

Advanced Metering: Overview



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What is Advanced Metering?

- Definition:
 - Advanced metering is a metering system that records customer consumption hourly or more frequently and that provides for daily or more frequent transmittal of measurements over a communication network to a central collection point
- Also known as Advanced Metering Infrastructure (AMI)



What is Advanced Metering?

- Advanced metering requires a fixed network that enables two-way data transfer
- Communication technologies include:
 - Power-line carrier
 - Wireless
 - Broadband Over Powerlines
- Differs from Automated Metering Reading (AMR) because of the use of fixed networks and increased functionality
 - AMR is typically one-way (meter reading)
 - AMR technologies include drive-by systems



FERC Staff Demand Response Reports

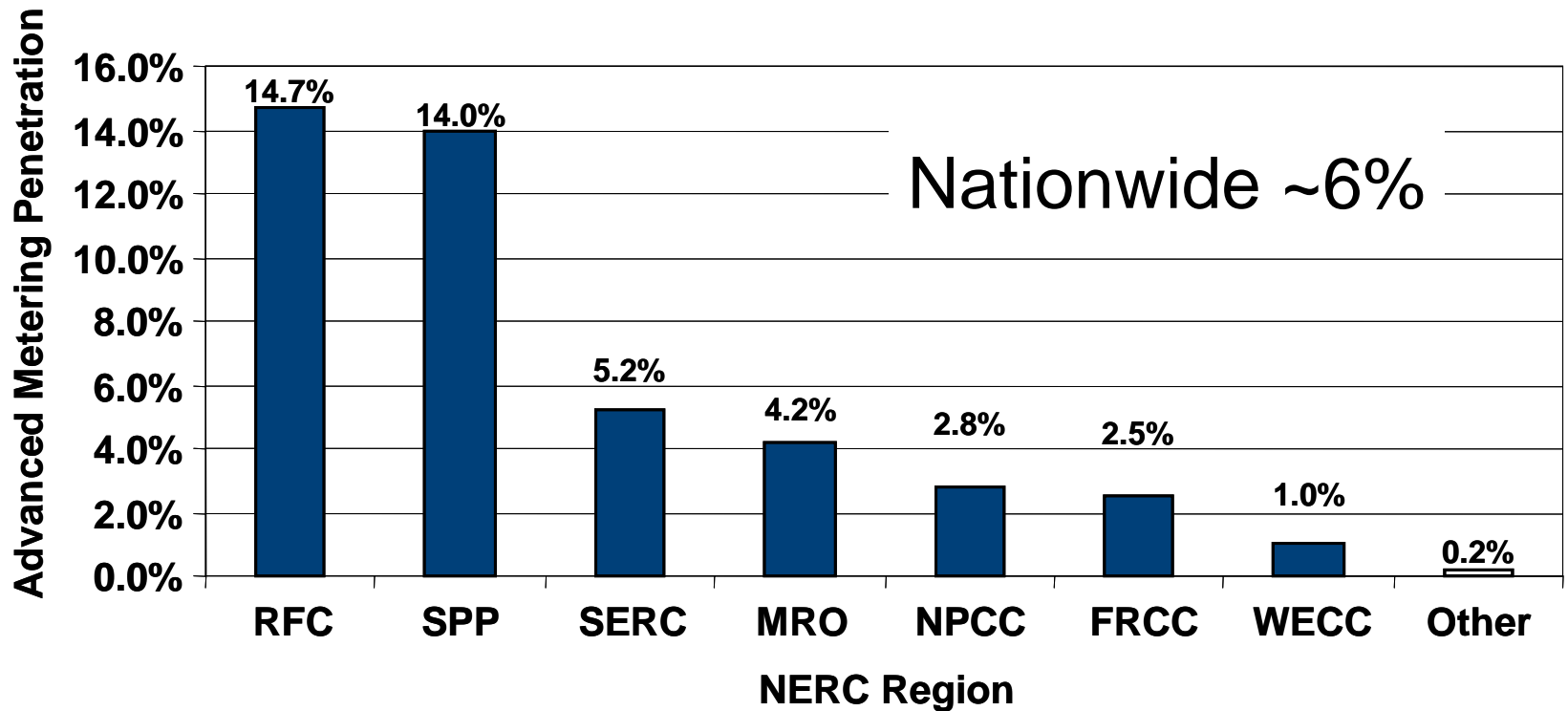
- Required by EPL Act 2005 Section 1252(e)(3)
- 2006 FERC staff report issued August 2006
- 2007 FERC staff report issued September 2007
- Future staff reports:
 - Comprehensive reports every even year reports (e.g. 2008) that will include survey results
 - Informational reports every odd year based largely on publicly available information

