MASSACHUSETTS
DEPARTMENT OF ENERGY RESOURCES

Policy Fixed Charge and Heat Pump Rates

Energy Efficiency Advisory Council's Lunch and Learn

April 16, 2025

This presentation explores the Massachusetts Interagency Rates Working Group's recommendation to further consider a non-bypassable public benefits fixed charge and seasonal heat pump rates.

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Executive Summary

This presentation explores the Massachusetts Interagency Rates Working Group's recommendation to further consider a non-bypassable fixed charge for public benefit programs and implementing seasonal heat pump rates in the near-term.

Critical programs that advance efficiency and decarbonization, such as Mass Save, provide widespread benefits to participants and non-participants alike. Currently, most of the program costs are collected from ratepayers through volumetric energy charges ($/kilowatt-hour). This presentation explores advantages and disadvantages of our existing approach and the alternative of using a monthly fixed charge, including the impacts on conservation, electrification, cost-reflectiveness, bill stability, and affordability.

This presentation also explores existing and proposed heat pump rates to promote efficient electric heating adoption, including differences in design, bill impacts, and opportunities for further stakeholder engagement.

Background

Interagency Rates Working Group (IRWG)

Context and Purpose

- Existing electric rates jeopardize the Commonwealth's clean energy goals as they remain a barrier to building and transportation electrification
- Massachusetts Interagency Rates Working Group (IRWG) was formed to advance near- and long-term electric rate designs and ratemaking that align with the Commonwealth's decarbonization goals by prioritizing the reduction of energy burden while incentivizing transportation and building electrification
- Includes representatives from the **Executive Office of Energy & Environmental Affairs** (EEA), the **Massachusetts Clean Energy Center** (MassCEC), the **Department of Energy Resources** (DOER), and the **Attorney General's Office** (AGO)

Near-Term Rate Strategy and Recommendations

- Purpose: identify rate designs that better support the adoption of electrification in MA prior to the widespread deployment of AMI meters that will enable additional, more advanced electric rates
- Recommendations: (1) All EDCs offer an optional, **seasonal heat pump rate,** with differentiated volumetric rates to reduce energy burden for customers transitioning from gas heating to electric heat pumps and (2) **consider an additional non-bypassable fixed charge**

Long-Term Ratemaking Study and Recommendations

- Purpose: identify advanced rate designs and alternative regulatory mechanisms that better support the adoption of electrification in MA in the long-term
- Recommendations: (1) default time-of-use rates; (2) alternative rate offerings longer-term; (3) comprehensive regulatory reform; and (4) expand non-ratepayer funding

Pillars of Decarbonization to Achieve Net Zero

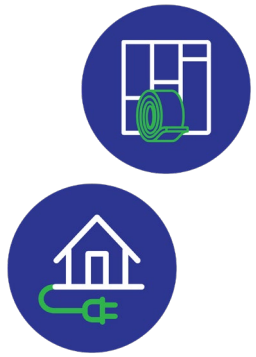
Electric rates directly impact three of the key pillars of decarbonization

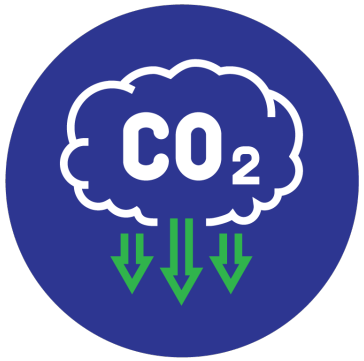
End Use Energy

Transitioning buildings, vehicles, and other end uses away from consuming fossil fuels

Energy Efficiency and Flexibility

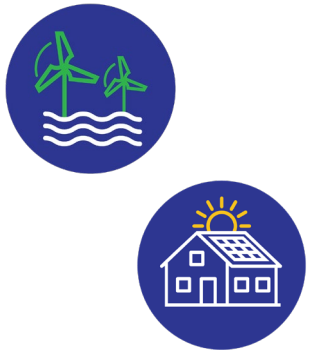
Pursuing energy efficiency and flexibility to enable cost-effective decarbonization





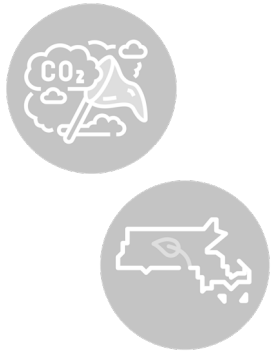
Decarbonizing Energy Supply

Producing zero and low-carbon energy supplies to power our energy system



Carbon Sequestration

Balancing remaining emissions by facilitating carbon dioxide removal from the atmosphere



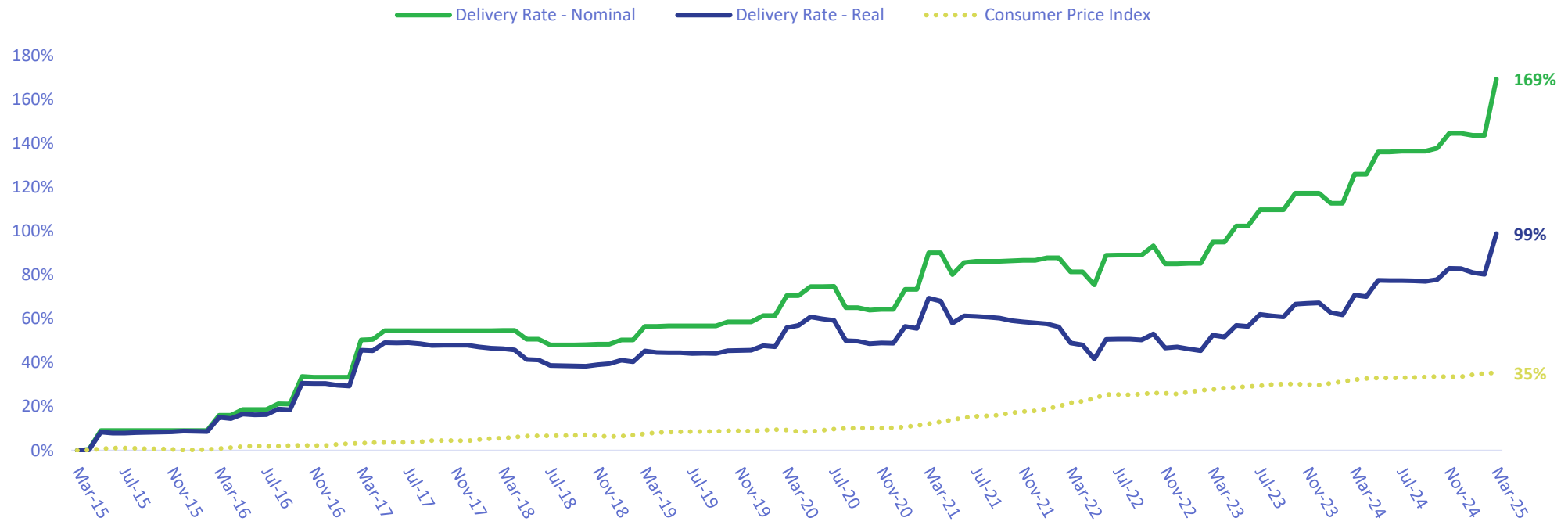
Adapted from Clean Energy and Climate Plan for 2025 and 2030

Electricity rates have outpaced inflation; increasing faster than general consumer prices over the past ten years

Consumers are experiencing a strengthening price signal for conservation or self-generation

