The Changing Electricity Market Model

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The Regulatory Assistance Project (RAP)

We are a global, non-profit team of experts focused on the long-term economic and environmental sustainability of the power and natural gas sectors, providing assistance to government officials on a broad range of energy and environmental issues.

About RAP – US

RAP provides technical and policy support at the federal, state and regional levels, advising utility and air regulators and their staffs, legislators, governors, other officials and national organizations.

We help states achieve ambitious energy efficiency and renewable energy targets and we provide tailored analysis and recommendations on topics such as ratemaking, smart grid, decoupling and clean energy resources. RAP publishes papers on emerging regulatory issues and we conduct state-by-state research that tracks policy implementation.

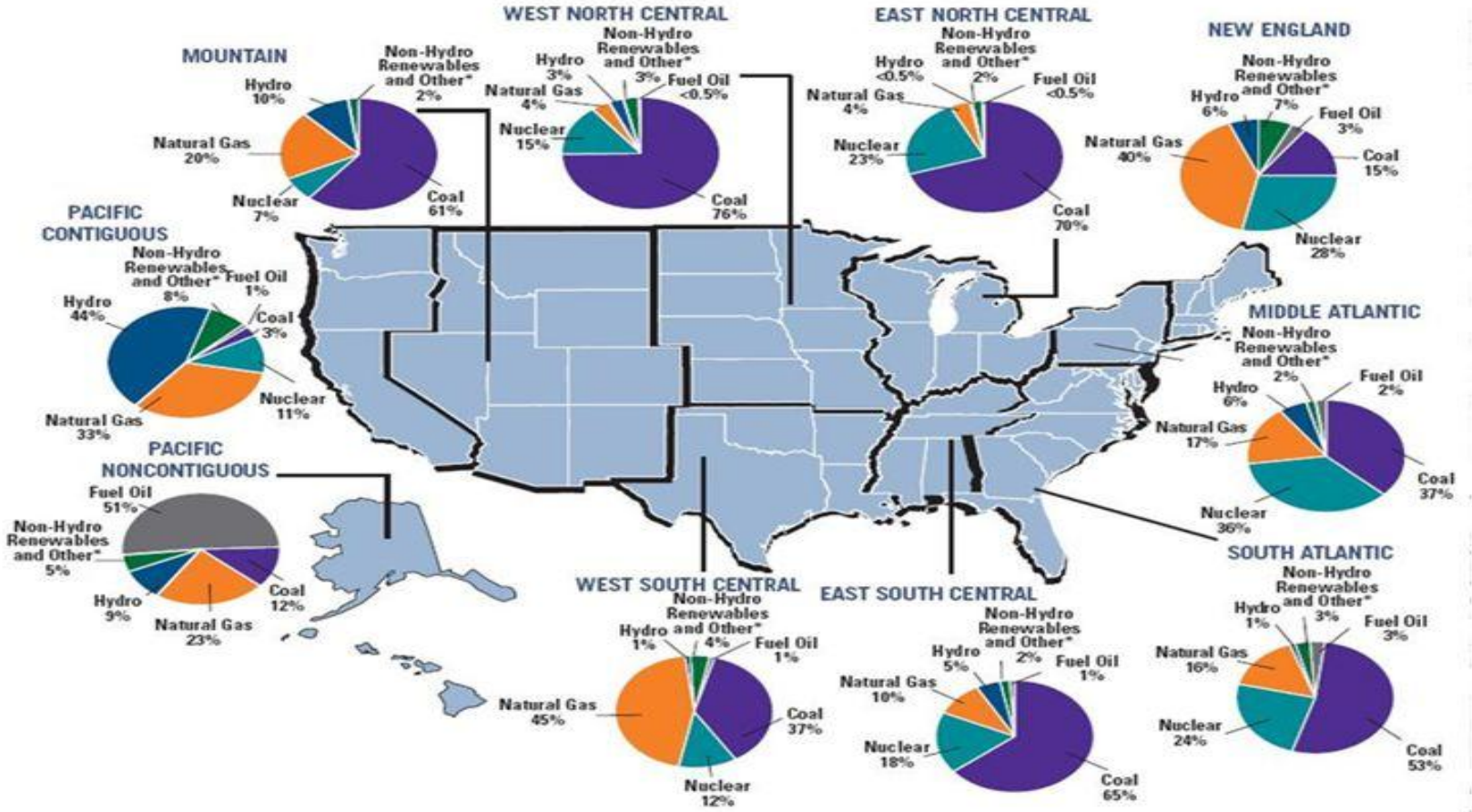
Premise:

