

# “Smart” Utility Meters And The Movement Toward Dynamic Pricing: The Need For Effective Consumer Protections

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The AARP logo is displayed in a bold, red, sans-serif font. The letters 'A', 'A', 'R', 'P' are connected, with a small 'SM' trademark symbol to the upper right of the 'P'.

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Advancing Fairness  
in the Marketplace for All

## Presenter – Janee Briesemeister

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- Senior Legislative Representative, Government Relations and Advocacy, AARP
- Works with AARP's state offices on consumer oriented legislative and regulatory issues, primarily relating to affordable energy, telecommunications and water services.
- AARP is the nation's leading advocacy organization for people age 50 and over.
- Prior to joining AARP, Janee was a Senior Policy Analyst at Consumers Union, the independent, non-profit publisher of *Consumer Reports*.



# Presenter – John Howat

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- Has been involved with energy program and policy issues since 1981.
- Areas of expertise include: design and analysis of low income energy affordability and efficiency programs, low-income utility consumer protections, energy expenditure and burden analysis, prepayment and advanced metering, utility credit reporting and utilization of credit scores, analysis of program participation and outreach efforts, and utility rate design.
- At NCLC over the past eleven years, John has represented public agencies and non-profit organizations as an expert witness in proceedings before state utility regulatory commissions across the country and has managed a broad range of regulatory, legislative and research projects in support of low-income and elderly consumers' access to affordable energy and utility services.



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# **“Smart” Utility Meters And The Movement Toward Dynamic Pricing: *The Need For Effective Consumer Protections***

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# Outline and Goals

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- Smart meter background and technology
- Dynamic pricing of utility service
- The cost impact on consumers least able modify home energy consumption in response to dynamic “price signals”
- Remote disconnection of essential utility service
- Prepaid utility service
- Privacy issues
- Essential consumer protections to ensure that consumers most vulnerable to the health and safety effects of utility service loss are not harmed by the deployment of digital metering systems
- Regulatory and legislative forums where policy decisions will be made
- Ways to weigh in on utility policy decision-making



## Q: How familiar are you with “smart meters”?

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- A lot
- Some
- I have heard of them, but don't know much detail
- I have no idea what you are talking about

# Smart meters

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- Smart meters: meters with digital, 2-way communications capability which can store data
- Remote reading, connection, disconnection and outage detections
- Two-way capability and storage enables “dynamic pricing” (e.g. time of use rates) and pre-payment.
- Customer side of the meter: In Home Display Devices, or internet portal

## Q: What are other names for “smart meters”?

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- Digital meters
- Advanced Metering Infrastructure
- Advanced Service Delivery Meters
- All of the above