Residential Electric Delivery Rate and Inflation

% Change, Relative to March 2015



Source: National Grid Delivery Rates

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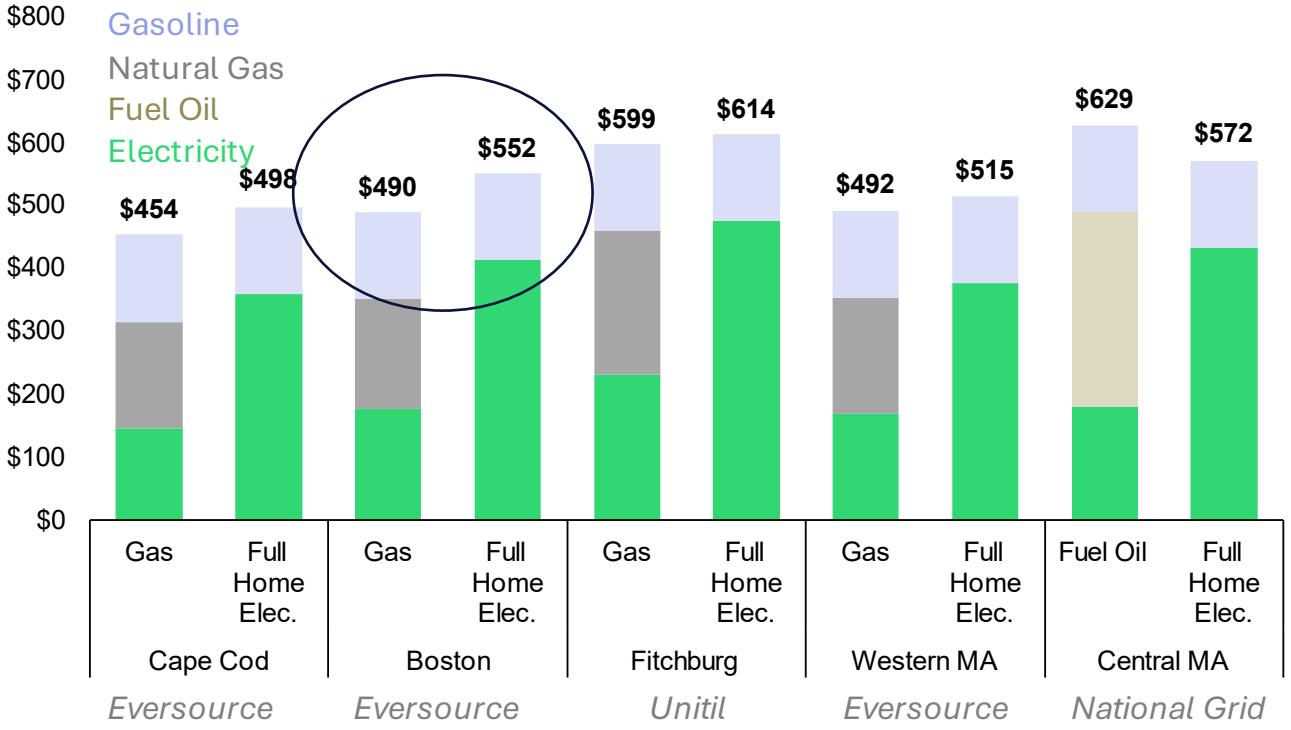
Full home electrification is not cost competitive under current rates

Most customers can expect to pay *more* for energy by electrifying under current rates

Monthly Avg. Energy Expenditure *(Incl. Vehicle Use)*
$/month

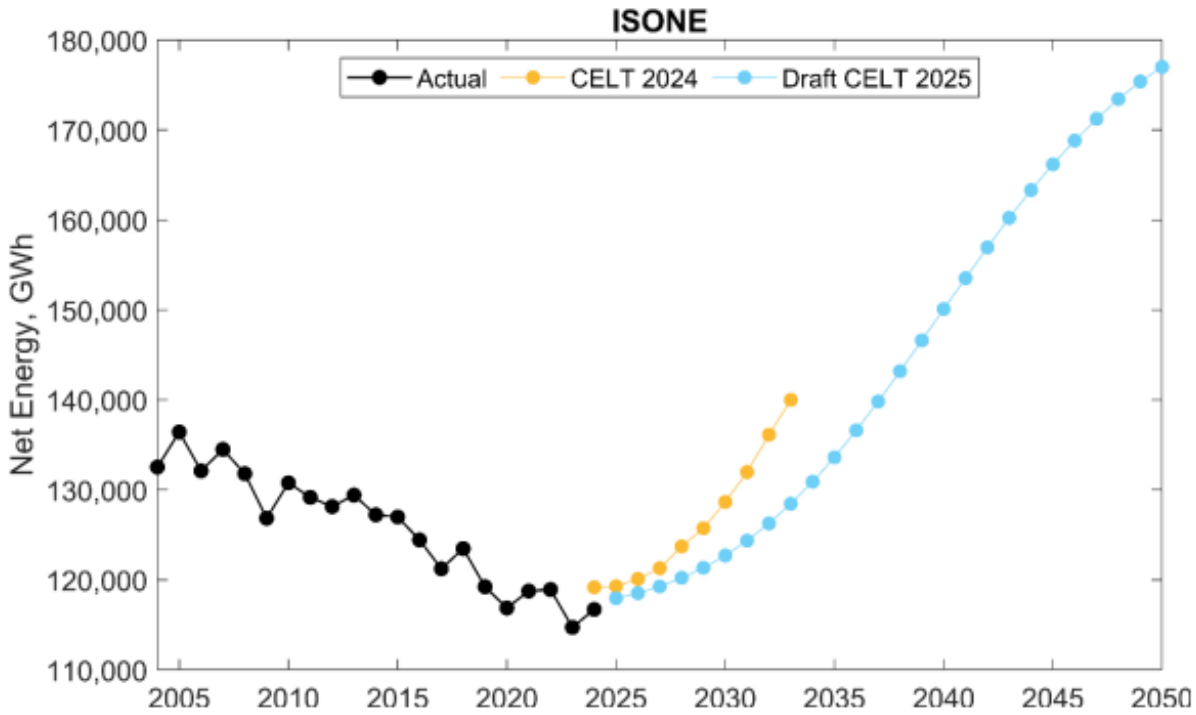


- Electrification is the cornerstone of MA's decarbonization strategy
- To achieve our climate commitments, electric rates must be cost competitive to fossil fuel to support adoption of EVs and heat pumps

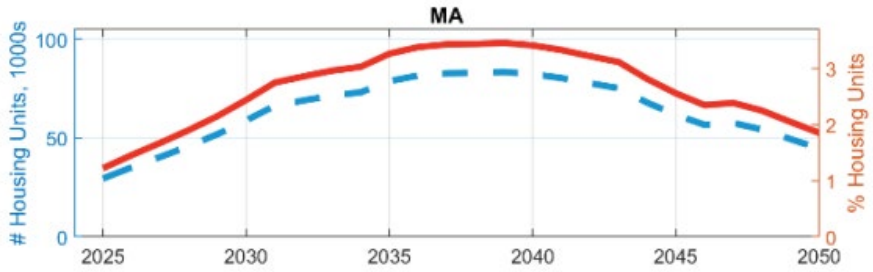
High electric rates are stifling electrification

ISO-NE's most recent load forecast scales back EV and heat pump deployment expectations

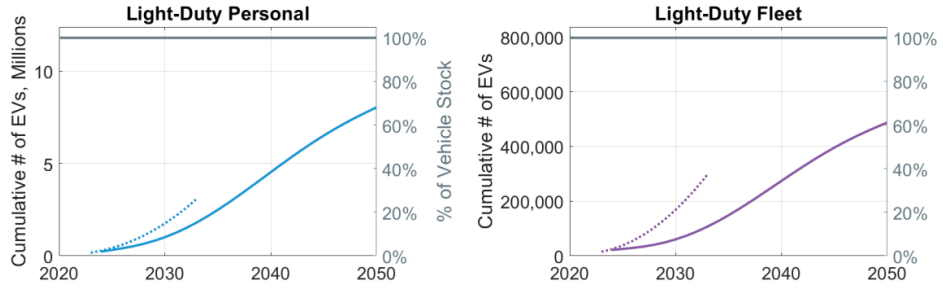
Total Load Forecast, New England



Incremental Heat Pump Adoption, Massachusetts



Electric Vehicle Adoption, New England



Source: ISO-NE Update on the CELT 2025 Forecast (March 19, 2025)

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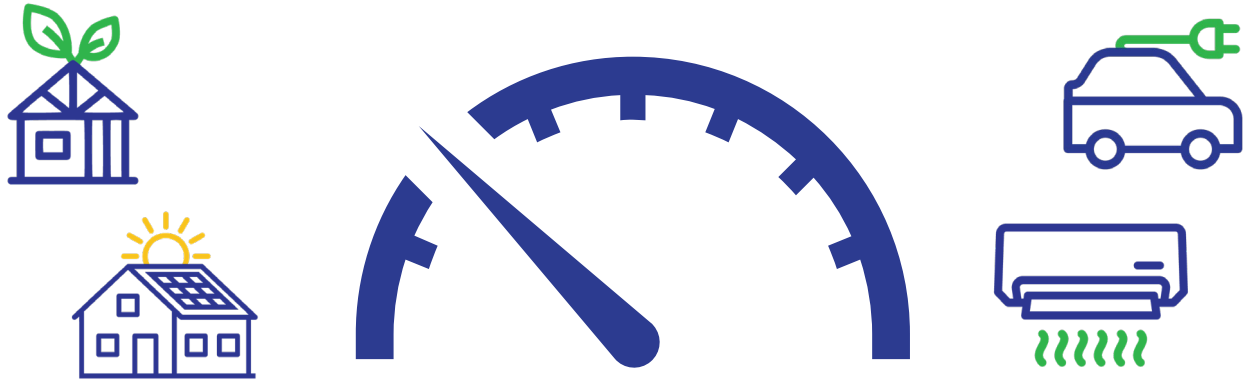
Rate design implications

Rate design impacts the attractiveness of various technologies and rate design choices have implications for the pace and scale of decarbonization strategies



- Massachusetts currently has relatively high electric rates and nation-leading success in deploying energy efficiency and behind-the-meter solar
- Massachusetts needs to accelerate its adoption and deployment of electric vehicles, heat pumps, and other electric end-uses

High Electric Rates	Low Electric Rates
May increase conservation or energy efficiency solutions	May reduce incentive to conserve
Makes solar more attractive since it reduces the amount of energy a customer purchases	Makes electrified end-uses (e.g., electric vehicles, heat pumps) attractive choices to consumers