Reports available at

<http://www.ferc.gov/industries/electric/indus-act/demand-response.asp>

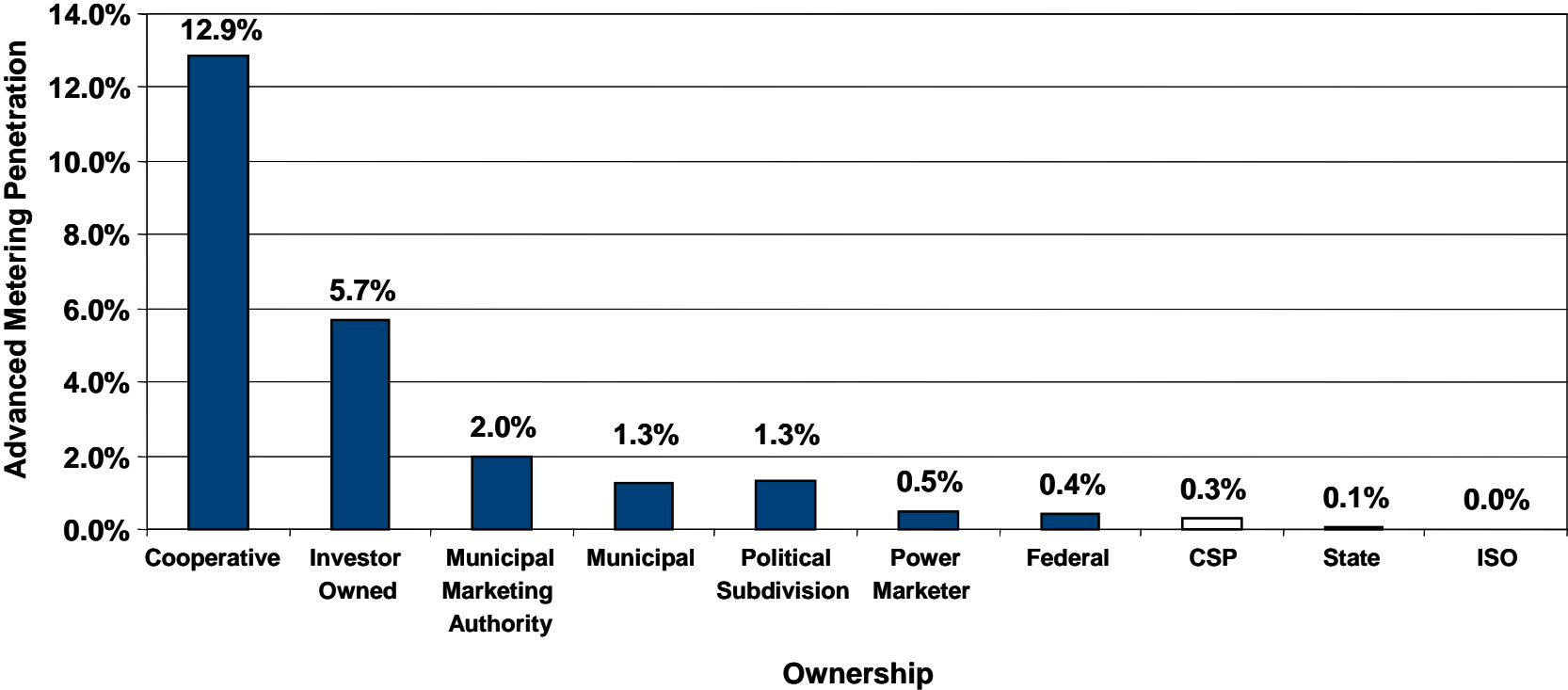


Advanced Metering Penetration By Region



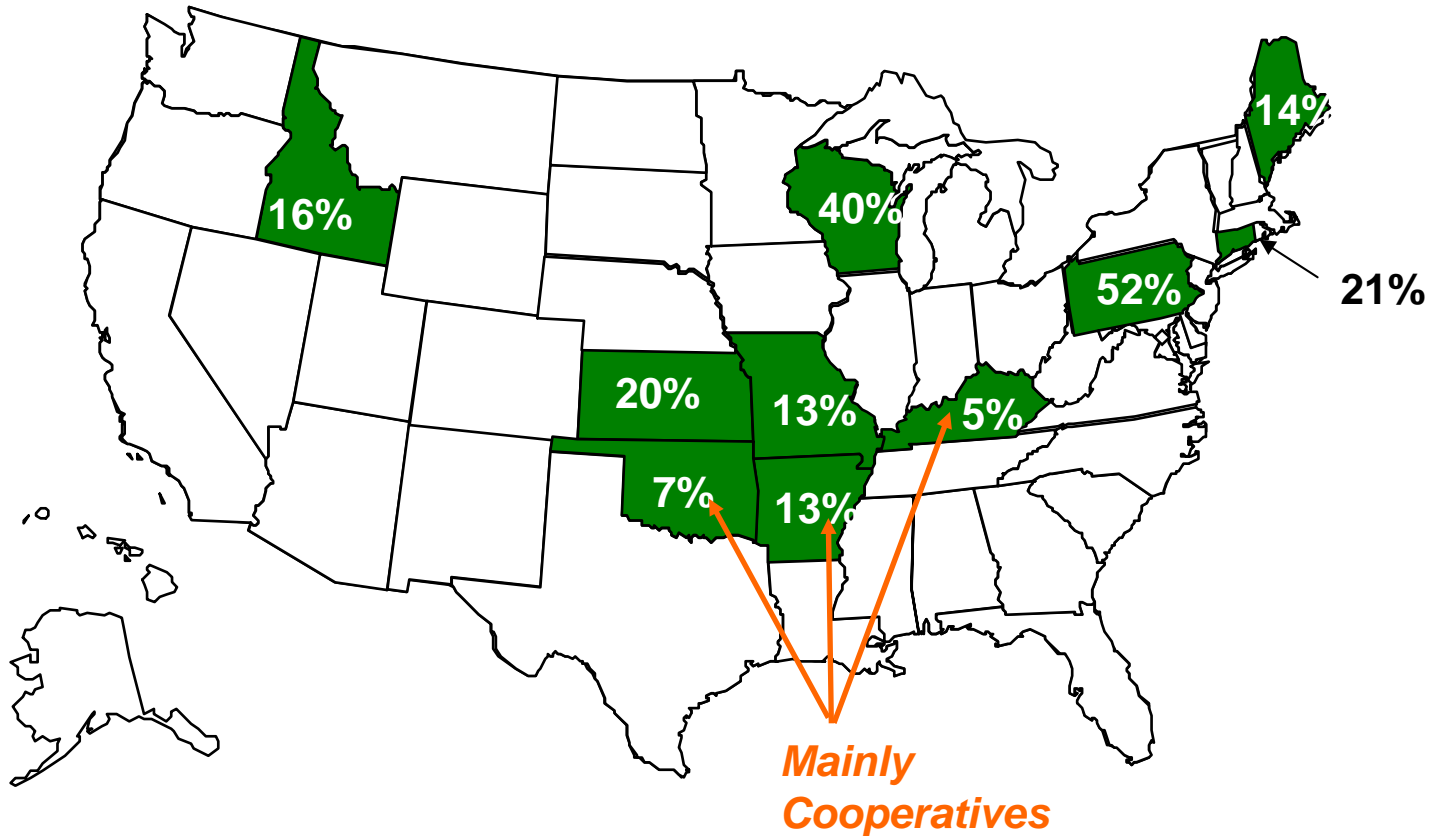


Advanced Metering Penetration By Ownership