# New technology

“smart” meter



Type of in-home display

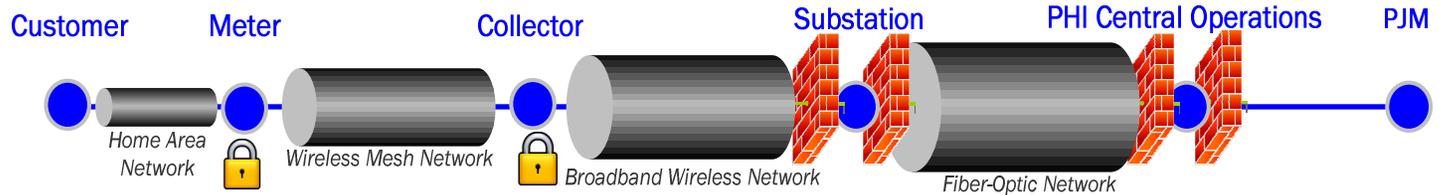
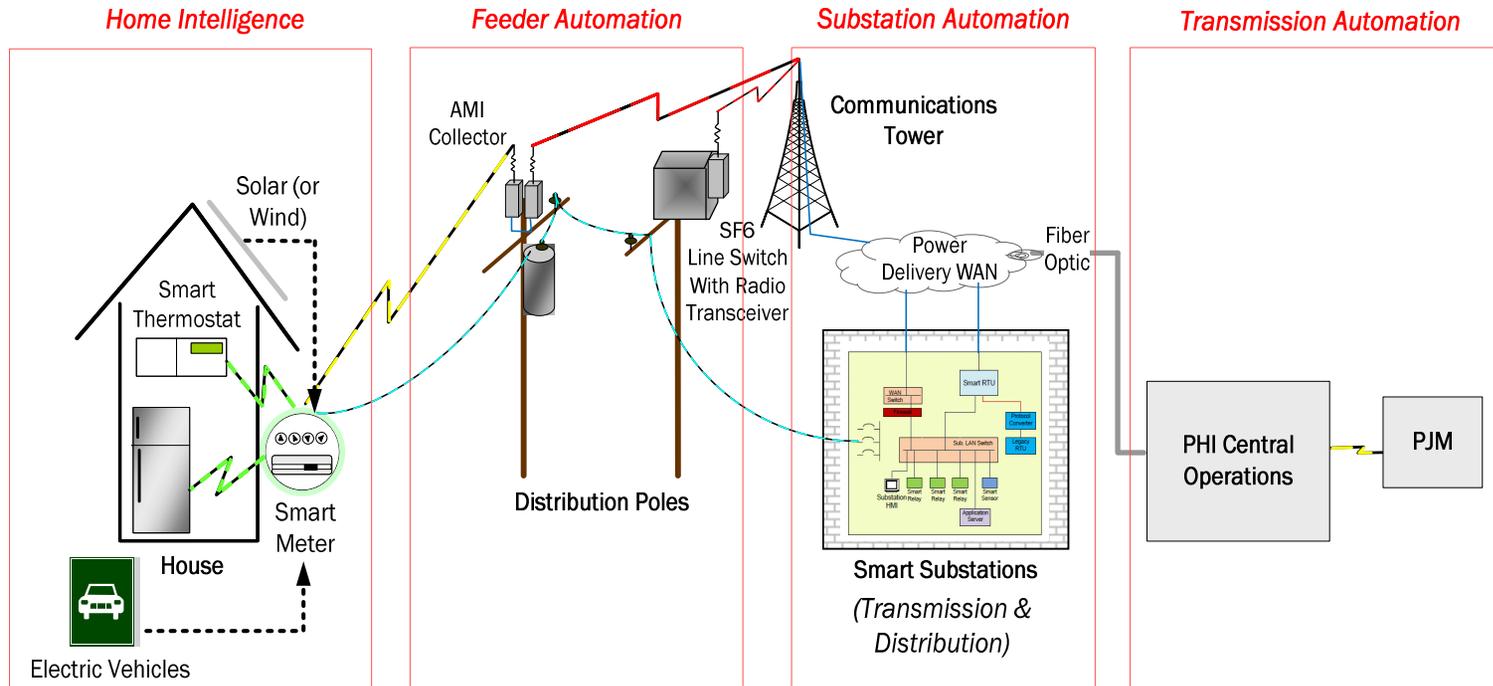


# Smart grid

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- Transmission and distribution investments to “modernize” communications, sensors, grid design and operation: manage outages; energy storage; intermittent (renewable) resources
- Smart meters are one component of Smart Grid
- Smart Grid is not dependent on Smart meter installation

# Smart Grid



# State v. Federal Jurisdiction

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- Federal policies promote smart grid/meters, including ARRA and the Energy Policy Acts of 2005 and 2007—NOT mandatory
- FERC regulates wholesale markets—some involvement with smart grid/and demand response
- States regulate retail rates (distribution only in deregulated states); includes cost recovery for meters and related communications system, distribution and in-state transmission costs
- States also responsible for consumer protections around rates, billing and disconnection





## Q: What is “dynamic pricing”?

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- Rates change in real time
- Rates charged differ based on time of day, day of week, season
- Rates higher during critical periods, such as very hot summer days
- Rebates for cutting usage during peak periods
- Any or all of these

# New Pricing Methods:

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- Dynamic pricing—based on when kilowatt hour is used
- Time of use—electricity usage priced differently at different hours, usually determined in advance. For example, peak at 2-7 pm daily or in summer months
- 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
- Peak Time Rebate—rebate for decreased usage during critical peak period
- Prepayment—pre-pay for usage; meter shuts off when money runs out