Electric bills include costs to generate and deliver power

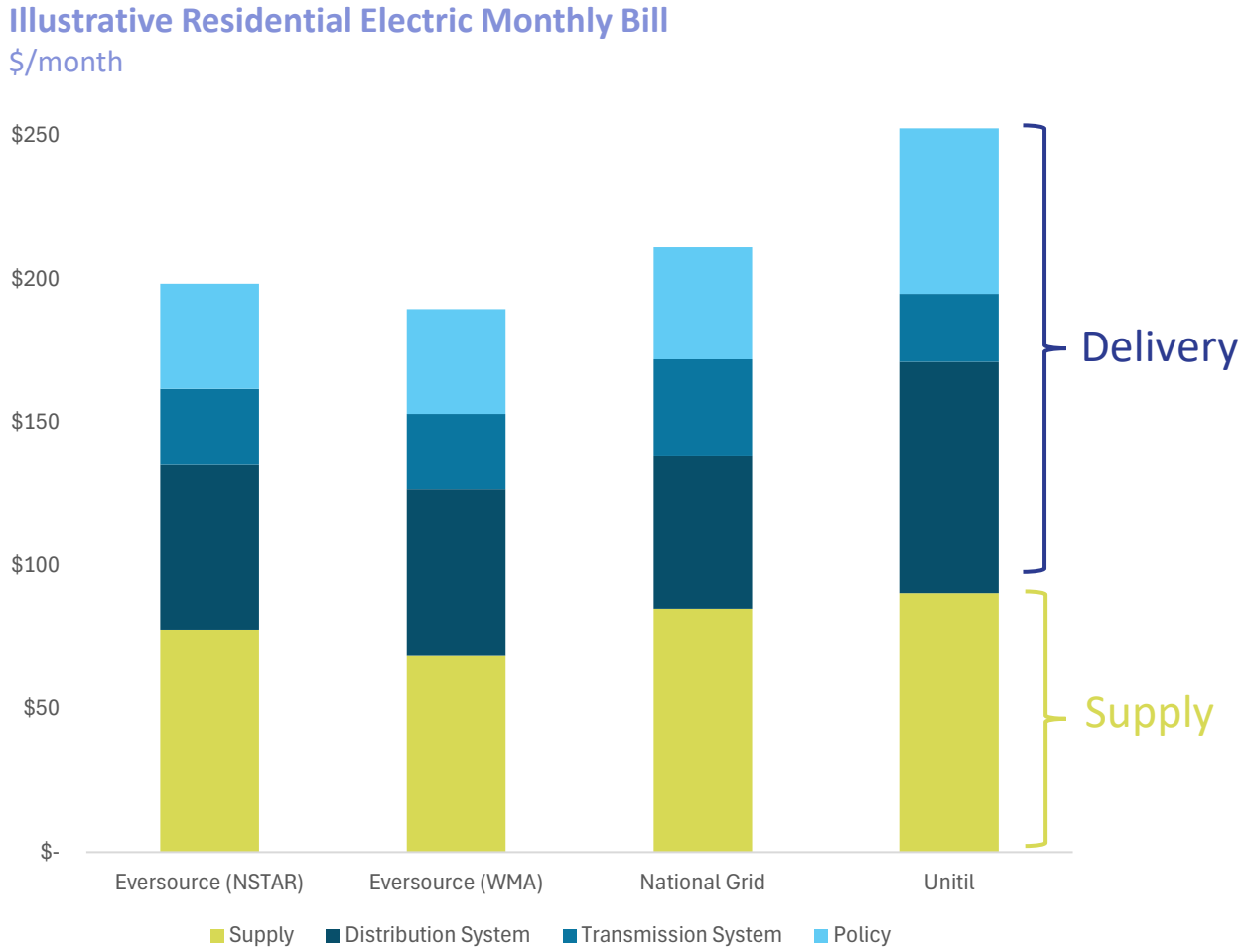
What are we paying for?

Electric bills primarily reflect the cost to **supply** and **deliver** electricity.

Supply: cost associated with generating electricity.

Delivery: cost associated with building and maintaining the infrastructure that brings the electricity produced by generators to end users. Includes:

- **Transmission** (e.g., high-voltage wires, bulk power substations, etc.)
- **Distribution** (e.g., poles, low-voltage wires, line transformers, etc.)



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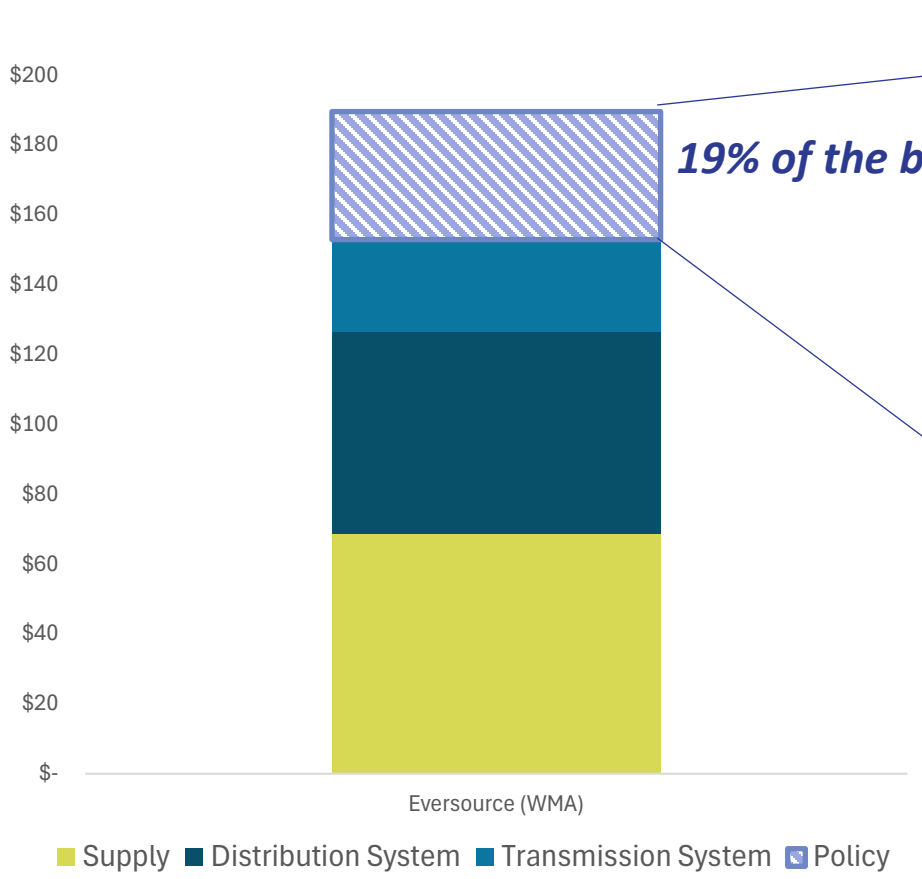
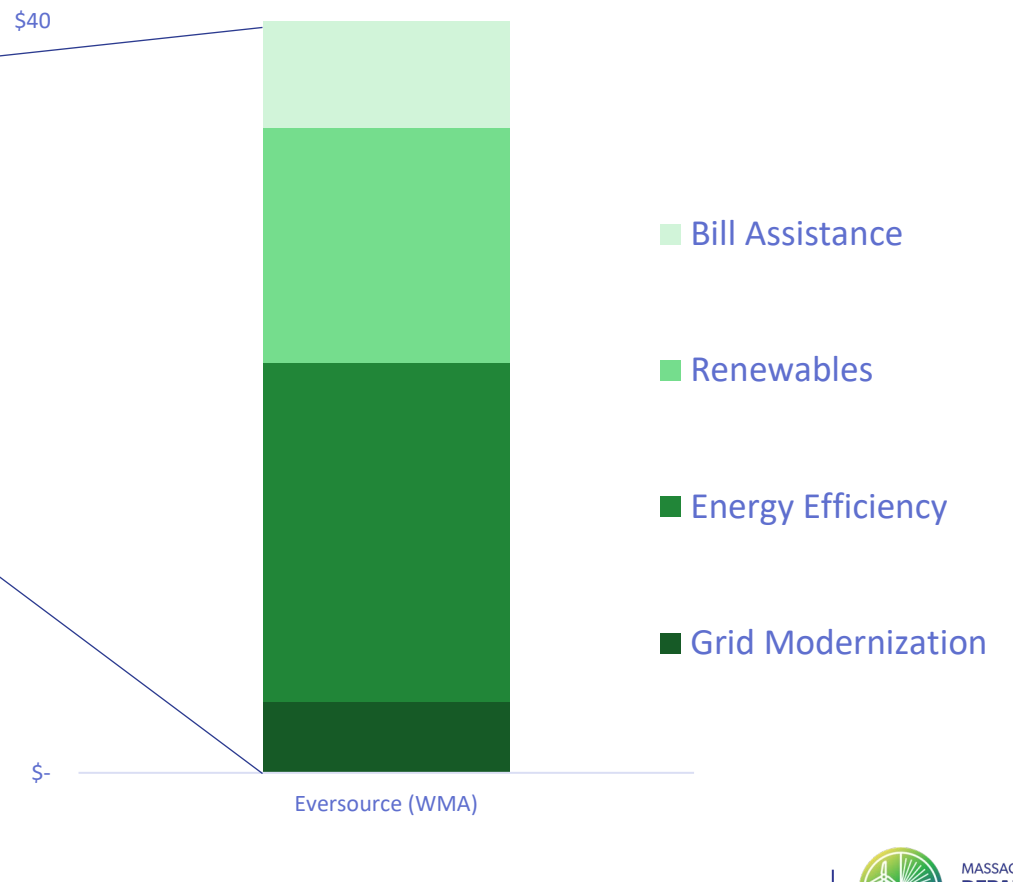
Electric bills also include costs of essential climate and affordability policies

Monthly Bill for Eversource West Customers



Breakdown of Policy Costs on Monthly Bill



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How do we design rates?

