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MidAmerican Energy Company Thoughts on PURPA Standard 14

South Dakota

Public Utilities Commission

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Metering Definitions

- Automated Meter Reading (AMR)
  - System that automates the manual meter reading process
  - Delivers accurate and reliable monthly meter readings on a billing cycle basis
  - Direct load control available separately
  - No automated communication to the meter
- Automated Metering Infrastructure (AMI)
  - In addition to AMR, AMI is capable of delivering interval data from all meters
  - Very conducive to large-scale time-based pricing
  - Provides automated outage detection and restoration messages
- Smart Metering
  - In addition to AMI, Smart Metering is capable of integrating demand response elements within the system
  - Offers “in home display” of information to customers through the meter
  - Integrates direct load control through cycling signals
  - Integrates indirect load control through pricing signals and consumer’s programming behavior of individual appliances
  - Two-way communication

MidAmerican Experience in Demand Response

- Significant experience in large-load curtailment and direct load control
- Modest experience with time-of-use rates
- Limited experience in real time pricing
- Does it comply with PURPA Standard 14?
  - Yes (possible exception of residential direct load control)
  - Requirements listed under PURPA Standard 14 are effectively met with MidAmerican's current tariff offerings

PURPA Time-Based Rate Schedules

- Time-of-use pricing
- Critical peak pricing
- Real-time pricing
- Credits for large customers

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Time-of-use Pricing

- Most utilities offer TOU pricing
- Fixed hourly windows during summer (and sometimes winter) weekdays where prices increase
- Typical rate
  - Customer Charge: $8.00/month
  - Winter Energy: $.065/kWh
  - Summer On-Peak: $.114/kwh (noon-7 p.m. summer weekdays)
  - Summer Off-Peak: $.075 (all other times)
- Typically cost-based, but can be market-based
- Most customers currently choose this because their usage pattern already fits the windows
- Modestly effective
- Customizing and education could improve effectiveness

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Critical Peak Pricing

- Idea that is gaining ground
- Similar to time-of-use pricing but only operates on hot/critical days
- Typical rate
  - Customer Charge: $8.00/month
  - Annual Energy: $.071/kWh
  - Peak Energy: $.170/kWh (3-7 p.m. summer days over 90)
  - Super-Peak Energy: $.185/kWh (3-7 p.m. summer days over 95)
- Can be cost or market-based
- Critical peak pricing correlates well with
  - Generation costs
  - Weather
  - Previous consumer education (peak alerts)
- Requires significant customer notification capabilities

Real-time Pricing

- RTP is a well-understood concept but is generally not popular with customers
- Commodity prices change by the hour
  - Prices tend to be stable most of the time
  - Generally correlates with hot weather and peaking conditions, but not always
- Typical rate
  - Customer Charge: $8.00/month
  - Delivery Charge: $.038/kWh
  - Commodity Charge: varies by hour
- Typically is market-based, but can be cost-based
- Requires the ability to send and monitor prices on a day-by-day basis
- Requires a particular ability to communicate with customers when prices aren't intuitive
- Assumption of price risk

What Works Best?

- Most effective options appear to be those where the price differentials are the greatest, or where the peak demand reductions are most certain
- Load control appears to be very cost effective
  - Good success with large loads and residential direct load control
  - Minimal infrastructure requirements
- For time-based pricing, critical peak pricing has the biggest price differentials
- Cost effectiveness for all pure pricing options is uncertain

Mandatory or Voluntary?

- Time-based pricing can be mandatory for large customers
  - Many MidAmerican customers already are on TOU rates
  - Necessary metering technology and systems are already in place for these customers
- Time-based pricing should be voluntary at this time for mass market consumers
- If full-scale implementation is desired, MidAmerican believes that most residential and small commercial customers will naturally migrate if pricing structures are implemented properly

Cost Recovery

- If South Dakota utilities are required to provide time-based rates coupled with advanced metering and communication services, costs should be recovered from all customers
  - Similar approach to energy efficiency programs where all customers benefit even if they don't participate
  - This is especially useful if a natural migration to time-based rates is encouraged
- Charging costs only to participants will make costs prohibitive and will limit the number of participants to that which can be served under current technology