Promoting Energy Efficiency:
Regulatory Policies for Increased Investment

National Governors Association
State Energy Efficiency and Renewable Energy Working Group
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About the Regulatory Assistance Project (RAP)

- RAP is a non-profit organization providing technical and educational assistance to government officials on energy and environmental issues. RAP Principals all have extensive utility regulatory experience.
- Funded by US Department Of Energy & Environmental Protection Agency, Energy Foundation and other foundations, and international agencies. We have worked in 40+ states and 16 nations.
- RAP advises governments directly, does not appear for parties in contested cases (but may be Commission witness or adviser)
- Also provides educational assistance to stakeholders, utilities, and advocates.
Why Does EE Require Policy Support?

Markets alone will not deliver cost-effective energy efficiency services. There are barriers:

- Poor/inadequate information
- High first cost/lack of capital
- Split incentives
  - Landlord/tenant
  - Builder/buyer
- Lack of transparent energy prices
- Regulatory disincentives for utilities
  - Program costs
  - Reduced revenues
Energy Efficiency is a Resource

- Proposition: EE is a resource, like any other resource, for meeting present and future demand for service
- Resolution: EE should be treated like any other resource, as both a regulatory and a business matter
What does this mean for policy?

- Planning
- Program Delivery
- Paying for EE
- Resolving the unique financial challenges that attend EE
Long-Term Least-Cost Planning

- How much EE is needed?
  - “Need” is an economic concept
  - If something is less costly than the alternative, it’s needed
    - Always ask “Compared to what?”

- Least-cost planning is a method by which we determine the mix of resources whose total cost, including external costs, will be lowest over the long-term (e.g., 20 years)
  - Also known as “portfolio management” or “integrated resource planning”
Least-Cost Planning

➢ IRP/PM is the law in at least 28 states

➢ In Vermont:
  – A "least cost integrated plan" for a regulated electric or gas utility is a plan for meeting the public's need for energy services, after safety concerns are addressed, at the lowest present value life cycle cost, including environmental and economic costs, through a strategy combining investments and expenditures on energy supply, transmission and distribution capacity, transmission and distribution efficiency, and comprehensive energy efficiency programs.
    • 30 VSA §218c (a)(1)
Planning

- Given expected loads, the mix of potential resources, cost estimates, and the value of environmental protection, IRP will tell you what to buy, how much, and when.

- What IRP will reveal, especially in those places where it is not rigorously undertaken, is that there is a far greater efficiency resource available than most imagine.
Challenges

- What is the legal significance of an IRP? What are the utility’s obligations under the plan? How prescriptive is it?
- How does the plan deal with changes in circumstances?
- What does planning mean in a restructured state? How should default (basic) service be handled?
- How do renewable performance standards and efficiency performance standards fit into the process?
- A utility’s least-cost plan should be its most profitable course of action (NARUC 1989)
EE Program Delivery

- Utility administration is the typical approach
  - Program design and delivery, in-house and through sub-contractors
  - PUC oversight

- Third-party administration
  - Oregon Energy Trust
    - Under contract with state, through PUC
    - Independent board approves program design
    - Limited role for PUC
  - Vermont: Efficiency Vermont
    - Under contract with state through PUC
    - Close PUC scrutiny and approval
EE Cost Recovery

- Covered in rates, along with all other costs of service
- Or funded through a separate, “system benefits” charge on customers bills
  - Drawback: SBC suggests EE is unlike other resources. A political target.

- Rate and bill impacts
  - EE has rate and bill impacts, as do power plants, but they’re not the same
    - There’s a mismatch between expensing EE and rate-basing power plants
    - The rate and bill impacts over the long term must be compared, before a judgment can be made: cost-effective EE reduces bills
    - **Remember: Compared to what?**
Utilities respond to incentives

- All regulation is incentive regulation
  - The trick is simply understanding what the incentives are and how they affect behavior
Traditional Regulatory Methods Provide Strong Disincentives for Customer-Sited Resources

- Utility revenues and profits are linked to unit sales (kW, kWh, therms, etc.)
  - But, in the short run, a utility’s marginal costs are only vaguely related to demand for gas or electricity (more on this in a moment)

- Loss of sales due to successful acquisition of customer-sited resources—energy efficiency and distributed generation / combined heat and power—will lower utility profitability

- This is true regardless of the means of delivering the energy efficiency and other programs
  - The incentive remains even where net revenues lost as a consequence of efficiency are recompensed

- *The effect may be quite powerful.* . . .
## How Changes in Sales Affect Earnings

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<tr>
<th>% Change in Sales</th>
<th>Revenue Change</th>
<th>Impact on Earnings</th>
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<tr>
<td></td>
<td>Pre-tax</td>
<td>After-tax</td>
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<tr>
<td>5.00%</td>
<td>$9,047,538</td>
<td>$5,880,900</td>
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<td>4.00%</td>
<td>$7,238,031</td>
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Least-Cost Service Should be the Most Profitable

