Ratemaking and Other Mechanisms for Promoting Energy Efficiency and Renewable Energy

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Table of Contents

I. Purpose of Presentation

A. Discuss different ratemaking and other state mechanisms for promoting energy efficiency (EE)

B. Identify factors that state public utility commissions (PUCs or state regulators) typically take into account in their ratemaking activities.

C. Discuss different ratemaking and other state mechanisms for promoting renewable energy (RE)

II. State Mechanisms for Promoting Energy Efficiency

A. Background on utility EE initiatives

1. Utility EE initiatives are premised on the existence of market and consumer behavioral problems that warrant financial incentives and other forms of intervention, as long as their costs are less than the benefits.

2. Past utility EE programs have confronted a number of problems in maximizing benefits; poorly designed programs have:

   a. Included "free riders" as participants (i.e., customers who would have invested in EE without utility programs, thus making no contribution to incremental energy savings),

   b. Featured nonalignment of program objectives with a specific market or "behavioral" problem (e.g., using rebates when the fundamental problem is customers not receiving adequate information to make an informed decision about whether to invest in EE),

   c. *Provided low utility motivation for success (via traditional ratemaking practices)*, and

   d. Contained inadequate utility financial inducements for consumer participation (e.g., most customers were not interested in loan programs, and education had a limited effect on energy savings).

B. Aligning a utility's financial interests with energy efficiency

1. *A core principle for maximizing the benefits from utility-initiated EE is to harmonize a utility's financial and other motivations with the EE initiatives.*

a. This principle relates to what is called the "principal/agent problem"; namely, how to motivate a utility to achieve the objectives set out by the regulator.

(1) Assume that a regulator wants a utility to commit itself to effectively promote EE.

(2) At the minimum, the utility hopes to avoid any negative financial consequences; this outcome could require a revenue-coupling rider, a lost revenue adjustment mechanism, or a rate design that protects the utility against unexpected sales declines (e.g., straight-fixed variable rate design).

(3) The regulator could go further by allowing the utility to profit from cost-effective initiatives comparably to profits from supply-side alternatives. Profits can come from:

(a) Shared savings,

(b) Performance target incentives, and

(c) Rate-of-return adders

(4) The National Action Plan described profit opportunities as "providing the utility incentives for the successful management of energy efficiency programs."

(5) Without financial inducements, the regulator would have to closely monitor the utility to make sure it is carrying out its goal for EE.

2. *Regulators face the following challenges:*

a. Alignment between the utility's interest and the promotion of EE is just one element in achieving maximum results from EE expenditures.

b. Alignment comes from ratemaking.

c. A regulator can choose among several ratemaking mechanisms that promote EE.

d. Regulators must set "just and reasonable" rates based on legal requirements and consider policy objectives, some of which conflict.

3. *Regulators should consider four aspects of ratemaking:*

    a. Cost recovery of utility EE actions

    b. Utility recovery of lost margins from EE

    c. Explicit utility-performance incentives for cost-effective EE actions

    d. Rate design that determines the marginal price during different periods (e.g., seasonal, real time, time of day)

4. *Regulators should ask the following questions:*

    a. What ratemaking or cost-recovery mechanisms have the ability to align utility financial incentives with the promotion of EE? What tradeoffs are associated with each mechanism?

    b. What would constitute a regulator providing a utility with adequate incentives to aggressively promote all cost-effective EE?

        (1) Should a utility be expected to execute EE initiatives effectively and efficiently as long as it recovers revenue losses and EE costs dollar-for-dollar, or

        (2) Should it have the opportunity to earn higher profits from successful EE initiatives?

    c. What ratemaking or cost-recovery mechanisms can provide a utility with timely cost recovery and an opportunity for higher earnings?

    d. Are these mechanisms only applicable to those utility EE initiatives that are cost-effective and for which energy savings are measurable and verifiable?

    e. What ratemaking or cost-recovery mechanisms would not diminish customers' incentives to use energy more efficiently?