Increased use of natural gas is a given, but other forces are transforming the electricity markets as well. Increased focus on Demand Response, Energy Efficiency, Combined Heat and Power, Distributed Energy, Renewable Energy all are changing the traditional market models. What are the implications of these changing dynamics for industrial customers?

Providing a Diverse Portfolio of Options Such as Demand Response, Energy Efficiency, Combined Heat and Power, Distributed Energy and Renewable Energy Have Multi-Tiered Benefits:

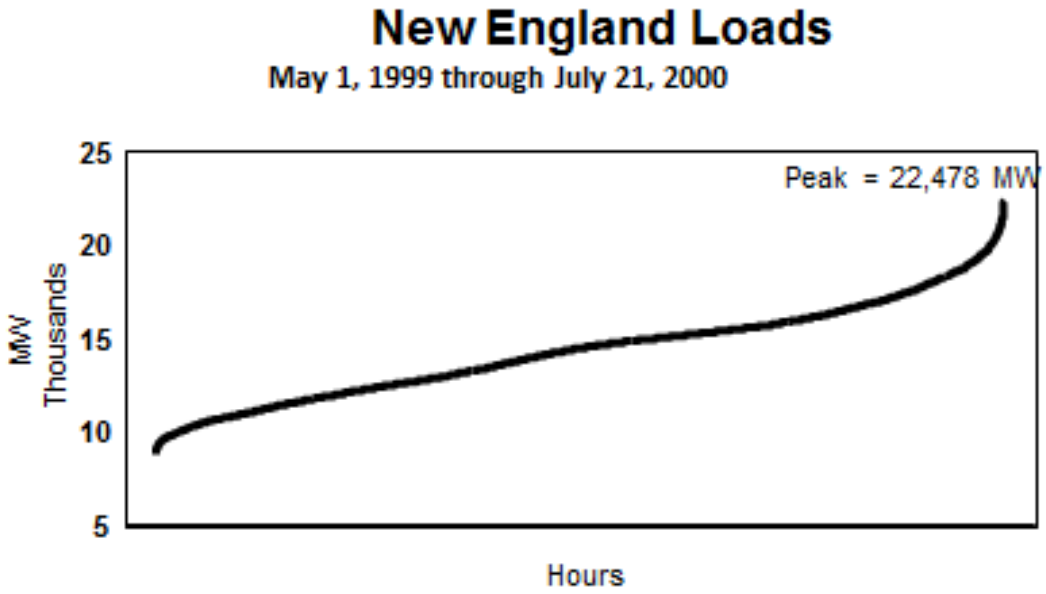
- Allows hedging against too much reliance on one fuel source
- Provides opportunities for customers to use energy more efficiently and reduce their costs
- Can create a revenue stream for customers who sell DR into the market or excess generation from distributed generation
- Increases energy independence and strengthens national security
- Reduces transmission congestion and line losses
- Better for the environment and impacts externality costs such as health care, work force productivity
- Provides cleaner sources of energy to keep regions in attainment

