MASSACHUSETTS
DEPARTMENT OF
ENERGY RESOURCES

Smart Metering in Massachusetts

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Key Players in Energy Policy in Massachusetts

Massachusetts has a deregulated energy system.

- **Department of Energy Resources (DOER)** – state energy policy office
  - Mission: create a clean, affordable, resilient, and equitable energy future for everyone in the state
  - Part of the Governor's Administration. Supports state in transitioning away from fossil fuels, growing clean energy, and reducing electric rates
  - Work with the DPU, private investor-owned gas and electric utility companies, advocacy groups
- **Department of Public Utilities (DPU)** – state regulator
  - Oversees investor-owned electric, natural gas, and water utilities
  - Approves or rejects electric rates, utility investments, and grid modernization
- **Electric Utilities** – investor-owned, private companies
  - Request gas and electric rate increases to cover cost of operating and modernizing the grid
  - Receive guaranteed return on investment, determined by the DPU
- **Attorney General's Office (AGO)** – state advocate for all ratepayers
- **Advocacy groups** – environmental, ratepayer protection, for-profit clean energy developers, etc

Smart Meters in Massachusetts

In 2022, the DPU approved $1B+ utility investment in advanced metering infrastructure (AMI)

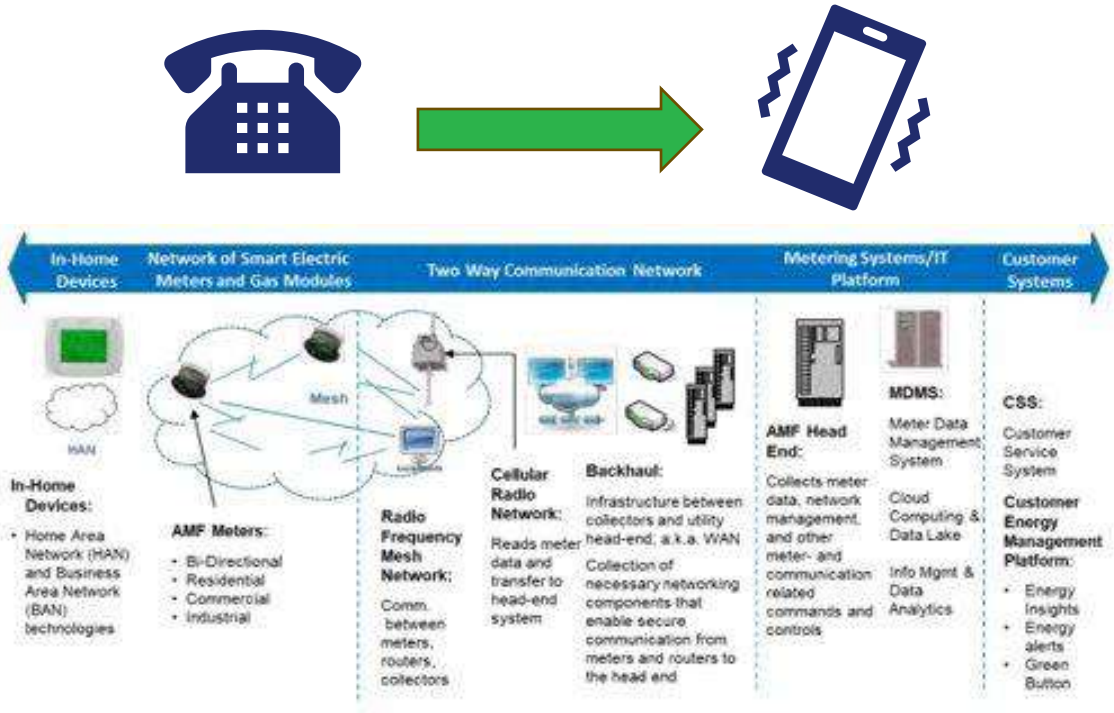


Figure 4-1: AMI Technology Elements

- MA's 3 utilities are currently rolling out their AMI meters
- AMI includes smart meters at each home and building, sophisticated mesh communications network, utility backend systems
- AMI automatically collects and transmits near real-time (~15-min) electricity usage data between customers and the utility
- Interval data can help design policies that align customers' usage with their actual costs to the system
- DPU approved AMI because of its ability to enable:
  - Time-varying rates (TVRs)
  - Load management
  - Targeted customer outreach

AMI Data Provides Granular Insight into Consumption

AMI data enables utilities to monitor customer load profile changes to identify risks and intervention opportunities.