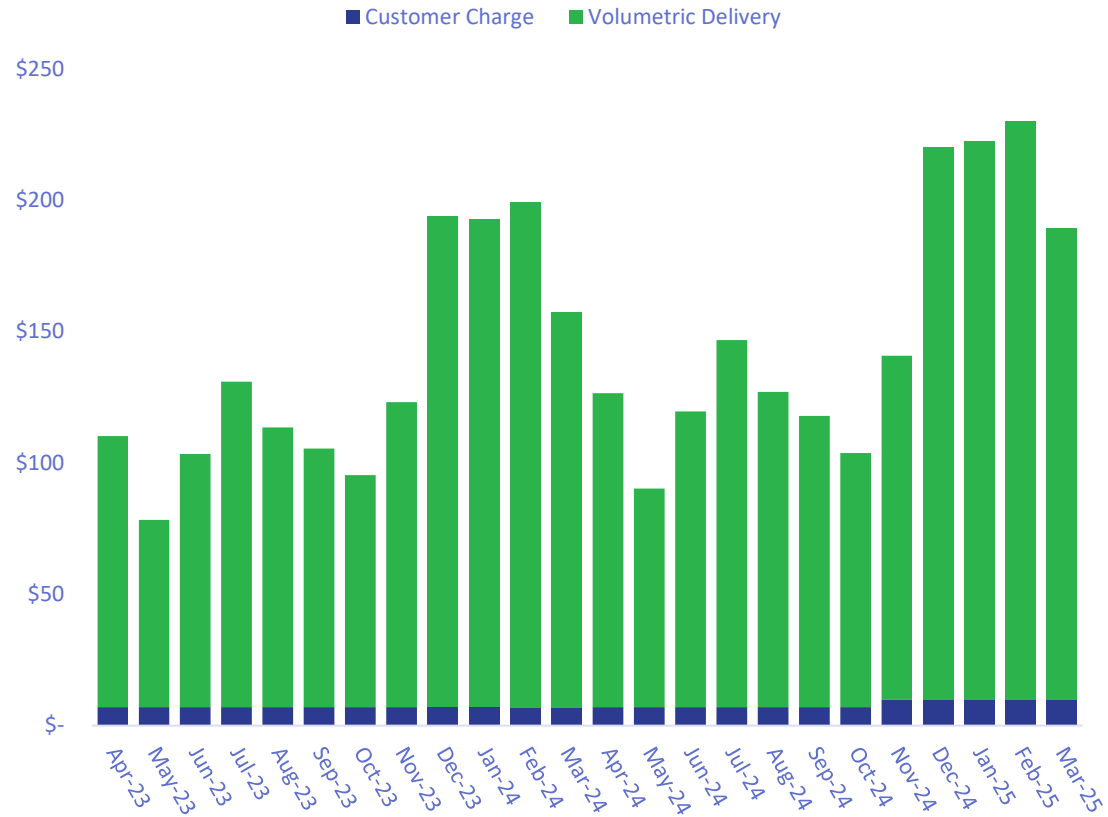
How are we paying for it?

Rate design is an exercise in deciding how we recover the costs associated with supplying and delivering electricity, traditionally through a combination of **volumetric** and **fixed** charges

- **Volumetric charges** scale with how much electricity a customer uses. For example, a customer who consumes 300 kWh will pay half as much in volumetric charges as a customer who consumes 600 kWh
- **Fixed charges** are paid by customers regardless of how much they consumer. For example, the 300kWh and 600 kWh customers will pay the same fixed charge

Most costs are charged volumetrically for residential customers

Illustrative All-Electric Residential Electric Bill (delivery-only)
$/month



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Policy Fixed Charge

Options for reducing volumetric policy charges

Consider a non-bypassable fixed charge for public benefits programs and expand non-ratepayer funding

- **Current rate designs are not cost reflective** – many of the costs recovered through volumetric rates exist regardless of a consumer's volumetric consumption
- **Policy costs represent ~$40 on the average customer bill** and are recovered entirely through a volumetric charge
  - Discourages electrification and, for some vulnerable customers, safe/healthy levels of consumption
  - Increases inter-seasonal bill volatility
  - Enables customers with solar and EE to avoid contributing
- The IRWG recommended:
  - **Funding certain programs through a fixed charge or through a combination of fixed and variable charges,** to better align volumetric rates with cost causation; and
  - **Alternatives to ratepayer funding for certain programs (i.e., fund the programs outside of electric rates)**, to address affordability, equity, and cost causation concerns.

Source: Near-Term Rate Strategy Recommendation and Long-Term Ratemaking Recommendation

Volumetric rates vs. fixed charges

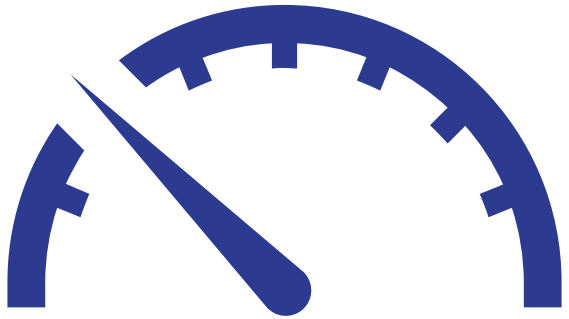
Arguments for volumetric rates

High volumetric rates send a stronger signal to conserve electricity

- "the cheapest kilowatt hour is the one you don't use"
- Promotes distributed generation (e.g., solar) and energy efficiency

Customers have more control over their bills

- Customers can avoid costs by consuming less, and their ability to do so is reduced when more of the bill is a fixed charge



Volumetric Fixed

Argument for *cost reflective* fixed charges

Promote electrification

- Heat pumps and electric vehicles are less competitive against fossil fuel alternatives when volumetric rates are high

Reduce bill volatility

- Under volumetric recovery, customers pay more for policy during high consumption months when their bills are already highest

Certain customers can avoid contributing to critical infrastructure/programs, despite enjoying the benefits

- Customers with solar and energy efficiency contribute less because their volumetric consumption is lower but still enjoy all the benefits of grid interconnection

Reduce barriers to using safe and healthy levels of electricity

- A growing body of literature reveals that low-income customers engage in unsafe and unhealthy "energy limiting behaviors" to minimize volumetric electricity bills

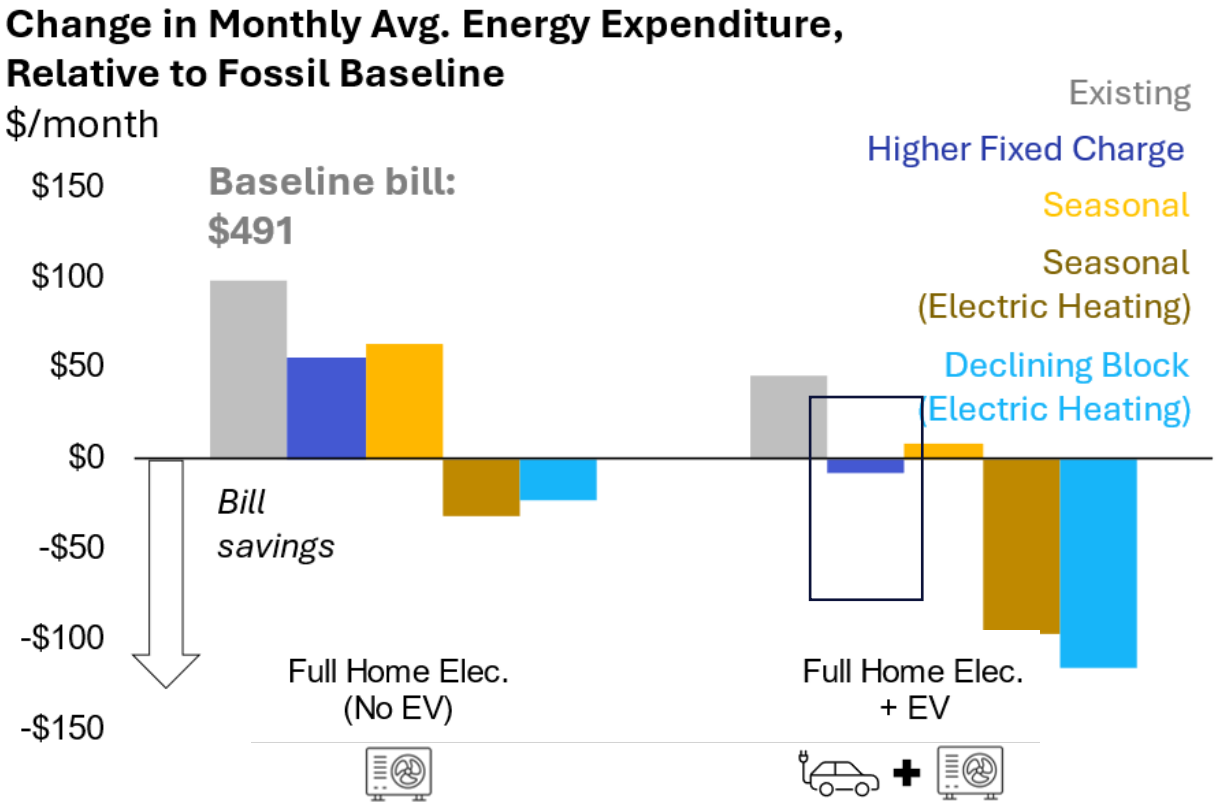
Illustrative Fixed Charges for EE and Affordability