C. What different ratemaking mechanisms encourage (or at least do not discourage) EE? What have states done?

1. Earnings stabilization for the utility

    a. Revenue decoupling rider (adjusting rates annually to account for sales less than the expected level)

b. Lost revenue adjustment mechanism (compensating the utility for revenue losses from EE initiatives)

c. Straight fixed-variable rate design (placing all fixed costs in the fixed monthly customer charge)

d. Earnings sharing mechanism (a k a formula rate plans, in which rate adjustments occur when a utility's actual rate of return falls outside some predefined range)

2. Performance incentive for the utility

a. Shared savings incentive (sharing of benefits from EE activities between the utility and its customers)

b. Performance target incentive (utility earning a financial reward for meeting EE goals)

c. Rate-of-return adder (capitalization and rate-basing of EE expenditures)

3. Timely cost recovery for the utility

a. Cost-recovery rider or tracker (cost recovery outside of a rate case based on prespecified formula)

b. System benefits charge (surcharge on customer bills to pay for utility EE initiatives)

4. Proper pricing signals to consumers

a. An inverted and non-declining rate structure (rates increasing at higher levels of consumption)

b. Real-time or dynamic pricing (pricing based on the marginal cost to produce and deliver energy at different times)

c. Critical peak pricing (pricing increasing on short notice for a defined period)

d. Long-run marginal cost pricing (pricing accounting for costs required to increase capacity and sustain utility system reliability to meet customer demands for the next several years)

(Incidentally, some of these pricing schemes can bolster behind-the-meter renewable energy generators that produce a disproportionate amount of electricity during high-demand periods.)

5. In practice, regulators have combined different ratemaking mechanisms to promote cost-effective EE (e.g., revenue decoupling along with a cost rider for EE expenditures).

D. Elements of good ratemaking

1. Three-step process for good regulatory decision-making

   a. Define the public interest in terms of ratemaking objectives (e.g., identify goals and ways to quantify them)

   b. Understand the performance of each ratemaking mechanism in advancing and impeding the objectives (unbiased, objective information and analytics)

   c. Apply a logical and transparent decision-making process (such as purchasing a car with the attributes of power, safety, fuel economy, appearance, low maintenance costs, reasonable purchase price, and reliability)

2. What tradeoffs do regulators have to make in advancing EE? Possible conflicts exist between promoting EE and

   a. Achieving utility financial stability

   b. Minimizing short-term rates

   c. Having strong incentives for cost control

   d. Making energy affordable to low-income households

   e. Moderating risk to customers

   f. Minimizing customer-funded subsidies

3. The standard requirements for "just and reasonable" rates and policy-based objectives are:

   a. *The core principles of ratemaking require that:*

      (1) Rates reflect the costs of an efficient or prudent utility,

(2) Rates reflect the cost of serving different customer classes and of providing different services and different level of services,

(3) Rates allow a prudent utility a reasonable opportunity to receive sufficient revenues to attract new capital, and

(4) Rates avoid undue price discrimination.

b. *Policy-based objectives include* public acceptability, rate stability and gradualism, equity or fairness, affordable utility service, and efficient consumption.

4. The $64,000 question: How should a regulator select a particular ratemaking mechanism or a combination of mechanisms to advance the goal of EE?

E. Electric resource planning

1. Some states have taken steps to explicitly integrate renewable, EE and other demand side initiatives into the overall resource planning process for electric generation and transmission.

2. Planning may help identify least cost, efficient alternatives for renewable development and energy efficiency targets.

III. State Mechanisms for Promoting Renewable Energy

A. Renewable portfolio standard (RPS)

1. Several states, including New Mexico, have implemented an RPS to increase investment in renewable power sources.

2. An RPS is a state policy mandating utilities in a state to generate a percent of its electricity (kWh) from renewable sources.

3. Each state can choose to fulfill this mandate using a combination of renewable energy sources, including wind, solar, biomass, geothermal, or other renewable sources. An RPS may specify the technology mix, while others leave it up to the market.

4. An RPS usually includes penalties for non-compliance.

5. Generally speaking, the costs associated with an RPS are passed on to all utility customers.

6. Arguments for an RPS:

   a. Needed to "jump start" renewable energy, even when uneconomical in the short run

   b. Usually results in a cleaner environment

   c. Would produce benefits from a more fuel-diverse electric power system (e.g., hedging effect)

7. Arguments against an RPS:

   a. Likely leads to higher electricity rates in the short run

   b. Technology mandate would likely lead to a sub-optimal outcome (e.g., non-least cost results)

   c. Makes electric systems less reliable

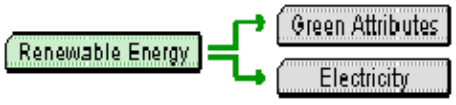
   d. Provides an unfair advantage to renewable energy over other energy sources

8. New Mexico policy toward an RPS is already consistent with other states' (*see* the Appendix)

B. Renewable energy certificates or credits (RECs)

1. One outcome in the development of renewable energy has been the recognition that electricity from renewable sources comprises two distinct commodities—the underlying electricity, and the "green" attributes associated with renewable generation

2. This in turn has led to the creation of markets for just the green attributes, "unbundled" from the electricity.



3. Green electricity generators build new renewable energy facilities, sell their electricity and begin delivering electricity to the grid in their area.