- The utilities can analyze AMI data to:
  - **Monitor energy limiting behavior** to identify impacts to affordability and inform targeted protections
  - **Identify non-shiftable loads** (e.g., medical devices) and protect households if TOU rates increase energy burden
  - **Target affordable access to enabling technology** to low-income households that will benefit
  - **Identify other customers experiencing undue energy burden**
- A 2024 state law required the utilities to jointly establish a *centralized AMI data repository*
  - The utilities' proposals are in front of the DPU for review and DOER is engaged in making sure AMI data can be leveraged to protect customers, identify those with energy burden, and target protections and programs.

Market and Regulatory Systems

Supply, transmission, and distribution are separate domains managed and regulated by different parties

Supply (generation and capacity)

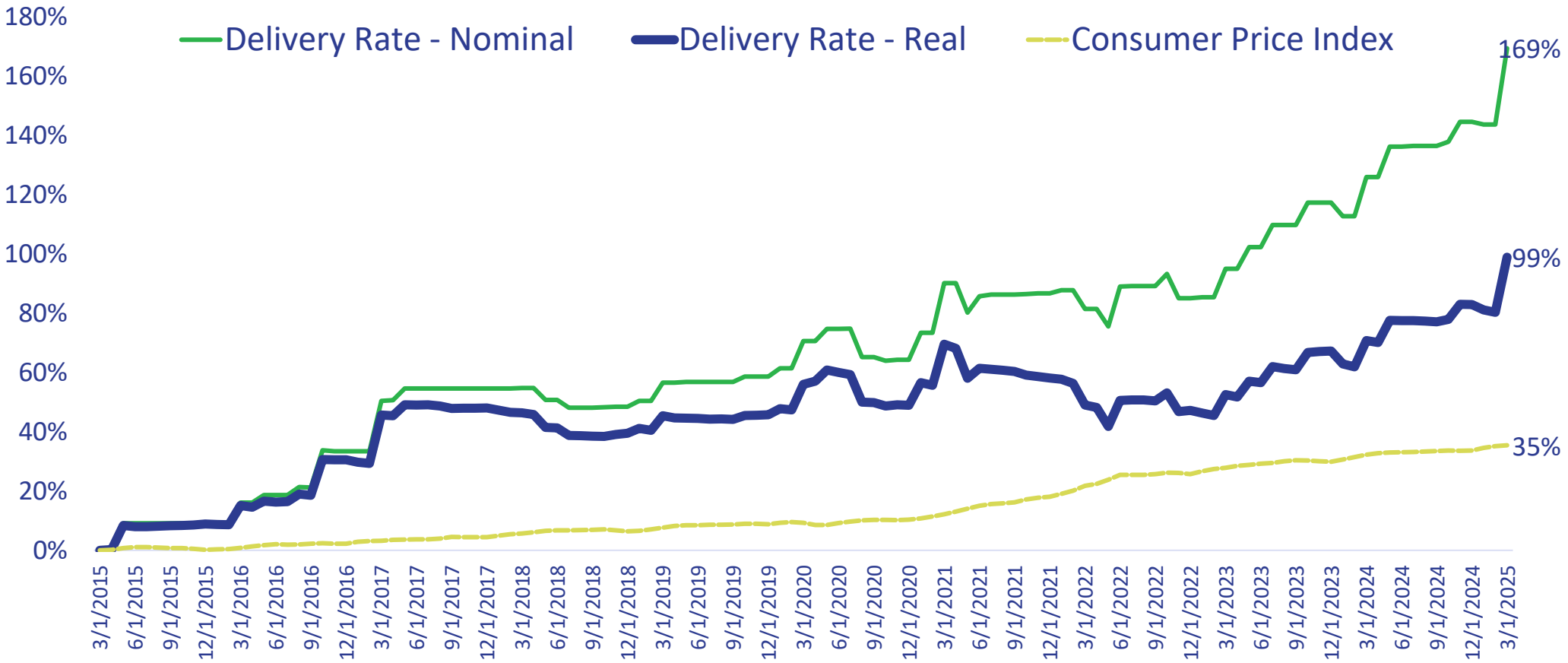
- Generators are owned by private independent power producers (IPPs)
- The independent system operator (ISO) manages energy, capacity, and ancillary services markets that decide how generators are dispatched and paid for all of New England
- The federal government sets standards and regulates

