

To Infinity and Beyond: The Benefits and Risks of Advanced Metering Technology



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**Janee Briesemeister
AARP**

Buzz Lightyear

- New toy
- Thinks he is a real astronaut
- Disney movie:
- Has adventures
- Makes mistakes
- Learns valuable lessons
- No one really gets hurt

Advanced Meters

- New technology
- Some think a solution to the energy crisis/global warming
- Real life:
- Cost billions
- Efficiencies
- “price signals”
- Adopting before learning about costs and impacts

Advanced, Smart, AMI, AMR

Advanced meters refers to meters with digital, 2-way communications capability which can store data and enable remote reading, connection, disconnection and outage detections. Two-way capability and storage enables “dynamic pricing” and pre-payment.

AMR refers to one way communications for remote reading.

In home display:



Operational Efficiencies:



- Remote reading
- Remote connect and disconnect
- Reduce operational expenses
- Outage detection
- System reliability
- Direct control of appliances (direct load control)
- Demand response to reduce peak

New Pricing Methods:

- Dynamic pricing—distinct from static pricing, where every kilowatt hour priced the same, regardless of when used.
- Time of use—electricity usage priced differently at different hours; not necessarily directly tied to wholesale market
- Real time pricing—retail price changes hourly or even more often based on wholesale market prices
- Critical peak pricing—retail price changes during critical peak periods of high wholesale price and/or shortages.
- Prepayment—pre-pay for usage; meter shuts off when money runs out

Is full blown AMI necessary?



No.

Features such as

- Direct load control
- Remote connection and disconnection
- Remote reading
- Prepayment
- Energy efficiency

Can be achieved without full advanced metering infrastructure

Benefits?

- Reduced system costs—replace employees with technology
- Better system management—outages
- Faster reconnection and disconnection
- Reduce peak demand
- Influence consumer behavior
- Influence wholesale prices
- Give customers control over their energy bills

Risks?

- Costs billions
- Low-usage customers—can't shift off peak
- Vulnerable customers—heat kills
- Largely unproven technology—how long will it last; what happens when it fails?
- Reliance on wholesale market price signals—markets are flawed; shifts market risk to customers
- Control v. confusion—information overload
- Opt-in v. opt-out?

Is the technology ahead of the policy?



What is the best way to achieve long term energy savings for consumers at the lowest reasonable price?

- How does dynamic pricing impact bills?
- What is the impact on vulnerable customers?
- Once installed, is mandatory usage inevitable?
- Do system cost savings justify expense?
- Will wholesale volatility increase?
- How do consumers manage this information?
- Consumer protections?

Example: Pricing Pilots

- Washington state: Puget Sound—mandatory TOU for residential customers abandoned in 2002 when analysis showed most customers paid more, not less.
- California: statewide pilot--most usage reduction by higher use customers with central air and higher income; no change in annual usage.
- Maine: Mandatory TOU for high use customers made voluntary after widespread dissatisfaction with high price
- NRRI: Critical peak pricing and other time-varying pricing is likely to produce “winners” and “losers”

Example: Idaho Avista Remote Disconnection Pilot

Avista Proposal

- Include customers disconnected 3 or more times in a three year period
- Reconnection required customer to push button on unit
- No change in fees
- Evaluation focused primarily on savings to company

Avista/AARP/CAPAI stipulation

- Include those with 2 disconnects or field visits in 12 months
- Exclude CARES customers
- No manual re-set
- 50% reduction in reconnect fee
- Greater focus on customer experience in evaluation; LIHEAP identified
- Worked together on notice language

Example: Prepayment Meters

- Targets payment troubled
- Higher rates
- “self-disconnect”
- Eliminates protections such as weather disconnection bans and pay at the door

“To Infinity and Beyond”

- What is the goal and how is it best achieved?
- Advanced meters increase infrastructure costs, assume consumers can respond to price signals, assume wholesale market prices are valid.
- Education, weatherization, integrated resource planning, incentive based demand response are other options.



- Proposals should be examined in contested proceedings with a full airing of the proposed costs and benefits of such programs, including impact on specific groups of customers such as low income, elderly, homebound.

Contact Information:
Janee Briesemeister
Sr. Legislative Representative
AARP
512-480-2426
jbriesemeister@aarp.org