Industry Customer Participation In Utility Energy Efficiency Programs and Decoupling: Skepticism, Barriers, and Constructive Approaches

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USDOE Webinar

April 14, 2010

The Regulatory Assistance Project

Maine ♦ Vermont ♦ Illinois ♦ New Mexico ♦ California ♦ Oregon

Regulatory Assistance Project

- Nonprofit organization founded in 1992 by experienced energy regulators
- Advises policymakers on economically and environmentally sustainable policies in the regulated energy sectors
- Funded by U.S. DOE & EPA, the Energy Foundation, ClimateWorks and other foundations
- We have worked in 40+ states and 16 nations

About Jim Lazar

- Economist with over 30 years experience in utility regulation, energy efficiency program design, and utility resource planning.
- Based in Olympia, Washington
- Clients have included utilities, regulators, consumer advocates, and NGOs
- Expert witness before numerous local, state, and federal energy regulatory agencies.
- Involved with RAP since 1997

Industrial Energy Efficiency Is Different

- Gas rate design for large industrial customers is generally “already decoupled” so utility resistance should be lower.
- Industries often have very short time horizons
- Industrial energy use may involve unique technologies, so specialized expertise is required
- 90+% of usage is often for boilers and process heat. Typically not weather-sensitive.
- Industries often believe that they are optimizing energy use, within constraints

Principal Barriers to Industrial Gas Efficiency

- Short time horizons of industrial customers
- Annual budget process and annual plant shutdown make retrofit difficult
- Unique equipment
- Protective of underlying technology

- **BUT: Analysts find boiler, process heat, and other efficiency opportunities almost every time they get inside a facility!**

Industrial Customers Often Believe They are Optimizing

- When asked, or in regulatory proceedings, many industrial customers assert they are "doing everything cost-effective."
- This generally reflects customer time-horizons, not utility or societal time-horizons.
- Be skeptical of customer claims they may not know the truth!
- SBC with self-direction gets around this

Divide Between Large and Small Industrial Customers

- **Large industries,** like oil refineries, smelters, and paper mills, need to be treated differently.
- Generally are gas transporters, not gas customers.
- Rate design can provide effective decoupling without a material impact on usage, because the delivery component of bills is small.
- **Self-direction programs are probably most effective.**

- **Small industries** on regular gas tariffs.
  - Millwork, Fabrication, Food Processors
- Mostly gas utility customers, not transporters.
- Should be eligible for regular utility energy efficiency programs.
  - System benefit charge
  - Audit and consultation
  - Program incentives
  - Decoupling will help reduce utility aversion to efficiency

What Is Decoupling

- In conventional utility regulation, the Commission determines the revenue requirement, divides by sales, and calculates a “rate” for service. That rate remain in place until changed, and the utility’s revenues rise and fall as sales change. Generally, rising sales mean rising profits, creating what we call the “throughput incentive.”
- Under decoupling, the Commission periodically changes the rate by small increments so that the allowed amount of revenue is received, independent of the sales volume.
- Decoupling is one tool to reduce utility resistance to investment in energy efficiency, as their profits no longer decline if sales go down.

Why Do Industrial Customers Often Oppose Decoupling?

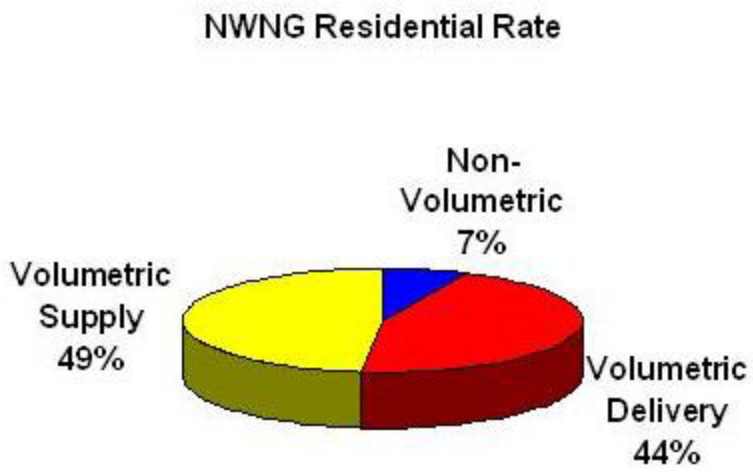
- ELCON 2007
  - ***Decoupling Promotes Mediocrity In The Management Of A Utility***
  - ***Decoupling Shifts Significant Business Risk From Shareholders To Consumers With Only Dubious Opportunities For Net Increases In Consumer Benefits*.**
  - ***Decoupling Eliminates A Utility's Financial Incentive To Support Economic Development Within Its Franchise Area.***
- AGA published a strong rebuttal in May, 2008

