Advanced Metering and Dynamic Rates

THE ISSUES

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Costs and Benefits

1 Meter Deployment

System-wide deployment of advanced meters will require a large capital investment. How would limiting meter installations to specific customer groups or geographic areas affect likely costs and benefits?

- U.S. utilities have installed advanced metering systems for over 15 million customers. All system-wide deployments were justified on the basis of reduced utility operating costs and improved service.
- Targeting implementation to specific customer segments, geographic areas or special programs may reduce or eliminate operational savings by requiring utilities to maintain both old and new systems.
- A comprehensive business case analysis should guide the final implementation decision.

Costs and Benefits

2 AMI Business Case

How should policy makers value the customer, environmental, and other system and societal benefits as part of the AMI business case?

- Preliminary estimates suggest cost savings from demand response and benefits from increases in system reliability are likely to be significant, however these benefits are difficult to quantitatively measure relative to conventional deployment costs.
- Benefits to the customer from better service, better pricing, information and improved reliability management, overall system reliability and environmental improvements are real benefits that must be considered in the business case.
- These benefits are supposed to be included in the AMI business case.

Costs and Benefits

3 Cost Allocation

The allocation method chosen to recover meter installation and maintenance costs needs to consider potential adverse and disproportionate impacts on low usage customers.

- AMI costs can be recovered through a fixed, uniform monthly customer charge ($/meter/month) or on a volumetric basis (mills/kwh). Charges to low usage customers could vary from more than $4.50/month (uniform fixed charge) to less than $0.50/month (volumetric).
- Allocating residential meter costs using a volumetric (kWh) approach recovers a higher percentage of AMI costs from larger users. This approach partially preserves existing tiered rate conservation and efficiency incentives and reflects greater importance of accuracy for higher usage customers.
- SPP results indicate that Critical Peak rates provide all residential customers with the ability to achieve net savings in their electric bills even taking meter costs into account.

Costs and Benefits

4 Meter Ownership

A comprehensive business case requires an analysis of the tradeoffs between conventional utility ownership and rate-basing of AMI investments with alternative ownership and service options.

- Two-thirds of U.S. utility deployments used alternative AMI ownership and service options to lower costs and reduce rate-payer risk.
- Alternative ownership and service options can reduce the risks to ratepayers of stranded metering assets and allow utilities to scale investments to specific project needs.
- A comprehensive business case analysis should guide the final ownership decision.

Implementation

5 Adverse Bill Impacts

There is concern that some low use residential customers will have higher bills if they are placed on Critical Peak rates.

- Pilot results show that most low use residential customers are likely to benefit from Critical Peak rates.
- Most low use residential customers have a lower proportion of on-peak usage than the average customer. Rate models show that these customers will benefit from Critical Peak rates without any change to their appliance holdings or usage patterns.
- Low use customers with a high percentage of their total load on during on-peak periods may need assistance to manage their bills. Potential adverse impacts should be addressed directly through public policy programs or bill assistance rather than through distortions to rate design.

Implementation

6 Response Capability

There is concern that some low use residential customers may not have enough discretionary load (air conditioning or other uses) to easily respond to Critical Peak rates.

- Pilot results show that the average customer, regardless of usage level, appliance holdings, income or other factors does reduce load and contribute significant demand response benefits in response to Critical Peak rates. [1]
- Pilot results do not support these concerns.
- Pilot results also show that residential and small / medium commercial customers overwhelmingly prefer Critical Peak rates over their existing inverted tier rates.[2]

1 Statewide Pricing Pilot, Summer 2003 Impact Analysis, CRA, August 9, 2004, Table 5-9, p.90.

2 SPP End-of-Summer Survey Report, Momentum Market Intelligence, WG3 Report, January 21, 2004, p23-24

Implementation

7 Rate Complexity

Critical Peak rates are too complex to be understood by the average residential customer.

- Pilot results show that residential customers actually consider Critical Peak rates easier to understand than their existing inverted tier rates. [1]
- Inverted tier rate designs inherently blur costs and incentives because bills reflect only aggregate monthly usage, not usage at any one point in time.
- Pilot results show that residential and small / medium commercial customers overwhelmingly prefer Critical Peak rates over their existing inverted tier rates. [2]

1 Residential Customer Understanding of Electricity Usage and Billing, Momentum Market Intelligence, WG3 Report, January 29, 2004.pviii-ix.

2 SPP End-of-Summer Survey Report, Momentum Market Intelligence, WG3 Report, January 21, 2004, p23-24

Regulatory and Legal

8 Rate Policy

Proposals to make Critical Peak the mandatory rate unnecessarily impact customers that cannot or do not respond.

- Pilot results show that the average customer, regardless of usage level, appliance holdings, income or other factors does reduce load and contribute significant demand response benefits in response to Critical Peak rates. [1]
- Making Critical Peak a default rate, rather than a mandatory rate, can accommodate customer choice. Education will play a key role.
- Making Critical Peak the default rate establishes demand response with efficiency measures as equally important determinants of customer energy costs and system reliability.
- System-wide advanced metering allows all customers to exercise choice and easily switch between rate options to accommodate different usage patterns.

Regulatory and Legal

9 Rate Design Constraints

Existing law does not allow customers the option to select Critical Peak or other new rate designs that might lower their monthly energy bill.

- Existing law intended to provide 'baseline' levels of electricity at an affordable price presumed cumulative monthly rather than hourly measurement of usage. AB 1X further locked in rate restrictions until the DWR contracts expire in ten years.
- Many customers with flat load shapes would have lower bills under a dynamic rate without any change in their usage patterns. Current interpretations of AB1X limit the CPUC's ability to offer these baseline customers a rate choice that may lower their bills.
- Existing law should be modified or re-interpreted to allow baseline customers to select bill rather than rate protection, thus allowing CPUC greater rate design flexibility.

Regulatory and Legal

10 Revenue Requirements

Fixed revenue requirements may discourage demand response and the deployment of dynamic rates. With fixed revenue requirements, cost savings from demand response do not reduce revenue requirements.

- Ideally, demand response cost savings should reduce total revenue requirements. Current ratemaking practice establishes a fixed revenue requirement that increases costs for all customers to compensate for demand response cost savings.
- Utilities must be provided with revenues that match legitimate costs. Bill adjustment mechanisms like those adopted for natural gas could be linked to actual procurement costs, ensuring that savings from customer demand response actions are reflected in service costs.