Advanced Metering Penetration Top Ten States





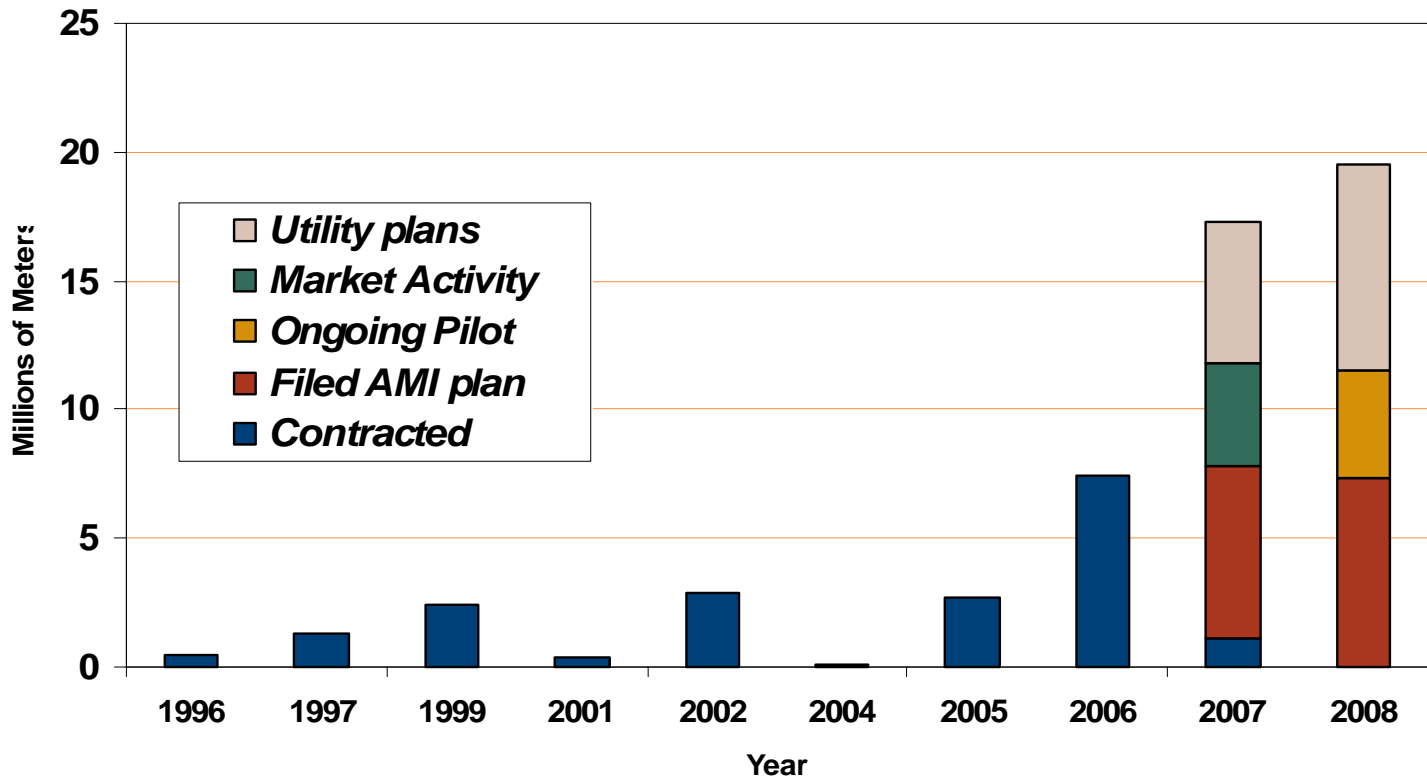
Advanced Metering Developments

- Interest and investment in advanced metering continues to gain momentum
- AMI functionality is increasing
 - Remote connect/disconnect and home-area network connectivity have been added to lists of specification in recent RFPs
- State activity increased
 - PURPA 1252(b)
 - AMI initiatives underway at several states
- Number of meters planned or installed increased nearly three-fold from 2005 to 2006