Residential	Eversource	National Grid	Unitil
Total Energy Efficiency Revenue Requirement	$196,489,951	$240,010,988	$5,696,725
Forecasted Kilowatt-hours (kWh)	6,865,600,740	8,649,044,623	170,121,790
Average Monthly Usage (kWh)	548	600	530
Current Volumetric Energy Efficiency Reconciliation Factor ($/kWh)	$0.02861	$0.02775	$0.03348
Fixed Charge Energy Efficiency Reconciliation Factor ($/month)	$15.68	$16.66	$17.75

Source: Eversource, D.P.U. 24-35 Exh. ES-ANB-1 (Revision 3); National Grid, Current Effective EERF, Forecasted kWh from D.P.U. 24-99, NG-Elec Exh. 3; Unitil, D.P.U. 24-47 Compliance Filing Exh. 2
Note: Eversource excludes an estimated 205,000 Cape Light Compact customers

Fixed charges allow reductions in volumetric rates

Higher fixed charges improve electrification affordability and cost-reflectiveness by shifting non-volumetric costs out of the volumetric rate



Source: Energy and Environmental Economics, Inc., Near-Term Rate Strategy Report, ES Figure 4

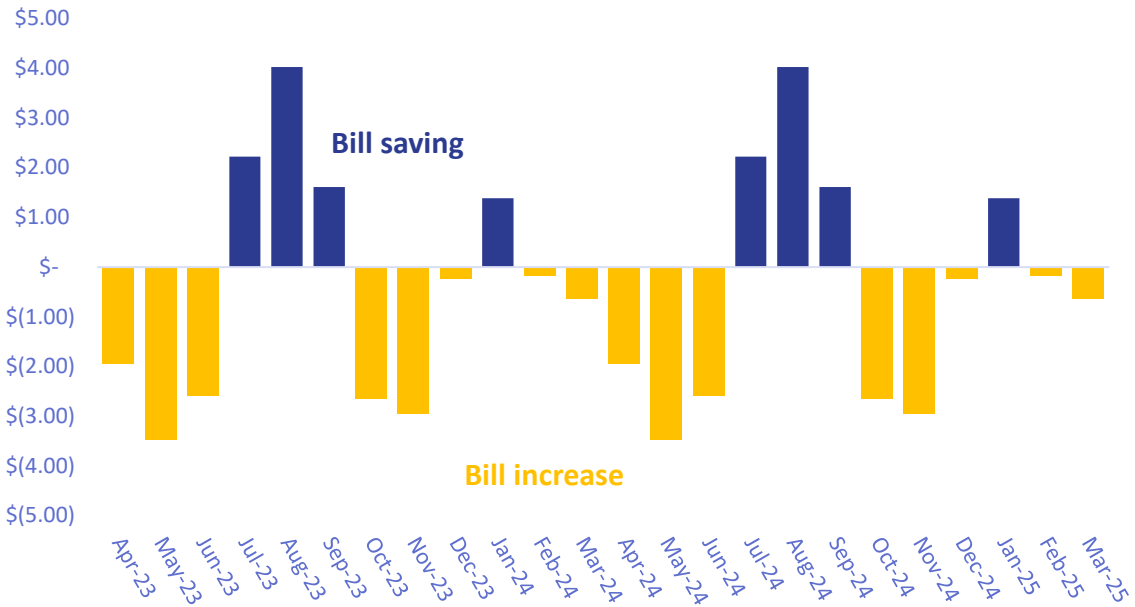
- The Near-Term Rates report found that a $30 fixed charge (+$20) was sufficient to make full home electrification competitive against fossil fuel technologies

Fixed energy efficiency reconciliation factor charges will smooth customer bill impacts, providing greater bill stability

A fixed EERF charge dampens bill volatility by reducing the electric rate subject to consumption; customers will tend to pay less during high-usage months and pay more during low-usage months

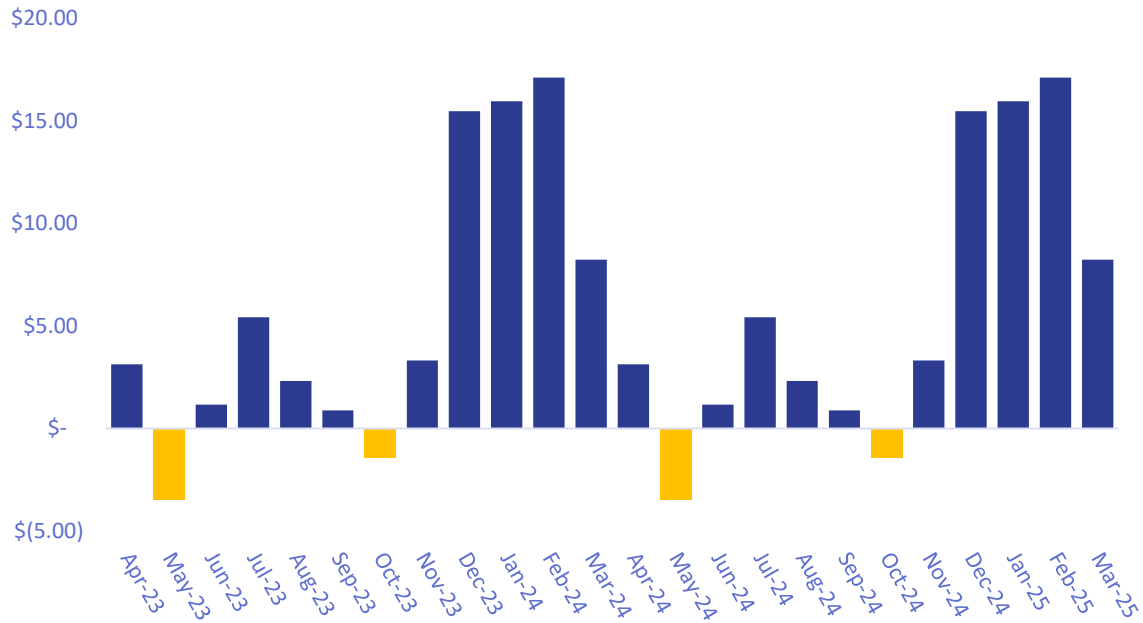
Illustrative Customer Savings for Average Customer