US Fuel Mix 2010



Demand Response

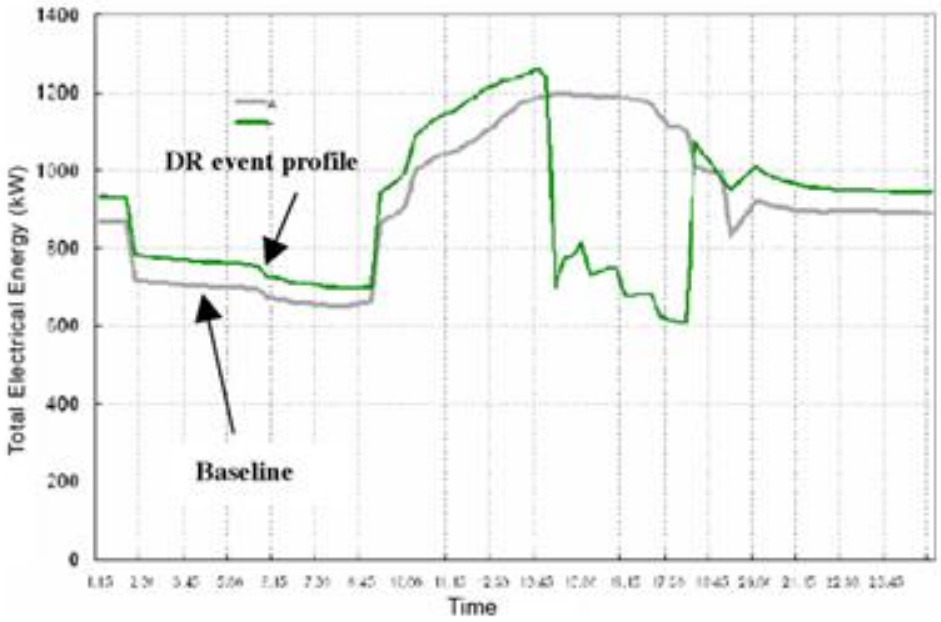
1% of hours = 9% of annual peak load



Benefits of Demand Response

- Allows customer to shift usage to off-peak periods when electricity is less expensive
- Reduces system demand for peak energy usage which drives up price
- Reduces cost of capacity needed to meet peak demand
- Provides customers with tools to manage energy usage