## Theory Behind Dynamic Pricing

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- Assumption that all or most customers can shift usage or reduce usage according to their “sensitivity to price”
- Control usage with in-home displays, web based information and “smart” appliances
- Empower consumers to save money by shifting usage to off peak
- Reduce system peak load and reduce generation supply prices

# Consumer Concerns With Dynamic Pricing

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- Consumers want and need stable and fixed prices for service essential to their health and well being
- Time of Use rates have proven unpopular with consumers
- Would dynamic pricing be mandatory?
- Concern about bill impacts on some customer groups: low income; elderly; disabled. These groups generally have lower “elasticity” and cannot shift usage to other times of day
- Also others such as shift workers, those who work at home, stay-at-home parents.



# Costs and Rate Impacts of AMI

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- Costs and pricing impacts of advanced metering infrastructure are not evenly distributed among residential ratepayers
  - Energy burden impacts
  - Prospective penalties to elderly and low-income customers

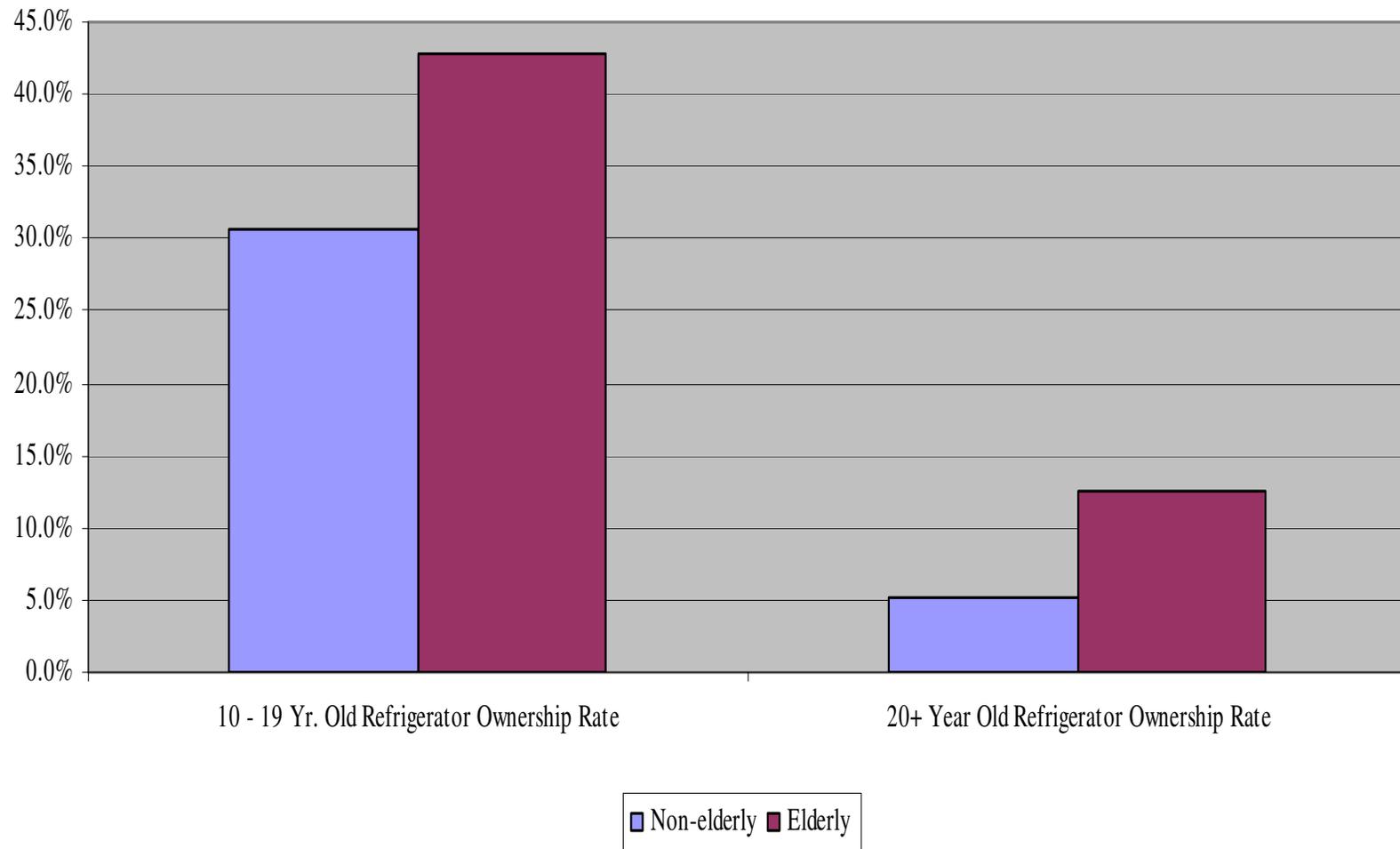
# Ability to Adjust to Price Signals

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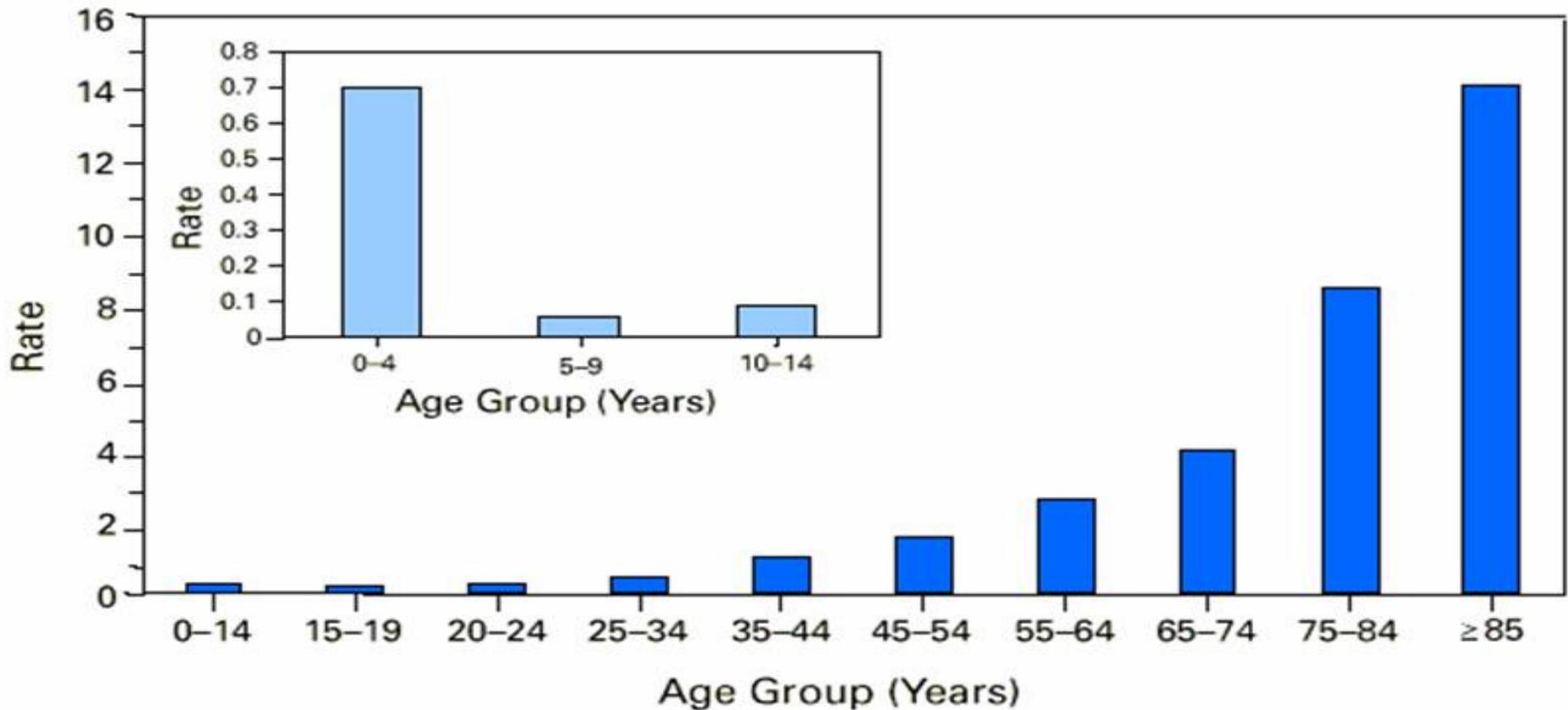
- Dwelling Unit
  - Size
  - Energy Efficiency
- Household Appliances
  - Inventories
  - Age
  - Access to High-efficiency and Programmable Appliances
- Vulnerability to Extreme Temperatures
- Tech-savvy