Distribution

- Electric distribution companies (utilities) own and operate distribution infrastructure
- Utilities are private monopolies regulated by the Department of Public Utilities

- **Transmission**
  - Private transmission owners (TOs) invest in and maintain infrastructure
  - The federal government regulates transmission projects (i.e., approves costs)
  - The ISO conducts long-term transmission planning

Electric prices (rates) in Massachusetts are growing faster than inflation



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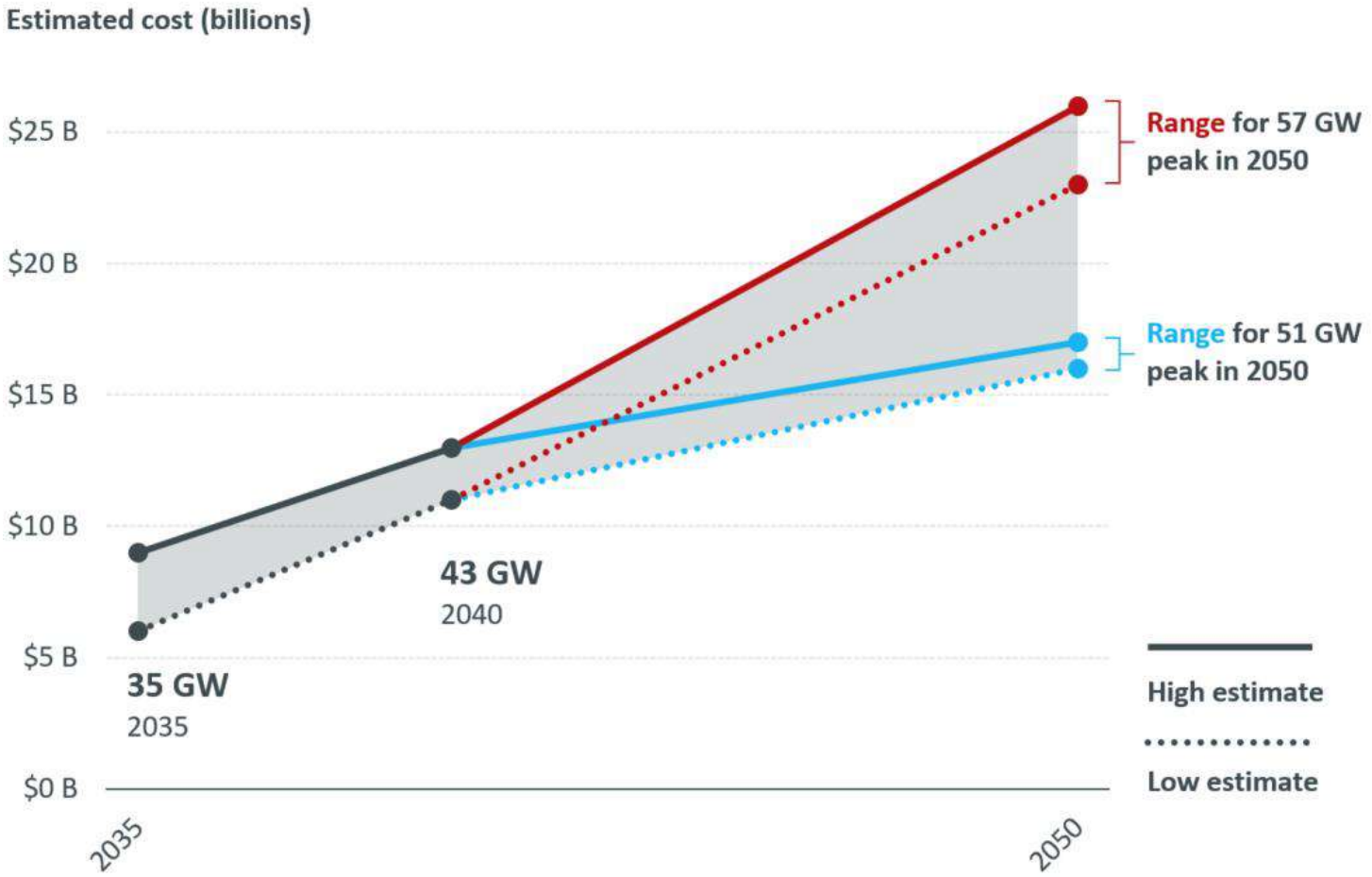
Load management is needed to contain costs