Demand Response



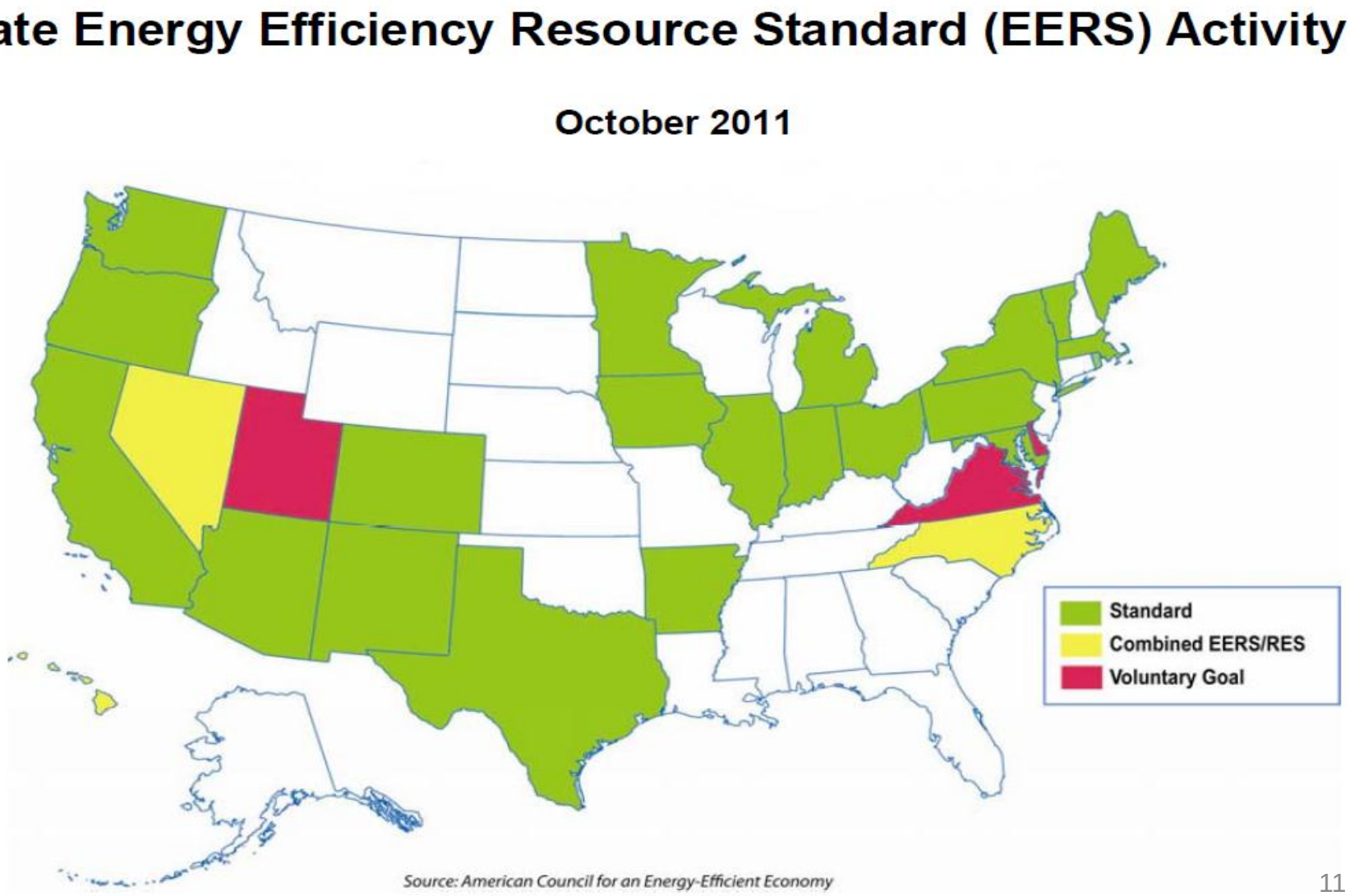
Demand Response – especially for large customers – offers an opportunity to receive compensation by agreeing to reduce their usage during system peaks and to sell those commitments to energy reduction into the market.

Industrial customers can either respond to curtailment programs offered by their generation service provider or they can bid individually or through an aggregator into the capacity market where RTO's permit this. (PJM, New England)

In last PJM auction, approximately 15,000 MW were bid and 14,000 MW cleared.

Energy Efficiency

24 US States with EE Resource Standards



Benefits of Energy Efficiency

- Least cost option at $.02 - $.04 in cost
- Can substitute for capacity additions as a resource
- Can be used as a reliability resource that does not compete with industry in terms of pollution emissions that threaten regional attainment requirements
- Can reduce consumption, thereby reduce the average bill of customers participating in energy efficiency
- Reduces transmission congestion and line losses
- Creates jobs

Arkansas: An Example of Success Story

- Rap facilitated multi-stakeholder process to bring parties together to negotiate new energy efficiency programs
- Quick start program implementation
- Continuation of collaborative process
- Industrial self-direct programs, residential home energy performance for distressed homes, emergency load management programs, and, small commercial and residential lighting and appliance programs put in place
- Provided program cost-recovery

Arkansas Deep Dive

- RAP continues to work in Arkansas as part of a deep dive, funded by US DOE
- AR program continues to evolve as the PSC considers lost-revenue mechanisms, incentives, program expansion and IRP

Integrated Resource Planning (IRP)

- Detailed IRP rules that require a rigorous review of demand and supply forecasts is critical.
- IRP can enable review of "least-cost" alternatives to power plant expansion and upgrades.
- Comprehensive EE should be considered as a resource option along-side traditional supply side options
- Examples: New Orleans, where first Entergy IRP was rejected due to insufficient consideration of EE.