Advanced Metering Market Activity

Actual and Projected



Source: UtiliPoint International

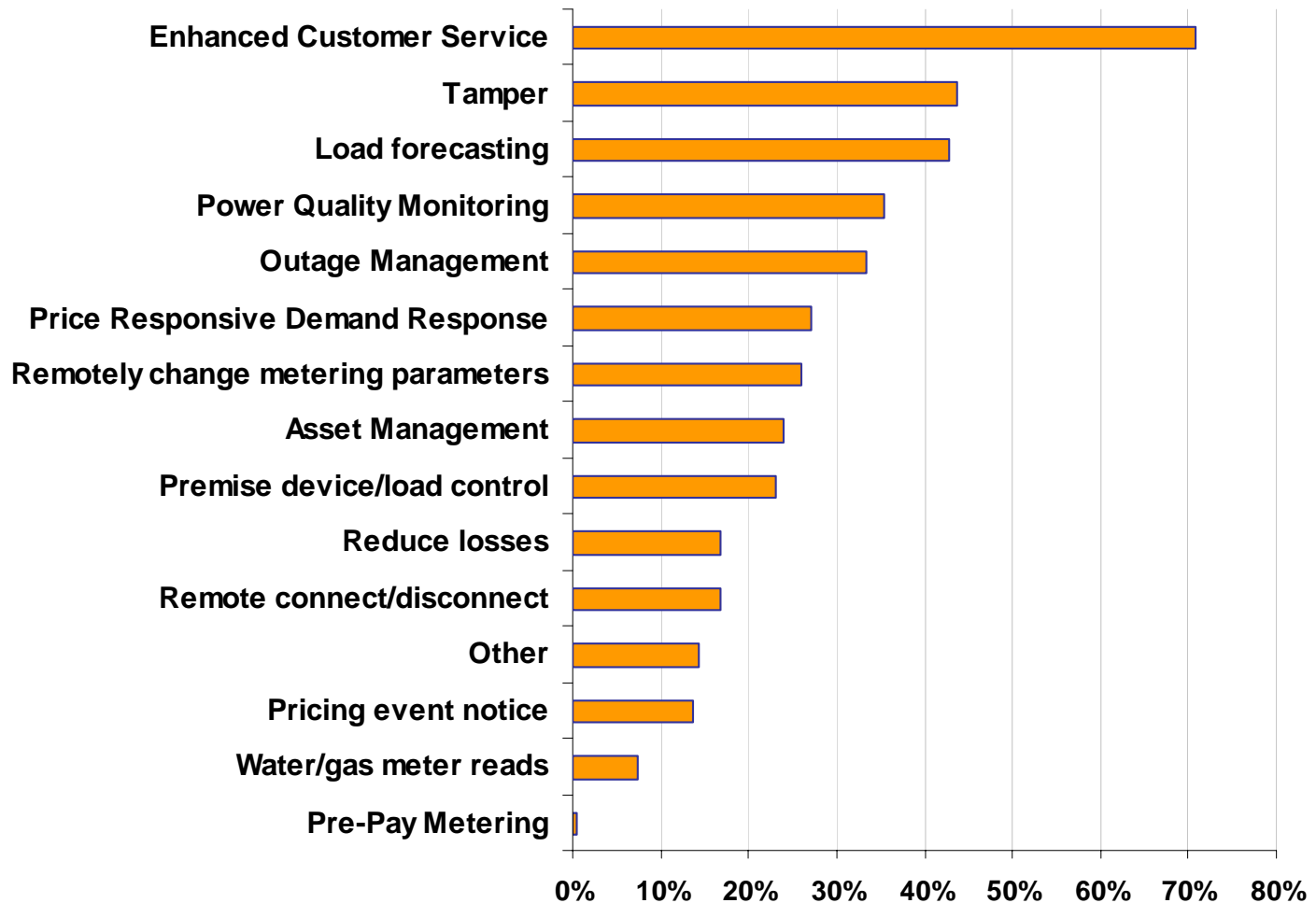


Functions Provided by AMI

- ability to provide time-stamped interval data for each customer, at least hourly, but often as short an interval as 15 or 30 minutes,
- option of remote disconnect/connect for some or all meters,
- ability to remotely upgrade meter firmware
- ability to send messages to equipment in or around customer home to support demand response,
- positive notification of outage and restoration (promising both significant cost savings and customer service benefits),
- capability to remotely read meters on-demand,
- voltage flagging capability if voltage is outside of range configurable by utility,
- voltage interval reading capability at same interval as meter readings,
- tamper flagging capability,
- memory to store specified number of days of readings on meters (anywhere from 7 to 45 days, depending on the utility),
- support for some form of prepay metering,
- daily register reading of meters, often at midnight,
- inclusion of data warehousing systems -- seen as increasingly necessary to store large volumes of data gleaned from AMI and meter data management systems (MDM),
- tight integration with MDM into overall operations management systems -- with links to accounting, billing, reporting, outage management, and other operations systems, and
- ability to extend AMI and smart grids to multiple in-home appliances connected together as part of a home-area network (HAN).



Uses of AMI





Advanced Metering

Issues and Challenges

- Technical Obsolescence Concerns
- Deployment Decisions
- Interoperability and Open Standards



Implications for Demand Response

- Low advanced metering penetration presents a barrier to greater expansion of price responsive demand response
 - Particularly amongst mass market customers
 - Complicates measurement and wholesale settlement
- Benefits associated with demand response can improve advanced metering cost-effectiveness
- AMI implementation can also assist energy efficiency
 - information on usage in near real-time provides valuable feedback that can encourage efficient consumption
 - If combined with time-based rates, peak consumption can be reduced – thereby reducing the need for new peaking capacity



State AMI Activity

- **EPACT 1252 Proceedings Status Summary (as of July 2007)**
 - States with Open EPACT 1252 Proceedings 27
 - States with Closed EPACT 1252 Proceedings 12
 - States Deciding to Adopt EPACT 1252 2
 - States Deciding not to Adopt EPACT 1252 11
 - States Deferring Decision to Adopt EPACT 1252 4



Questions?

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