Increasing the peak demand necessitates expensive new infrastructure investments



ISO-NE estimates that unmanaged load growth will require **$7-9 billion in new transmission costs**

Source: Charles Dawson, DOER. Expert Presentation Session on Performance Mechanisms (Nov. 2025), p. 52.

Source: ISO-NE, 2050 Transmission Study (Feb. 2024), Figure 2-1, p. 16

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AMI enables time-varying rates which can reduce costs

Short-term savings opportunities

Shifting load away from peak **reduces generation costs and the allocation of capacity and transmission costs**

Shifting 6% of consumption from peak to off-peak periods (conservative estimate) could save National Grid's residential Basic Service customers approximately:[1]

- **$31.3 million in transmission costs**
- **$9.8 million in capacity costs**
- **$6.6 million in energy costs**

[1]6% peak demand reductions estimated by DOE "Customer Acceptance, Retention, and Response to Time-Based Rates from the Consumer Behavior Studies" (2016). 6% likely represents a lower bound as more automated load management technologies are and will become available

Long-term savings opportunities

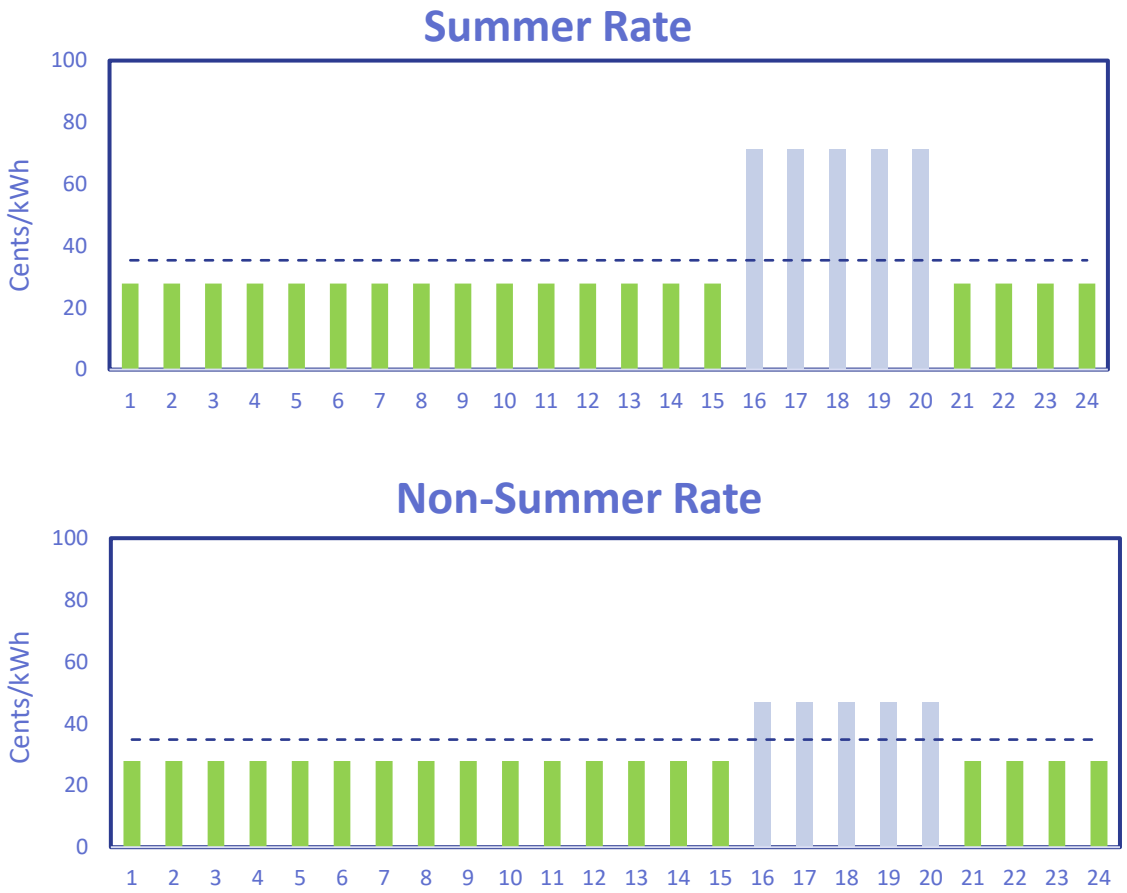
Reducing peak demand **avoids investment in new infrastructure** to accommodate load growth, including

- Transmission
- Capacity
- Distribution

Increasing total demand faster than peak demand (i.e., new load is effectively managed), **suppresses rates**

DOER's recommendation - Implement time-of-use (TOU) rates as soon as possible

Illustrative TOU rate based on National Grid (2025)



TOU Design Principles

- **Default + robust customer protections**
  - All customers are enrolled
  - Low-income and vulnerable customers can opt out + hold harmless protections
  - Robust marketing education and outreach
- **Comprehensive**
  - Include all costs that vary with time (supply, transmission, and distribution)
