Efficiency First:
Delivering Business Efficiency in a Competitive World

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Major Points Today

1. “Efficiency First” -- the central role of demand-side resources in the energy transition
2. Delivering Demand-Side Resources: Efficiency Obligations and supplier mandates
3. Delivering Demand-Side Resources: Governmental standards
4. Carbon pricing and end use efficiency: The importance of Carbon Revenue Recycling
What is “Efficiency First”?

Efficiency First is a guiding public policy principle:

- applied to energy sector **policies, plans, and investments**
- that chooses and requires investments in end use efficiency and demand management,
- whenever they would **cost less, or deliver more value**, than investing in energy fuels and supply-side infrastructure.

Departures from this rule are permitted only for clear, compelling reasons (e.g., system security)
Efficiency First in Practice

- **California’s “Loading Order”** – First Efficiency, then Renewables, only then (if needed), conventional generation
- **“Least Cost” Utility Plans** in many places
- **Non-Wires Alternatives** to T&D
- **Energy facility siting laws** (e.g., Vermont)
- **Clean Energy for All** legislation under review now in Europe:

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  ...the energy we do not use is the cheapest, most sustainable and most secure energy there is. The EU is already a world leader here; but I think we can do so much more. It starts with taking "efficiency first" as our abiding motto.

  --EU Climate Action and Energy Commissioner Arias Canete, February 2015
Industrial EE Mandates – 2 Approaches
A. Utility Efficiency Obligations

- Whether called EEOs, WCs, EE Resource Standards, key elements are:
  
  *A public mandate* requires an *energy provider* to prove their activities have resulted in *energy efficiency improvements* by eligible *end use customers*.

- **Why obligate energy companies?**
  
  - Integrated system management -- “Load” is really part of power systems
  - Customer relationships
  - Non-government funding
  - EEOs play a lead role in US, AUS, some EU Member States – a basic mandate, not a new “utility of the future”
U.S. Utility EE Program Spending Now Over $8 Billion/Year and Still Growing

Program spending (Billion $)

- Natural gas EE programs
- Electric EE programs

Note: 1993 - 2008 represents spending; 2009 represents spending among CEE members reporting to CEE; 2010 and 2011 represent budgets of CEE members reporting to CEE; 2015 and 2020 represent LBNL "high case" projections
B. Standards and ESCOs for Industrial Efficiency – the Chinese example

• EE in China is driven by Governmental savings requirements, not utilities
• Efficiency mandates are part of a comprehensive national program:
  • National high-level targets (e.g., 16% intensity reduction 2011-15)
  • Sub-targets for provincial and local governments
  • Individual savings agreements are in place for many facilities (e.g. the “Top 1000 Enterprise Program”)
  • Numerous Energy Conservation Centres monitor compliance
• ESCOs play a major role in delivering industrial efficiency.
Industrial efficiency in China – some unusual aspects

- **Energy intensity standards** -- energy used per unit of production --imposed on 8 major industrial processes
- New factories must get **energy use permits**
- **Differential electricity pricing** – inefficient enterprises pay higher electric RATES (>20% intensity = +20% power rate)
- **Utility DSM requirement** is relatively small
- Major savings result from these industrial performance standards
- **ESCOs play a major role** in delivering savings
4. Paying for Efficiency: the Logic of Carbon Revenue Recycling
Carbon Revenue Recycling: Carbon revenues are a powerful tool to leverage carbon price

- Key idea: Sell allowances, invest carbon revenue in low-cost carbon reduction -- especially EE
- **Northeast US: 9 RGGI states** now dedicate >80% of allowance value to clean energy (~55% to EE)

- Even with low (~$3/ton) CO₂ prices, RGGI has raised over $500 Million for EE programs – avoiding CO₂ at a cost of (minus) $73 per ton!
- So far: Adding $2.9 Billion to the regional economy, and supporting 16,000 new jobs

- Political lesson: RGGI renewed 2013, cap lowered

- **Germany, France, Czech Republic** – have programs and/or plans to invest substantial carbon revenues in EE
Conclusion: Deeper efficiency permits deeper carbon cuts

Recycle revenues for efficiency

Meet savings targets affordably

Tighten cap for greater progress

- Lower emissions, AND lower energy bills
- Keep a robust carbon price
- Maintain industrial competitiveness
Additional Resources

- “Efficiency First: From Principle to Practice” (RAP, Client Earth, E3G, 2016)
- “Energy Efficiency in China” (D Crossley, 2013)
- “Carbon Caps and Efficiency Resources: Launching a "Virtuous Circle" for Europe” (R Cowart et al, RAP 2015)

These and many other reports on the RAP website

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Regulatory Assistance Project (RAP)

RAP is a global, non-profit team of experts providing technical and policy assistance to government officials on energy and environmental issues. RAP has advised governments in more than 30 nations and 55 states and provinces.

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A member of the IEA DSM Executive Committee, he served 12 years as Chair of the Vermont PSB (utilities regulator), Chaired the US regulators' Committee on Energy & Environment, and the National Council on Competition and the Electric Industry. He is an advisor to the New York Independent System Operator, and served three terms as Chair of the Electricity Advisory Committee of the US Department of Energy.
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