$/month



Illustrative Bill Savings for All-Electric Residential Customer

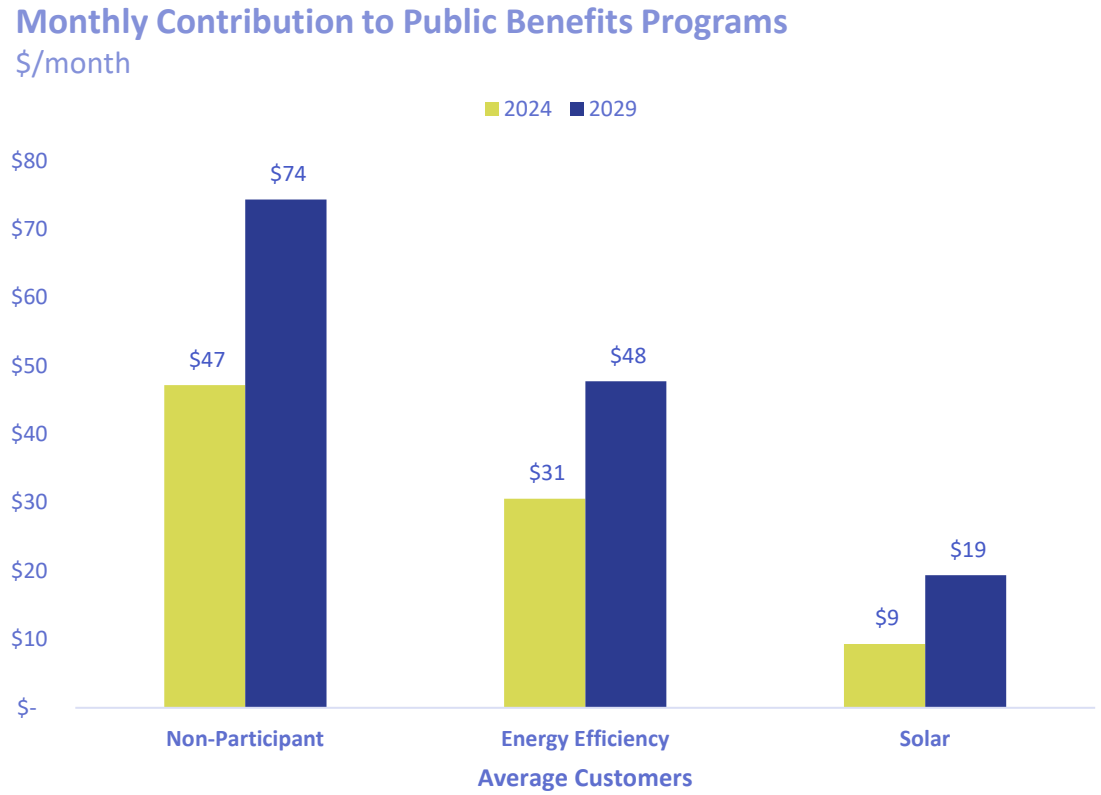
$/month



Fixed charges can ensure equitable contribution

A non-bypassable fixed charge makes sure that all customers, especially affluent customers with solar and/or energy efficiency, contribute to public benefits programs

- As the energy efficiency program and low-income discount rate expand to help more people, a shrinking share of consumers who don't/can't access EE and solar are left to foot the growing bill
  - Households with solar and high levels of EE do not contribute as much to these program costs
  - Households that electrify contribute more
- Fixed charge ensures that non-participating and electrified customers aren't disproportionately burdened by these costs
  - Impacts on low-income, low-consumption customers can be mitigated via anticipated reforms to the low-income discount rate



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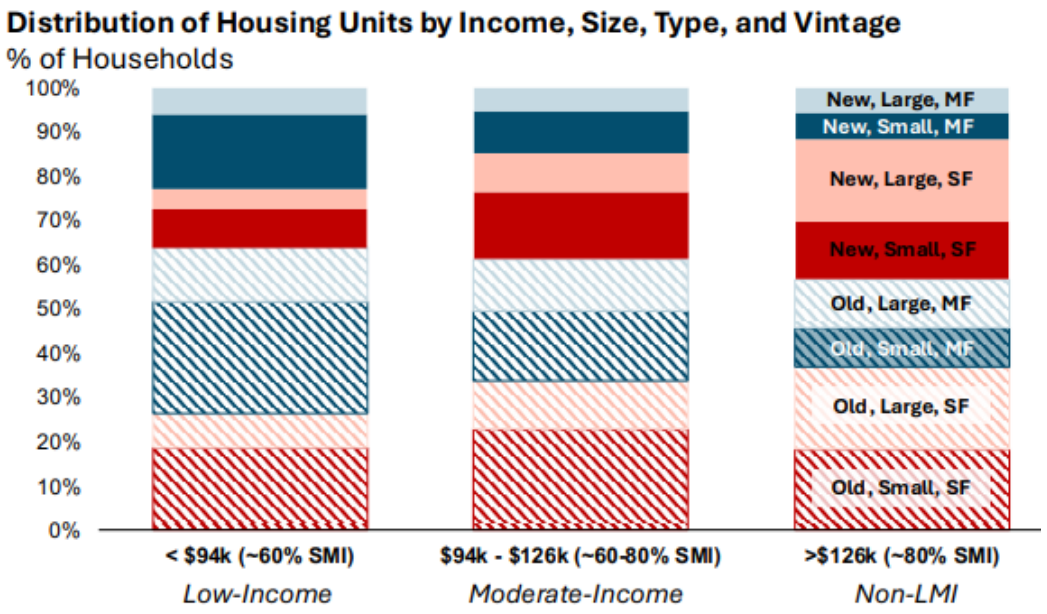
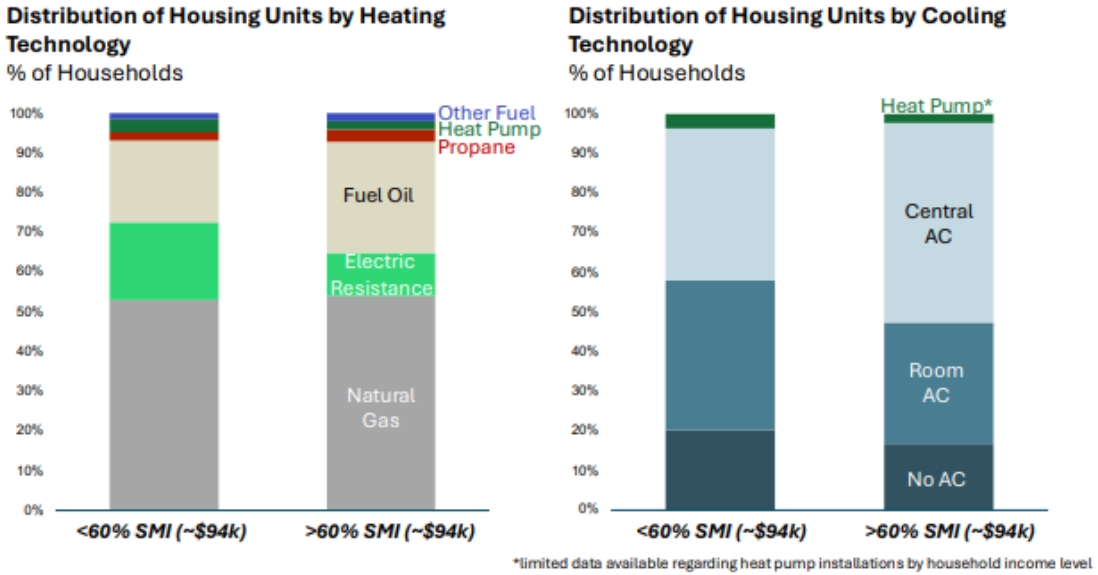
Differences in housing and temperature control technologies by income

Housing



- Low-income customers have smaller, but older houses

Temperature Control

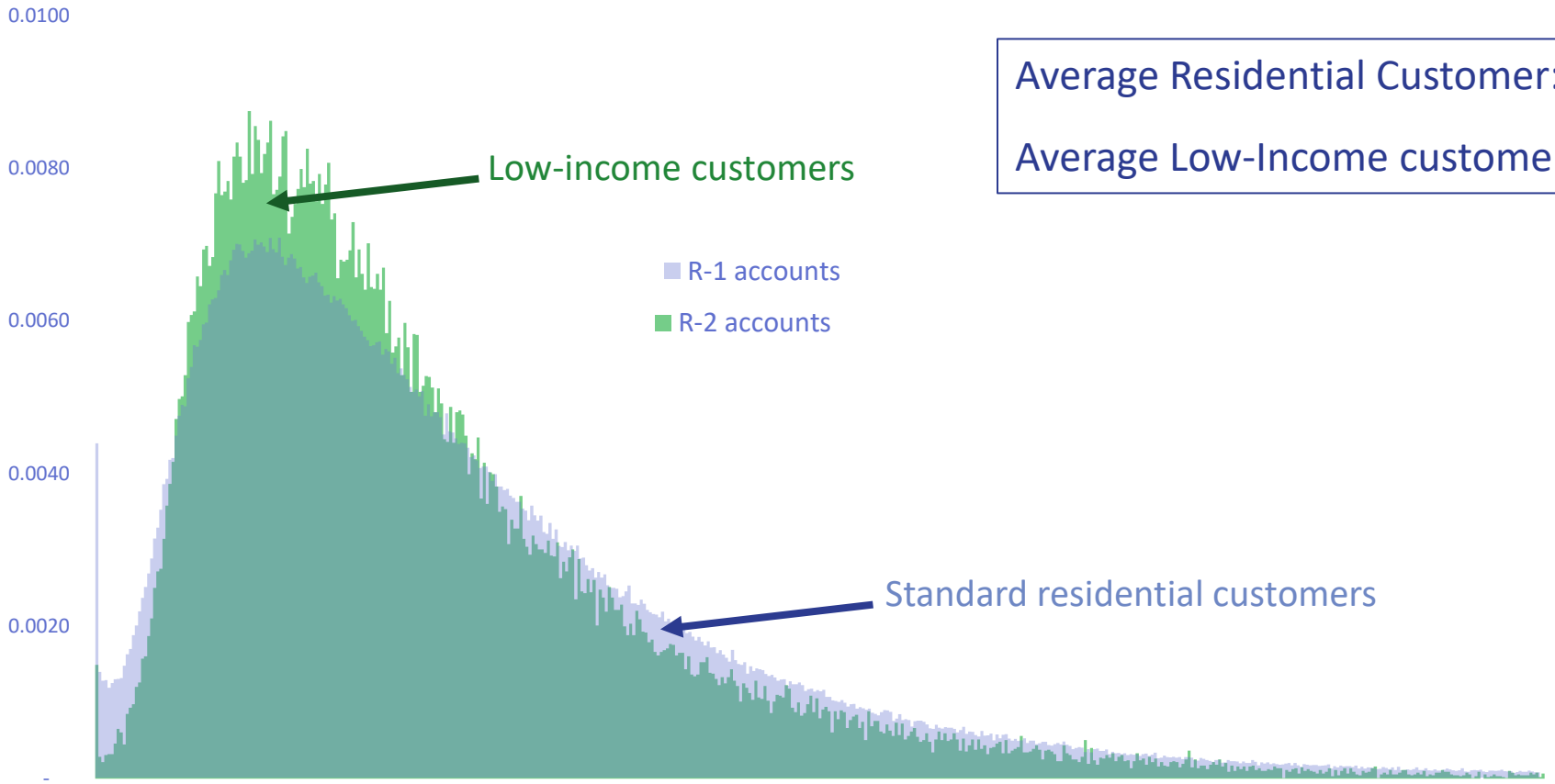


- Low-income customers have less efficient electric heating and cooling
- Greater share without cooling