- **Cost-reflective**
  - Reflect the "marginal cost of electricity"
  - Seasonal
- **Customer-centric (3-6 hour peak period)**
  - Peak happens during the same hours all year
  - Long enough to reliably capture high-cost hours; short enough for customers to reasonably manage their use

*This illustrative example has a 1:1.5 peak ratio for distribution costs. In practice, this differential can be identified via a marginal cost of service study

Load Management Marketplace

AMI data insights and TOU rates interact with other load management programs

Connected Solutions:

- "Bring Your Own Device" demand response program
- Customers earn performance-based incentives for discharging battery storage or curtailing energy use during utility-called peak events

Clean Peak Energy Standard:

- Portfolio standard requiring retail electricity suppliers to procure an increasing percentage of certificates earned by qualified clean energy resources that generate or discharge during peak windows
- Bonus multipliers for performing during the highest-demand hours

EV Managed Charging Programs:

- Utility-administered programs that enroll EV drivers and smart chargers into off-peak charging schedules, using time-of-use rates and monthly performance incentives

Lessons Learned

- Designate who is responsible for AMI-enabled advanced rates and data governance from the beginning
- Anticipate years of stakeholder engagement
- Understand utility incentives to deploy AMI-based solutions
  - The utility wants to deploy AMI… buts does it want TOU rates? Does it want to share AMI data with third-parties?
- The technical details matter
  - Ensure the utility commits to providing the exact technical capabilities the regulator assumes AMI offers
  - Engage technical expertise to scrutinize the meters and data sharing plan

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Thank You!