<ul style="list-style-type: none"> <li>• State and local governments (and their associations)</li> <li>• Utilities</li> <li>• PUCs</li> <li>• Property owners/managers</li> <li>• Industry groups</li> <li>• NGOs</li> </ul>	<ul style="list-style-type: none"> <li>• ACEEE Report: <a href="#">Carrots for Utilities: Providing Financial Returns for Utility Investments in Energy Efficiency</a>, Jan. 24, 2011</li> <li>• <a href="#">ACEEE Energy Efficiency Financing papers</a></li> </ul>	<ul style="list-style-type: none"> <li>• Identify effective financing models in private and public sectors, such as:               <ul style="list-style-type: none"> <li>○ Reserve/revolving loan funds</li> <li>○ Loan guarantee programs</li> <li>○ EE tax incentives</li> <li>○ On-bill financing</li> <li>○ Energy performance contracting</li> </ul> </li> <li>• Replication of model financing pathways</li> </ul>
Funding sources	<ul style="list-style-type: none"> <li>• State and local governments</li> <li>• Utilities</li> <li>• PUCs</li> <li>• Industry groups</li> <li>• NGOs</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">EPA CHPP Funding Database</a></li> <li>• <a href="#">Database of State Incentives for Renewables and Efficiency (DSIRE)</a></li> <li>• <a href="#">Council of Development Finance Agencies</a></li> </ul>	<ul style="list-style-type: none"> <li>• Seed money for revolving funds, etc.</li> </ul>



# Solution 9: Financial Incentives

Needed Resources	Audience	Existing Resources	Additional Resources Needed
Technical guidelines	<ul style="list-style-type: none"> <li>State</li> </ul>	<ul style="list-style-type: none"> <li>ENERGY STAR for Industry</li> <li>E3: Economy, Energy, and Environment</li> <li>IACs and Clean Energy Application Centers</li> <li>State EE assessment or energy analysis assistance programs</li> </ul>	<ul style="list-style-type: none"> <li>Model successful program implementation, including desirable industrial EE and CHP</li> </ul>
Funding sources	<ul style="list-style-type: none"> <li>State government</li> </ul>	<ul style="list-style-type: none"> <li>State Energy Program</li> <li>ARRA</li> <li>State and Regional <i>Save Energy Now</i> programs</li> <li>Industrial Energy Efficiency Grand Challenge</li> <li>State tax incentives</li> <li><a href="#">Database of State Incentives for Renewables and Efficiency (DSIRE)</a></li> <li><a href="#">Council of Development Finance Agencies</a></li> </ul>	<ul style="list-style-type: none"> <li>Financial CHP incentives</li> </ul>



# Solution 10: Technical Solutions

Needed Resources	Audience	Existing Resources	Additional Resources Needed
Methodology for CHP efficiency calculation	<ul style="list-style-type: none"> <li>Industry groups</li> <li>Utilities</li> </ul>	<ul style="list-style-type: none"> <li>Energy analysis assistance programs</li> <li>EPA CHP Partnership</li> <li>NYSERDA DG/CHP Data Integration System</li> </ul>	<ul style="list-style-type: none"> <li>Develop a standardized methodology for calculating the value of CHP</li> </ul>
Standardized project pro forma	<ul style="list-style-type: none"> <li>Industry groups</li> <li>Utilities</li> <li>State and local governments</li> </ul>		<ul style="list-style-type: none"> <li>Standardized project pro forma for industry use</li> </ul>
Funding sources	<ul style="list-style-type: none"> <li>State and local governments</li> <li>Utilities</li> </ul>	<ul style="list-style-type: none"> <li>State Energy Program</li> <li>Energy efficiency grants and loans</li> <li>ARRA</li> <li>State and utility incentives</li> <li>EPA CHPP Funding Database</li> <li><a href="#">Council of Development Finance Agencies</a></li> </ul>	



# Solution 11: Energy Management Programs/Continuous Energy Improvement

Needed Resources	Audience	Existing Resources	Additional Resources Needed
Technical resources for CEM	<ul style="list-style-type: none"> <li>• Industry groups</li> <li>• Utilities</li> </ul>	<ul style="list-style-type: none"> <li>• SEP</li> <li>• EPA ENERGY STAR for Industry</li> <li>• DOE/ITP <i>Save Energy Now</i></li> </ul>	
Energy management testing and demonstration	<ul style="list-style-type: none"> <li>• National organizations</li> <li>• Universities/laboratories</li> <li>• Industry groups</li> <li>• Utilities</li> </ul>	<ul style="list-style-type: none"> <li>• ITP Energy Management Demonstration Projects</li> </ul>	<ul style="list-style-type: none"> <li>• Vast uptake of new energy management standards</li> </ul>