- The “throughput” incentive is at odds with public policy to supply electric power services at the lowest total cost:
  - inhibits a company from supporting investment in and use of least-cost energy resources, when they are most efficient,
  - encourages the company to promote incremental sales, even when they are wasteful

- Ratemaking policy should align utilities’ profit motives with public policy goals: acquiring all cost-effective resources, whether supply or demand

- The utilities’ throughput incentive promotes inefficient outcomes, even where:
  - there is no programmatic energy efficiency; and
  - even with third-party administration of energy efficiency programs.
A New Regulatory Model: Revenue-Sales Decoupling

- Breaks the mathematical link between sales volumes and revenues (and, ultimately, profits)
  - Makes revenue levels immune to changes in sales volumes
  - Fundamentally, it’s a matter of enabling recovery of the utility’s prudently incurred fixed costs, including return on investment, in a way that doesn’t create perverse incentives for unwanted actions and outcomes
- Two objectives:
  - To protect the utility from the financial harm associated with least-cost actions and
  - To remove the utility’s incentive to increase profits by increasing sales
- Decoupling revenues, rather than earnings directly, preserves the utility’s incentive to improve its operational and managerial efficiency
- This is a revenue issue, not a pricing issue: it is not intended to decouple customers bills from consumption
  - Unit-based consumption pricing approaches remain
  - Customers continue to see the cost implications of their consumption decisions, while the utility’s risks associated with variations in sales due to efficiency are mitigated
  - Unit-based consumption pricing reflect the relationship between demand and cost causation in the long-run
    - Especially true of the costs of wires, but also of generation
Purpose of Decoupling

- Utility profits no longer linked to sales, but to operational efficiency
- A key barrier to least-cost energy service – the threat to utility revenues from distributed resources (energy efficiency and combined heat and power) – is removed
  - Makes utility indifferent to distributed resources
  - Policymakers may want to consider whether positive utility incentives to support distributed resources are warranted
  - Should ease revenue concerns associated with stand-by rates
Revenue Decoupling: The Essential Concept

- Basic Revenue-Sales Decoupling
  - Utility “base” revenue requirement determined with traditional rate case
  - Each future period has a calculable “allowed” revenue requirement
  - Differences between the allowed revenues and actual revenues are tracked
    - Variety of ways of tracking differences
  - The difference (positive or negative) is flowed back to customers in a small adjustment to unit rates
Positive Incentives

- No one way to do incentives. Each state is unique.
- **California**
  - State expects huge societal benefits ($ savings) from EE. Decided to divide the pie, sharing the benefits with the utilities. Inclining scale: as performance improves, share of the savings increases. Symmetrical: penalties for poor performance.
- **Massachusetts**
  - Linked metrics to a broader set of EE-related tasks. Metrics include the broad (e.g., total savings) and the specific (e.g., increased penetration of Energy Star appliances, numbers of schools served, etc.). Metrics for all customer segments, to promote comprehensive delivery. Rewards as % of budget, not savings. Like CA, employee compensation incentives, too.
Effect of Incentives on EM&V

- Evaluation, monitoring, and verification:
  - EM&V for cost recovery is one thing, but EM&V for incentives is all the more intense and fraught with controversy
    - In CA, measured savings by independent evaluator were significantly less than the utilities expected
    - In MA, where the metrics are relatively more objective, has had fewer problems

- Lesson: make the system as manageable and uncontroversial as possible
Potential Areas of Federal Stimulus Spending on EE

- A variety of vehicles for EE services
- An analogue to Community Development Block Grants – perhaps $3.5 billion
  - Rules yet to be written
- Weatherization will be significantly expanded
- An increase in funding for state energy offices
  - Restrictions on use of funds, if any, aren’t known yet
- A significant increase in DOE technical assistance through Office of Electricity
- Challenge: What does it mean to be “shovel ready”?
  - What can states do quickly? E.g., weatherization, public housing
What Some States Are Doing

- **Arkansas** utilities are financing customer energy savings through energy audits, weatherization, & appliance tune-ups
- **California** aggressively funds EE and provides incentives for utilities that meet or exceed performance goals
- **Maryland, Minnesota, and Ohio** have aggressive energy-saving goals
- **Oregon’s** Energy Trust helps the state’s utilities target all cost-effective energy savings
- **New York** is pursuing EE through its public benefit fund and EE portfolio standard
- **Vermont’s** “Energy Efficiency Utility” has reduced the state’s load growth by two-thirds since 2000
To Sum Up

- Least-cost planning identifies needed resources
- Costs of service are recovered in rates
- Customer-sited resources create unique financial challenges for utilities *no matter who delivers the resources*
- Decoupling eliminates the key financial barrier to utility support for customer-sited resources
  - Stabilizes utility revenues
  - Reduces or eliminates a host of risks (and therefore costs) for both utility and customers
Policy Options

- Require utilities to engage in least-cost planning
- Assure a reasonable opportunity to recover the costs of investments made pursuant to an approved IRP
- Address the “throughput” incentive by decoupling
  - So long as utilities make money by selling electricity, the full potential of EE and other customer-sited resources will not be achieved
- Consider positive incentives for performance