Source: Energy and Environmental Economics, Inc., Near-Term Rate Strategy Report, Figures 25 & 26

How much does consumption vary by income?

Frequency Distribution of Household Consumption for R1 and R2 Customers, Eversource East



Average Residential Customer: **552 kWh/month**

Average Low-Income customer: **539kWh/month**

Source: DPU 24-15 Attachment 2, EMA

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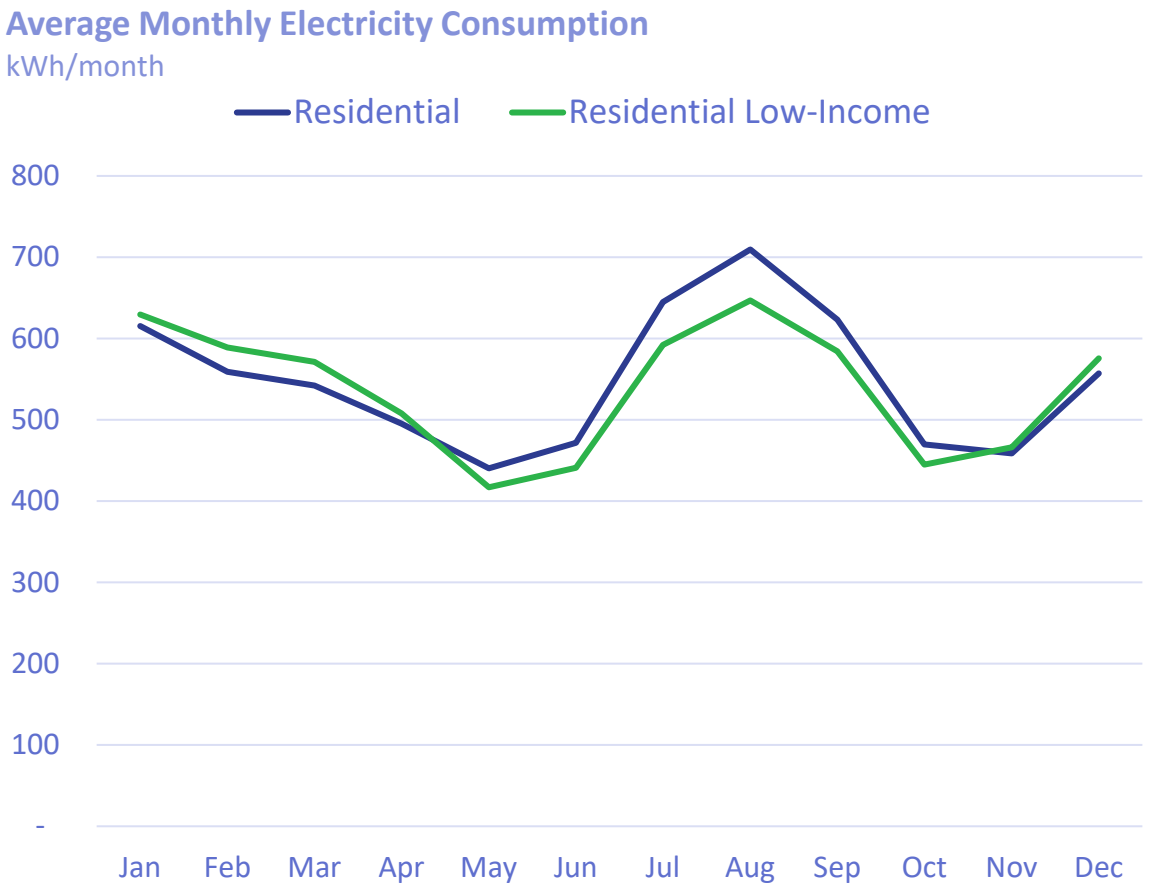
How much does consumption vary by income?

Low-income customers use more electricity in the winter and less in the summer



- Low-income customers use more electricity in the winter, likely due to less efficient housing/heating
- Low-income use less electricity in the summer, likely due to limited cooling access and energy rationing behaviors

Source: Massachusetts Electric Customer Choice Data (2023)

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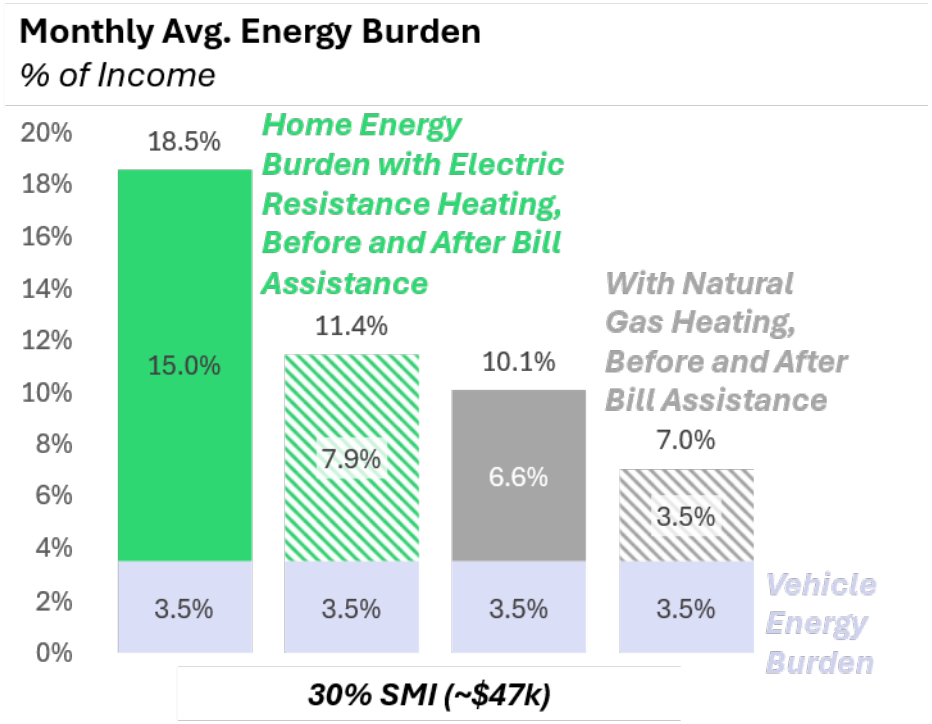
High volumetric rates can harm vulnerable customers

High volumetric rates force vulnerable customers to forgo safe and healthy levels of electricity consumption



- Low-income customers wait longer to start cooling and heating their homes and restrict use as temperatures rise

- "After controlling for income and race… severely energy insecure households had"
  - **2.0x greater odds of lifetime asthma**
  - **4.7x greater odds of pneumonia**
  - **1.8x greater odds of depressive disorder**
  - **1.6x greater odds for poor-quality sleep**

Huang et al. (2023). *Inequalities across cooling and heating in households: Energy equity gaps*

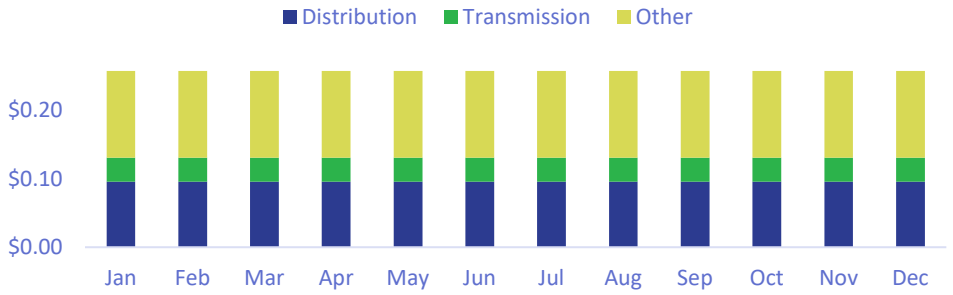
Heat Pump Rates

Heat pump rate design basics

Electric rates are based on average costs of the system and other programs and policies