# Solution 12: Technology Demonstration

Needed Resources	Audience	Existing Resources	Additional Resources Needed
Technology identification	<ul style="list-style-type: none"> <li>Industry groups</li> <li>Utilities</li> </ul>	<ul style="list-style-type: none"> <li>ENERGY STAR for Industry</li> <li><i>Save Energy Now</i> LEADER</li> <li>IACs and Clean Energy Application Centers</li> </ul>	
Technology demonstration	<ul style="list-style-type: none"> <li>Industry groups</li> <li>Utilities</li> </ul>	<ul style="list-style-type: none"> <li>ENERGY STAR for Industry</li> <li><i>Save Energy Now</i> LEADER</li> <li>NYSERDA Technology Acceleration Program</li> <li><a href="#">C&amp;I Distribution Transformer Initiative</a></li> </ul>	<ul style="list-style-type: none"> <li>Research and development demonstrations of new technologies</li> </ul>



# Solution 13: Regulatory Recommendations to Support CHP

Needed Resources	Audience	Existing Resources	Additional Resources Needed
Fact sheets	<ul style="list-style-type: none"> <li>State and local governments</li> <li>Industry groups</li> <li>NGOs</li> </ul>	<ul style="list-style-type: none"> <li><a href="#">DOE CHP fact sheet</a></li> <li>Clean Energy Application Center State Policy White Papers</li> <li>U.S Clean Heat and Power Policy Fact Sheets</li> <li>EPA CHPP technology and policy fact sheets</li> </ul>	<ul style="list-style-type: none"> <li>Outreach to state and local governments about the value and potential cost-effectiveness of CHP</li> <li>Tailor for key audiences</li> </ul>
Standardized guidelines	<ul style="list-style-type: none"> <li>State and local governments</li> <li>Industry groups</li> </ul>	<ul style="list-style-type: none"> <li>DOE ITP CHP program</li> <li>8 Regional Clean Energy Application Centers</li> <li>EPA CHP Partnership</li> </ul>	<ul style="list-style-type: none"> <li>Strengthen practical application of the linkage between benchmarking and continuous improvement</li> <li>Tailor for key audiences</li> </ul>
Workshops	<ul style="list-style-type: none"> <li>Industry</li> <li>Utilities</li> </ul>	<ul style="list-style-type: none"> <li><a href="#">CHP &amp; District Heating Opportunities Workshop</a></li> </ul>	



# Solution 14: Reduce Uncertainty Related to State Interconnection

Needed Resources	Audience	Existing Resources	Additional Resources Needed
Standardized processes	<ul style="list-style-type: none"> <li>State and local governments</li> <li>Utilities</li> <li>Industry groups</li> <li>NGOs</li> </ul>	<ul style="list-style-type: none"> <li><a href="#">EPA fact sheet</a></li> <li>Interstate Renewable Energy Council Model Interconnection Procedures</li> <li>EPA Clean Energy-Environment Guide to Action</li> <li>Mid-Atlantic Distributed Resources Initiative Interconnection Procedures</li> <li>U.S. Clean Heat and Power Assoc Fact Sheets</li> </ul>	<ul style="list-style-type: none"> <li>FERC small- and large generator interconnection procedures and agreements (up to 20 MW and over 20 MW, respectively)</li> <li>IREC's model standards (up to 10 MW)</li> <li>MADRI's model standards (up to 10 MW)</li> <li><a href="#">PJM procedures (up to 20 MW)</a></li> </ul>
Funding sources	<ul style="list-style-type: none"> <li>State and local governments</li> <li>Utilities &amp; PUCs</li> <li>Property owners/managers</li> <li>Industry groups</li> <li>NGOs</li> </ul>	<ul style="list-style-type: none"> <li>State incentives</li> <li>Public/private investment management companies</li> <li><a href="#">Council of Development Finance Agencies</a></li> </ul>	



# Solution 15: Financing Reform

Needed Resources	Audience	Existing Resources	Additional Resources Needed
Information for finance reform	<ul style="list-style-type: none"><li>• National organizations</li><li>• State and local governments</li><li>• Utilities</li><li>• Industry groups</li></ul>		<ul style="list-style-type: none"><li>• Review of financing hurdles for industry use of industrial EE and CHP</li></ul>