Very Large Industries Are Already "Decoupled" Using Fixed / Variable Rate Design

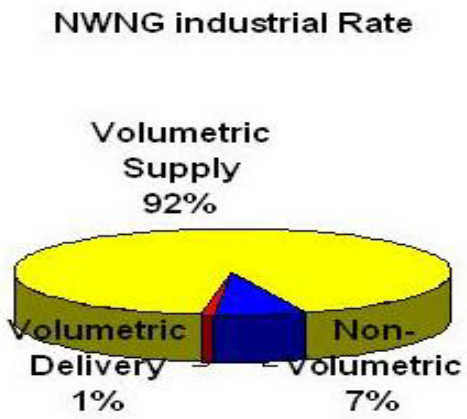
- **Northwest Natural Gas High Volume Rate**
  - Customer Charge (pipes): $38,000/month
  - Transportation Charge (metering): $250/month
  - Distribution Capacity Charge (pipes): $.15748/therm of deliverability (contract demand)
  - Volumetric rate (odorization/ leaks): $.00538
  - <10% of delivery charge is volumetric
  - Delivery charge is <10% of total bill; cost of gas is >90%
  - **Only 1% of total bill is volumetric delivery.**
- **Northwest Natural Gas Residential Rate**
  - **>80% of delivery charge is volumetric**
  - **About 44% of total bill is volumetric delivery**

Comparison of Residential to Industrial Rate Design

- Residential Rate:
  - $6.00/month
  - $.38/therm delivery
  - $.57/therm supply



- Large Industrial Rate
  - $38,000/month
  - Contract demand charge
  - Small variable delivery
  - $.57/therm supply



Large Industrial Rate Design Is Inappropriate for Small Users

- If small users faced high fixed charges, usage charges are lower, and conservation would suffer.
- Utility would not avoid distribution loop costs, but would lose marginal customers who currently pay more than marginal delivery cost.
- Low customer charge accurately reflects incremental costs for metering and billing.
- High (and inverted) gas rate blocks reflect the cost of service accurately, and price incremental usage close to incremental cost, including CO_2 costs.

Straight Fixed/Variable Rates Cause Higher Usage For Small Users

For small-use customers, where delivery service is half the bill, straight fixed/variable rates can result in up to 18% higher usage.

Unit Price With SFV Pricing		**$ 1.00**
Unit Price with Volumetric Pricing		**$ 1.36**
Change in Price / Therm:		**36%**
Assumed Long-Run Elasticity		**-0.5**
Elasticity Response:		**-18.00%**

For industrial customers, where delivery service is <10% of the bill, the effect is dramatically smaller.

Structuring a Gas System Benefit Charge

- Experience in Oregon, Idaho, and Vermont all converges on about 5% of electric revenues needed to fund all cost-effective energy efficiency. Less experience and data for gas.
- Needs to be expressed on a cents/therm basis, not a percentage basis, so that it is indifferent to transport vs. sales.
- Funding should be used to ensure that all measures that meet the Total Resource Cost test (TRC) are funded.

Self-Direction for Very Large Industries

- Many utilities have a System Benefit Charge for natural gas energy efficiency programs.
- For very large customers, more generally accepted if 80%+ of the customer's contribution is available for self-directed projects.
  - Up to 20% reserved for "general" conservation, including R&D, pilots, and low-income assistance
- Industrial customer proposes specific projects
  - Utility reviews and funds where cost-effective
  - Customer also eligible for pilot and R&D funding from the "reserved" amount for general programs.

Decoupling Generally Addresses the Fixed Cost / Variable Sales Dilemma

- Most of the cost of operating a gas utility, except the cost of gas, do not vary with volume in the short run.
  - Pipes, People, Computers, Trucks, and Buildings
- The "competition" for natural gas is sold volumetrically
  - Oil, propane, electricity; Energy efficiency
- If gas utilities adopt high fixed charges, they lose business from small users to alternatives.
- Decoupling stabilizes revenues while retaining competitive rate design.

Effective Decoupling Mechanisms for Gas Utilities

- **Revenue Per Customer**, provided that "new" and "existing" customers are either similar in usage, or treated differently in mechanism.
  - Example: $250/year x existing customers
    - + $200/year x new customers.
- **Test Year Plus Attrition** (California) may be more appropriate where customer growth is low, and/or infrastructure is being upgraded.
- For small customers, current decoupling (within billing cycle) is best, as it synchronizes weather-caused variations to rates and bills.
- For large customers, weather is less of a factor, and an annual true-up may be desirable.

Key Tools For Pursuing Industrial Gas Efficiency

- Specialized expertise that the customer respects.
  - Understanding of industrial, equipment, and operating environment
  - Customized analysis of process heat and steam system components
  - Operator training and continuing education
- Ability to work with budget and shutdown cycle.
- Understanding of time horizon issues.
- Funding for measures.
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RAP is committed to fostering regulatory policies for the electric industry that encourage economic efficiency, protect environmental quality, assure system reliability, and allocate system benefits fairly to all customers.