4. They also sell a certificate for every block of electricity they deliver and the additional revenue from the sale of these certificates allows these green generators to stay in business, covering their higher capital costs.

C. Net metering programs

1. Net metering programs serve as an important incentive for consumer investment in renewable energy generation.

2. Net metering enables customers (typically small customers) to use their own generation to offset their consumption over a billing period by allowing their electric meters to turn backwards when they generate electricity in excess of their demand.

3. This offset results in customers receiving retail prices for the excess electricity they generate.

4. Without net metering, a second meter is usually installed to measure the electricity that flows back to the provider, with the provider purchasing the power at a rate much lower than the retail rate. In New Mexico, this rate is set at the utilities' avoided cost rate, plus net-metering customers can receive a REC payment.

5. *Federal income tax credit*: 30 percent of installed cost of residential renewable system plus state tax incentives.

6. For customers who can finance the initial cost of a renewable energy system, the combination of these policies have made renewable development economical from the point of view of the customer.

D. Long-term contracts

1. They help to shorten the risk to renewable generators by guaranteeing them a fixed price or a minimum price for several years.

2. They shift risks to utility consumers, who generally would foot the bill for payments to generators.

3. Advocates contend that generators need long-term contracts to get financing.

E. Tax benefits (e.g., Some states, as well as counties or municipalities, provide individuals or corporations with tax incentives for renewable energy projects; such benefits include credits to income taxes and exemptions from sales, excise, or property taxes.)

F. Rebates and grants

Appendix: The RPS for Different States

State	Amount	Year	Organization Administering RPS
Arizona	15%	2025	Arizona Corporation Commission
California	33%	2030	California Energy Commission
Colorado	20%	2020	Colorado Public Utilities Commission
Connecticut	23%	2020	Department of Public Utility Control
District of Columbia	20%	2020	DC Public Service Commission
Delaware	20%	2019	Delaware Energy Office
Hawaii	20%	2020	Hawaii Strategic Industries Division
Iowa	105 MW		Iowa Utilities Board
Illinois	25%	2025	Illinois Department of Commerce
Massachusetts	15%	2020	Massachusetts Division of Energy Resources
Maryland	20%	2022	Maryland Public Service Commission
Maine	40%	2017	Maine Public Utilities Commission
Michigan	10%	2015	Michigan Public Service Commission
Minnesota	25%	2025	Minnesota Department of Commerce
Missouri	15%	2021	Missouri Public Service Commission
Montana	15%	2015	Montana Public Service Commission
New Hampshire	23.80%	2025	New Hampshire Office of Energy and Planning
New Jersey	22.50%	2021	New Jersey Board of Public Utilities
New Mexico	20%	2020	New Mexico Public Regulation Commission
Nevada	20%	2015	Public Utilities Commission of Nevada
New York	24%	2013	New York Public Service Commission
North Carolina	12.50%	2021	North Carolina Utilities Commission
North Dakota*	10%	2015	North Dakota Public Service Commission
Oregon	25%	2025	Oregon Energy Office
Pennsylvania	8%	2020	Pennsylvania Public Utility Commission
Rhode Island	16%	2019	Rhode Island Public Utilities Commission
South Dakota*	10%	2015	South Dakota Public Utility Commission
Texas	5,880 MW	2015	Public Utility Commission of Texas
Utah*	20%	2025	Utah Department of Environmental Quality
Vermont*	10%	2013	Vermont Department of Public Service
Virginia*	12%	2022	Virginia Department of Mines, Minterals, and Energy
Washington	15%	2020	Washington Secretary of State
Wisconsin	10%	2015	Public Service Commission of Wisconsin

Source: US Department of Energy – Energy Efficiency & Renewable Energy at http://apps1.eere.energy.gov/states/maps/renewable_portfolio_states.cfm#chart.