Ways Industrial Customers Can Participate in Energy Efficiency

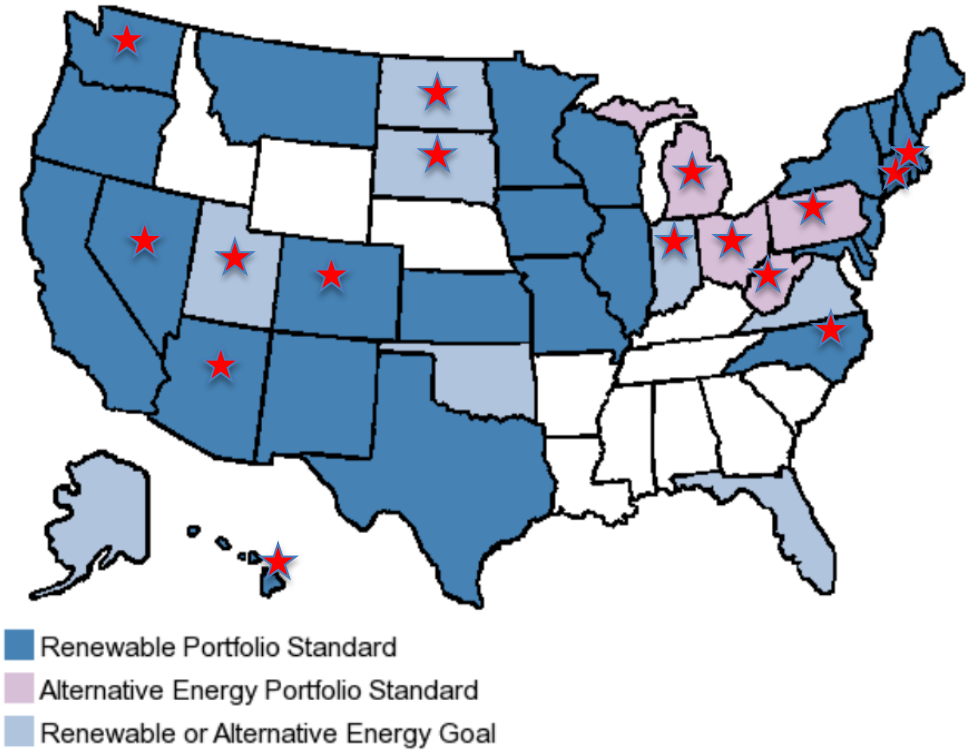
- Through distribution utility
- Through self-direct / opt-out programs
- Through energy supplier
- Through independent energy service companies

Combined Heat and Power
Unheralded Benefits of Industrial EE/CHP

- Measures can be highly cost-effective, but many have negative payback (i.e., cost savings)
- Improves economic competitiveness
- Energy savings improve profit margin
- Improved worker conditions
- Lower emissions; improved public health
- May be eligible for lower insurance premiums due to reduced occupational exposure and risk