## Elderly and Non-elderly Refrigerator Ownership Rates by Age of Refrigerator



**FIGURE 1. Average annual rate\* of heat-related deaths†, by age group — United States, 1979–1996**



\*Per 1 million population.

†Underlying cause of death attributed to excess heat exposure classified according to the *International Classification of Diseases, Ninth Revision*, as code E900.0, "due to weather conditions."

# Remote Disconnection Capabilities of AMI

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- Disconnection of traditional, analog utility meters
  - Requires utility field personnel to physically shut off the meter at the customer's home or place of business
  - Limited by the number of field personnel and vehicles available to the utility company
- Advanced Metering Infrastructure (AMI)
  - Provides utility companies with the capability to disconnect service remotely
  - No need to send field personnel to the residential customer's home.

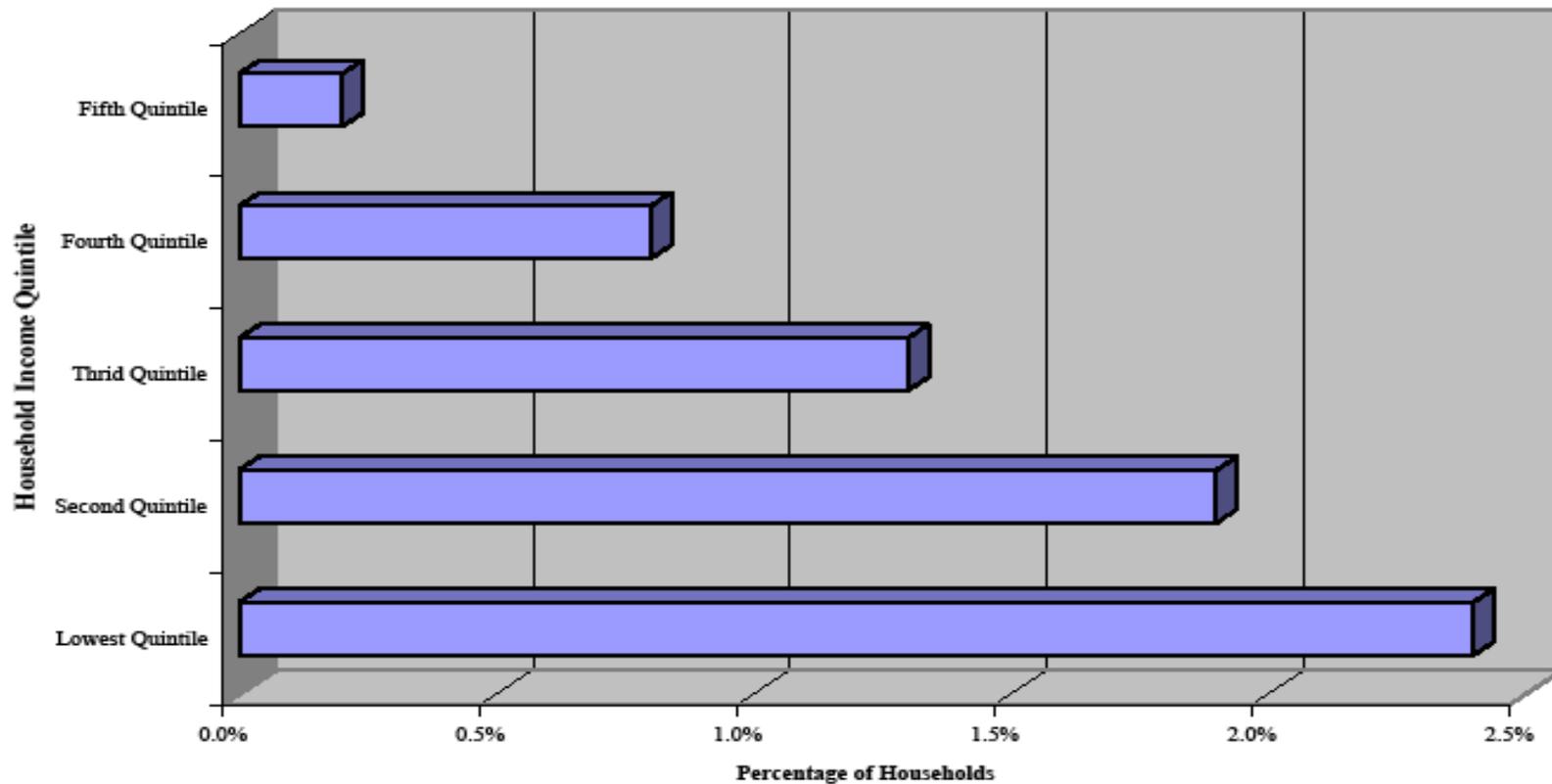
# Prepaid Billing Capabilities of AMI

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- Many AMI systems include capacity to provide utility service providers with the option to offer or require prepaid billing programs
  - Customers pay in advance for service
  - May be delivered with or without in-home readout device to monitor billing credits and usage
  - When billing credits are used, service is disconnected remotely
  - Similar in function to prepayment meters that are prevalent in Great Britain and parts of the US
  - Marketed to payment troubled customers
  - Often more expensive than traditional, credit-based service