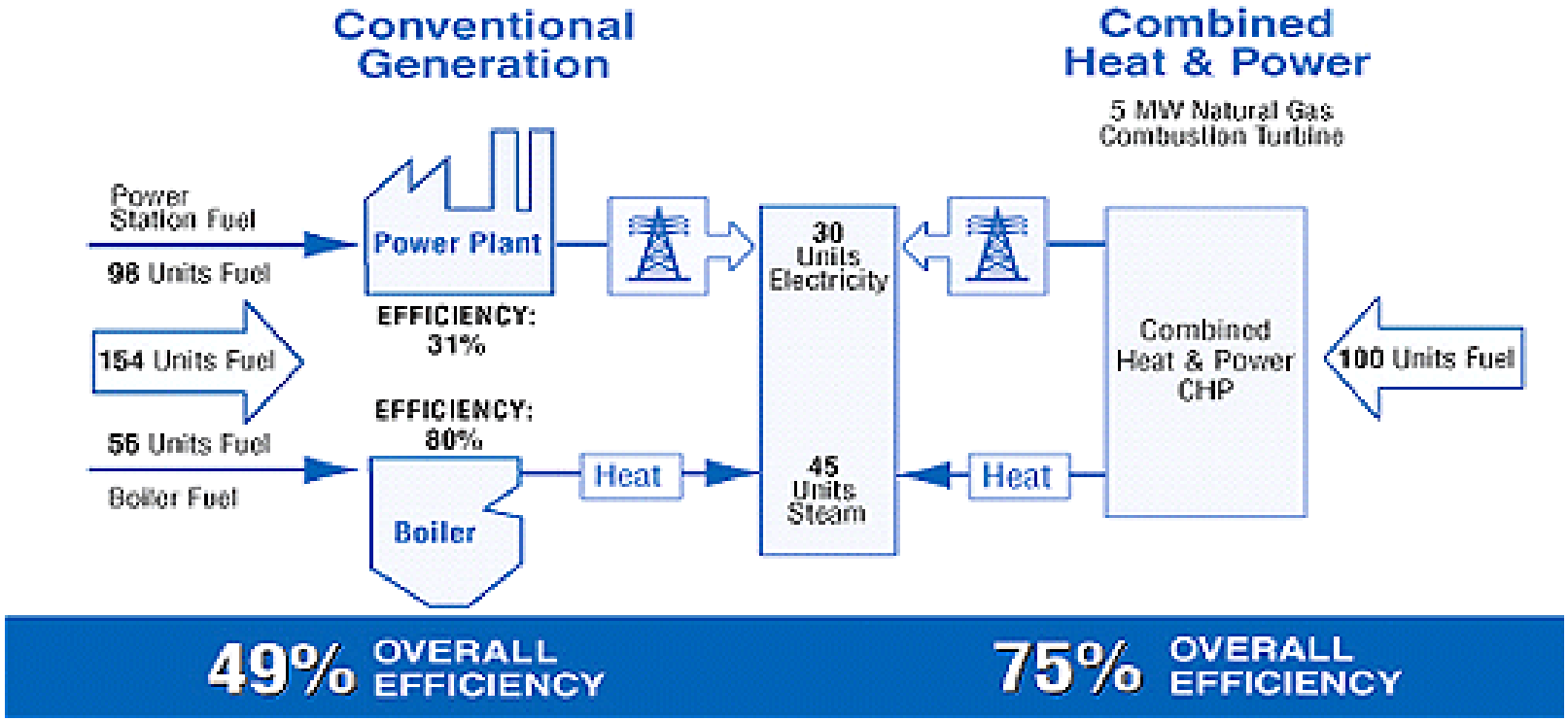
States Including CHP or Waste Heat Recovery in Their RPS

One way to promote CHP and waste heat recovery systems is to make these systems eligible for credit under a state RPS policy, even if the fuel used is not renewable. This map shows the states that have done this.



Source: Center for Climate and Energy Solutions

CHP vs. Conventional Power & Heat



DOE Regional Industrial Energy Efficiency & Combined Heat and Power Regional Dialogue Meetings

In support of the August 30, 2012 Executive Order – Accelerating Investment in Industrial Energy Efficiency, DOE is pleased that these meetings help meet the objectives outlined. The Order sets a goal of 40 gigawatts of new, cost effective industrial CHP in the U.S. by 2020, it directs the agencies, including DOE, with convening stakeholders, through a series of public workshops, to develop and encourage the use of best practice State policies and investment models that address the multiple barriers to investment in industrial energy efficiency and CHP. Participants at these meetings will engage in a dialogue about the potential for increased industrial energy efficiency in the region, successful industrial and CHP policy approaches, innovative policy options, and opportunities to work together to achieve the many benefits of 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