### Percentage of U.S. Households with Electric or Natural Gas Utility Service Disconnection in 1998

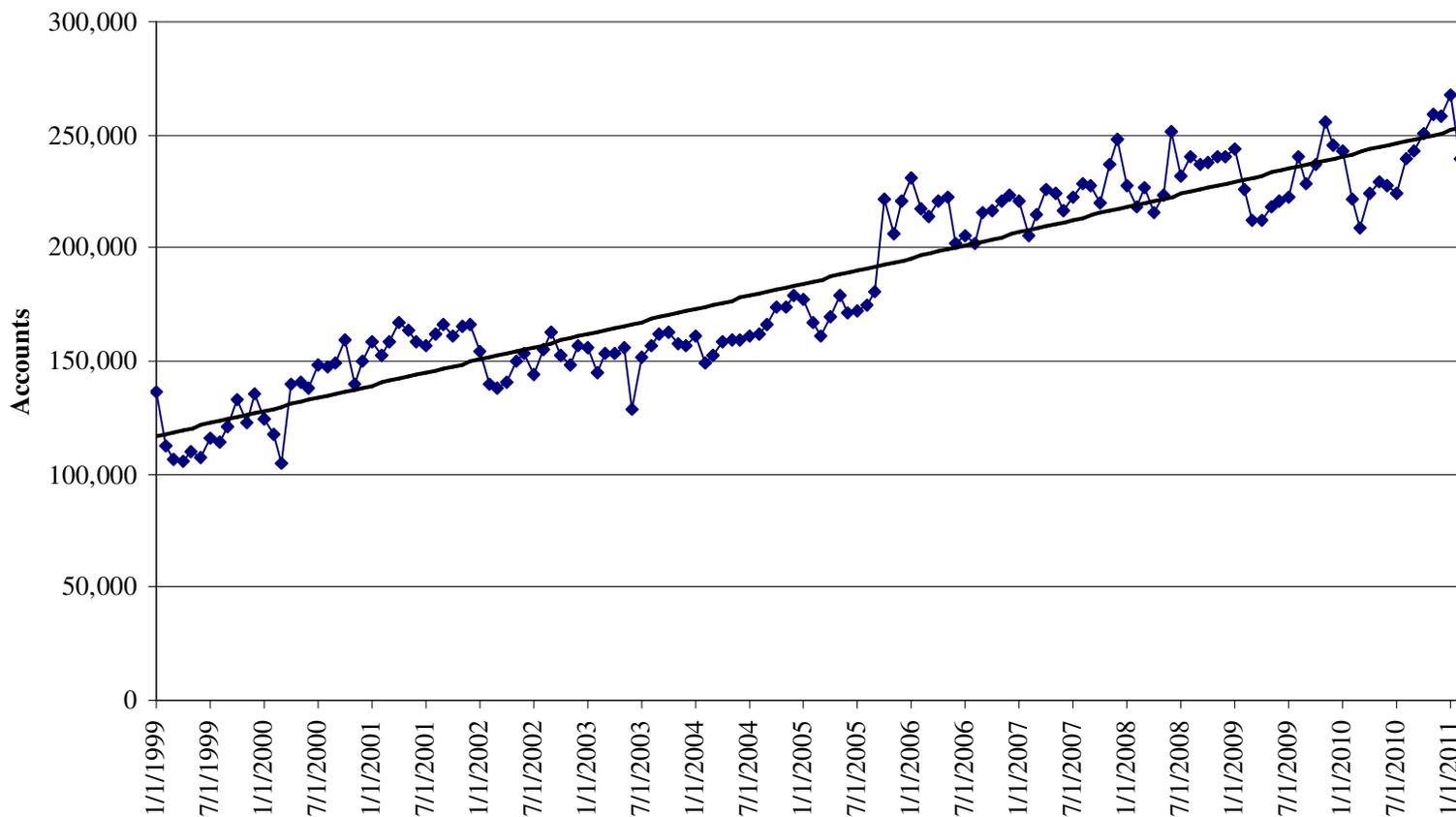


Source: U.S. Census Bureau, Survey of Income and Program Participation, 1996 Panel, Wave 8, Table 18 B.  
Release Date: May 2003

National Consumer Law Center  
March 2006



## Iowa Electric and Natural Gas Utilities: *General Residential Accounts Past Due*



# Privacy and Security Concerns

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- The technology transmits and stores usage and other personal information that could reveal when a person is home, how many people are home, and eventually what appliances are in use
- Such information could be used/misused by marketers, scammers, thieves
- Debate about who owns the information—consumer or the utility

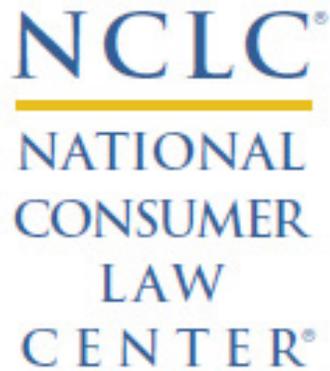
# Cyber-security

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- Fear of hacking into network not only to access personal information but to attack the electric grid
- Standard setting bodies and government investigating and discussing standards now; yet meters are being deployed. Could result in additional costs for upgrades.
- Issue of electro-magnetic radiation also raising alarms.

# The Need for Essential Consumer Protections

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# Costs

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- Smart meter proposals must be cost-effective
- Utilities must share the risks associated with new technologies
- Utilities must share the risks re benefits used to justify the investment.

# Pricing

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- Time-based or dynamic pricing must not be made mandatory
- Consumers should be allowed to opt-in to dynamic pricing options
- Pre-paid service should not be allowed

# Consider alternatives

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- Regulators should assess alternatives to smart meters to meet the same load management goals
- In particular consider direct load control programs

# Consumer Protection

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- Smart meters should not result in reduced levels of consumer protections,
- Especially relating to implementation of remote disconnection
- Traditional billing and dispute rights should be retained



# Privacy

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- Privacy and cyber-security concerns must be addressed prior to a smart meter rollout

# Consumer Education

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- Utilities and policymakers should include comprehensive consumer education and bill protection programs in any evaluation or implementation of smart meters

# Accountability

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- Investments in smart grid need to be verifiable and transparent
- Utilities need to be held accounts for the costs they want consumers to pay and for the benefits they promise to deliver
- Costs should be reasonable and prudent

# Specific Advocacy Considerations

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- Enhancement and No Degradation of Regulatory Consumer Protections
  - Premise Visit at time of Disconnection
  - Disconnection Protections
    - Temperature/Seasonal
    - Vulnerable Populations
  - Deferred Payment Agreements
    - Reasonableness Standard
    - Renegotiation
  - Prohibition against Prepaid Electric Service
  - Disconnect/Reconnect Fees and Timeframes
- Payment Assistance and Arrearage Management Programs for Low Income Consumers



# Regulatory and Legislative Forums

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## Federal—

- policy guidances on issues including privacy, security, technological standards; ARRA grants; R&D
- Federal Energy Regulatory Commission (“FERC”)
- Department of Energy

# Forums, cont.: States

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- The utility will have to submit application for approval of cost recovery at regulatory commission.
- A few states (ex, TX, PA) require meters by statute. Utility must still seek approval for cost recovery.
- Issues include overall cost, prudence, stranded costs, recovery (rates v. riders), ongoing recovery v. “used and useful”, risk under cost-benefit analysis

# Time based rate plans:

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- Retail rate plans such as time-based rates also must be approved by regulators (except in deregulated states)
- Pilots also require approval
- Issues for advocacy include mandatory v. optional rate plans, opt-in v. opt-out, bill protection, rebates v. critical peak pricing, prepayment, etc
- Seek protections during regulatory proceeding and/or incorporate into law—time based rates should be optional



## Consumer Protection Advocacy – Never too Late!

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- Even where meters already approved and being installed, it is not too late to seek enhanced consumer protections.
- Opportunities include amendments to existing consumer protection regulations and new amendments in state law



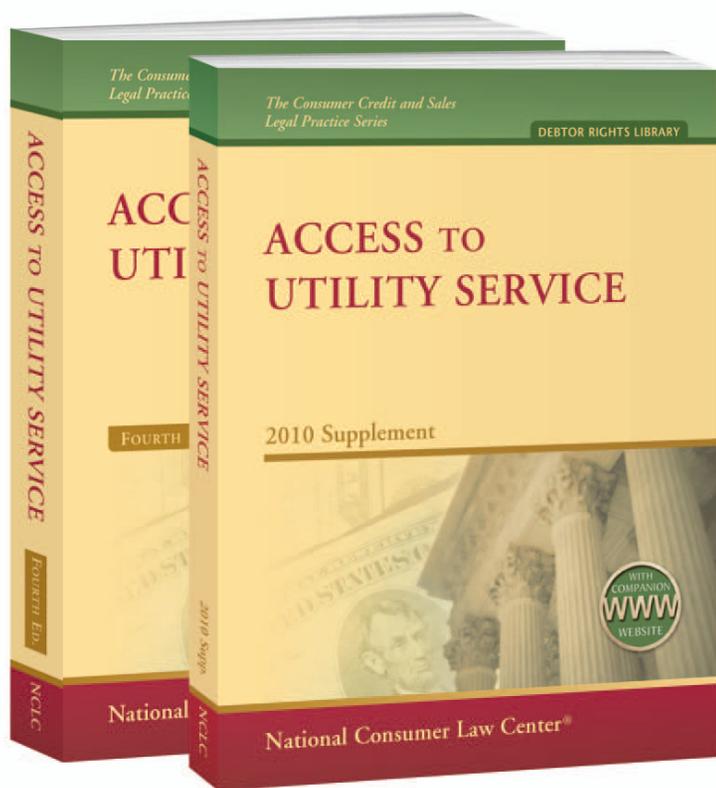
## For more information about what is happening in your state

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- Find the state consumer advocate for your state from the National Association of State Utility Consumer Advocates: [www.nasuca.org](http://www.nasuca.org)
- For information about AARP activities in your state: Janee Briesemeister, [jbriesemeister@aarp.org](mailto:jbriesemeister@aarp.org) and I will put you in touch with the AARP office in your state
- For information about how your state's consumer protections stack up against other states' protections: John Howat, [jhowat@nclc.org](mailto:jhowat@nclc.org)



# For More Information on Utility Service and Consumer Protections



*4<sup>th</sup> Edition & Supplement  
of the Definitive Treatise*  
**from National Consumer  
Law Center**

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