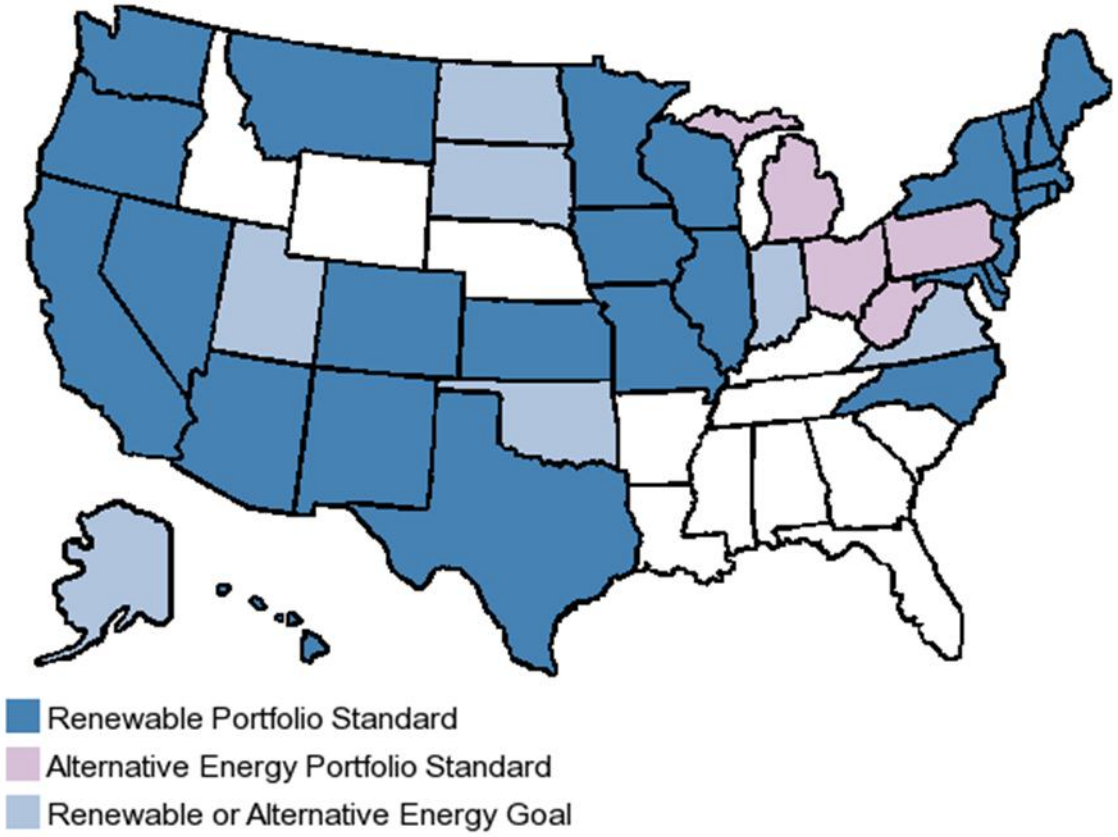
Northeast / Mid-Atlantic Industrial Energy Efficiency & Combined Heat and Power Regional Dialogue Meeting

March 13, 2013

Baltimore, Maryland

http://www1.eere.energy.gov/manufacturing/newsandevents/events_detail.html?event_id=7305

Renewable Energy
Renewable Portfolio Standards



Source: Center for Climate and Energy Solutions

Customers Can Help Drive the Market, They Need Signals

- Barriers are regulatory, financial and complexity.
- We need to remove unnecessary barriers, provide better financial tools and make it simple.

Ideas for Engaging the Customer

- Through Customer Empowerment:
  - Simple interconnection standards
  - Net metering – paired with dynamic pricing
  - Renewable Energy Credit Purchase Program
  - Tax credits for customer-installed renewable energy
  - Loan funds
  - Solar leases

About RAP

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- Promote economic efficiency
- Protect the environment
- Ensure system reliability
- Allocate system benefits fairly among all consumers

Learn more about RAP at www.raponline.org

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