Illustrative Electric Delivery Rate

dollar per kilowatt-hour

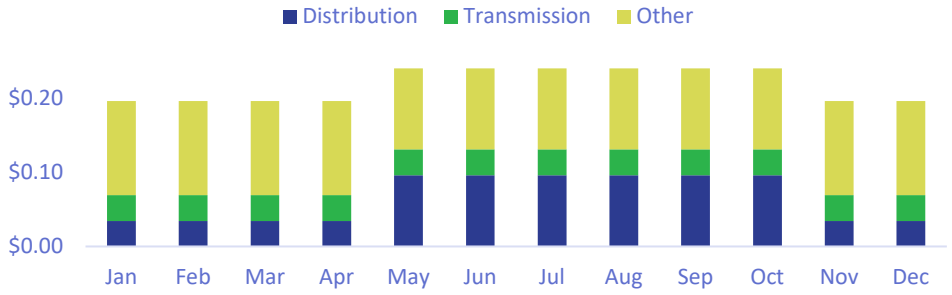


- Distribution and transmission system costs are driven by peak demand, forecasted to occur in the summer through the mid-2030s
  - Incremental usage during the winter season doesn't drive additional costs in the system
- Many other costs, including policy charges, are not discernibly caused by energy usage or seasonal consumption

Heat pump rates reflect minimal costs driven by incremental usage in winter

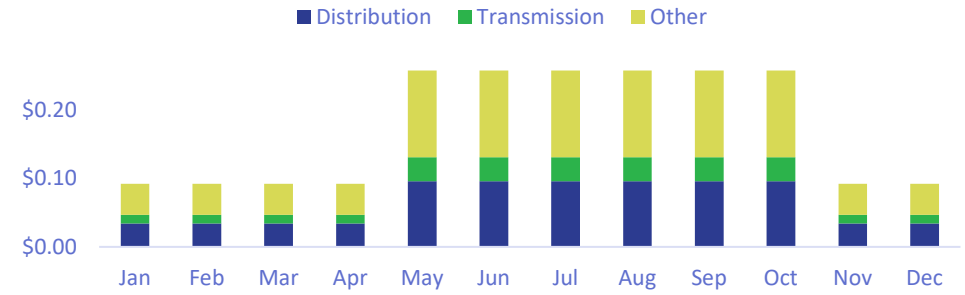
Illustrative Distribution-Adjusted Electric Delivery Rate

dollar per kilowatt-hour



Illustrative Delivery-Adjusted Electric Delivery Rate

dollar per kilowatt-hours



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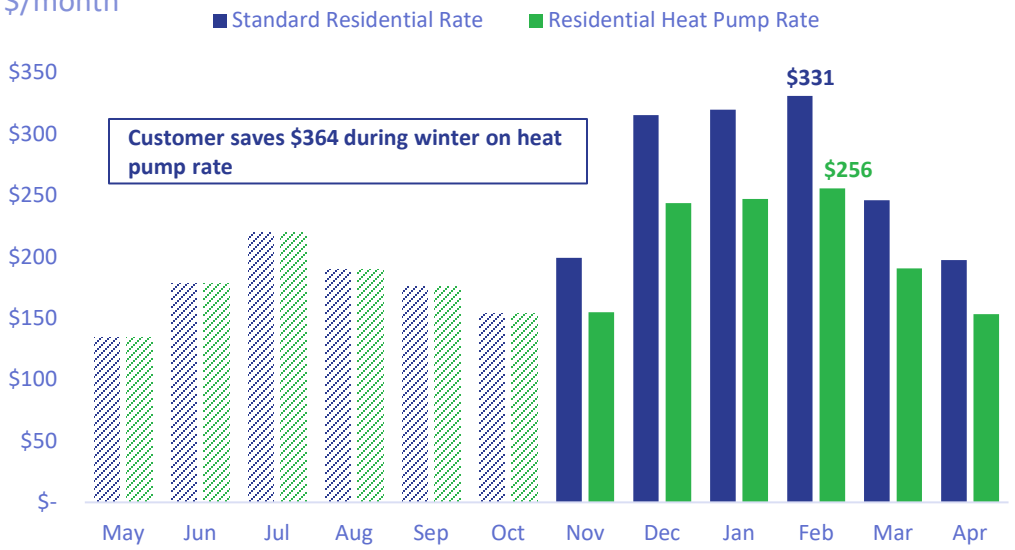
Unitil and National Grid have approved heat pump rates

Unitil Heat Pump Rate

- Currently available to heat pump customers
- Adjusts base distribution charge of $0.09621 per kWh to $0.03435 per kWh from November to April

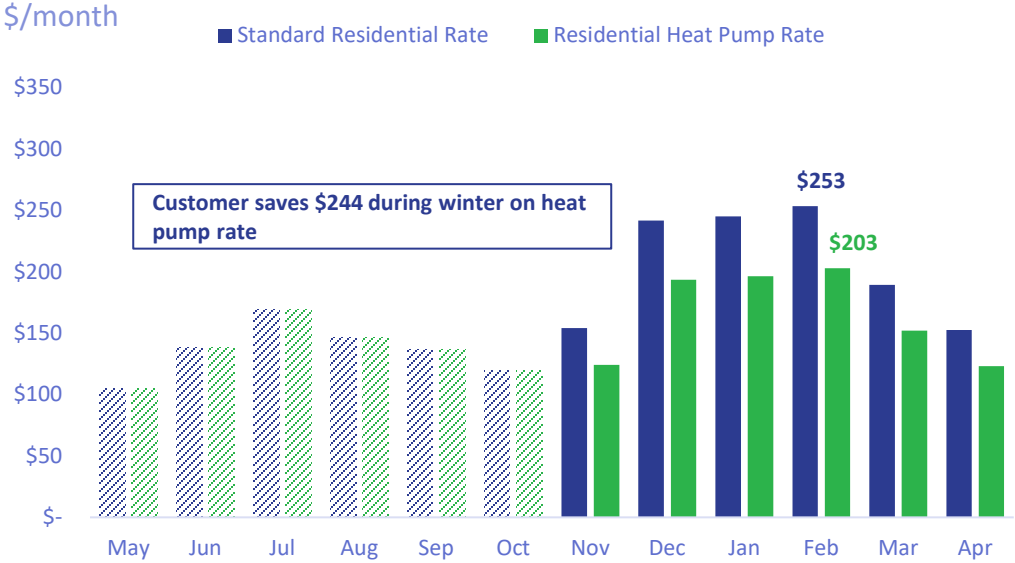
Illustrative Residential Heat Pump Bill (delivery-only)



National Grid Heat Pump Rate

- Availability to heat pump customers anticipated October 2025
- Adjusts base distribution charge $0.06546 per kWh to $0.02337 per kWh from November to April

Illustrative Residential Heat Pump Bill (delivery-only)



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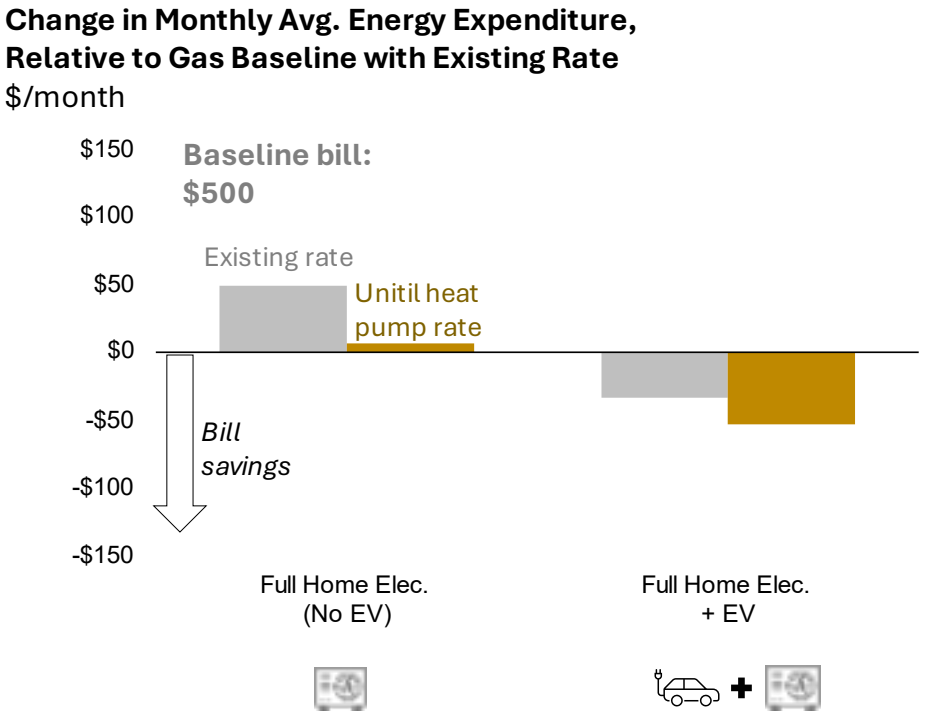
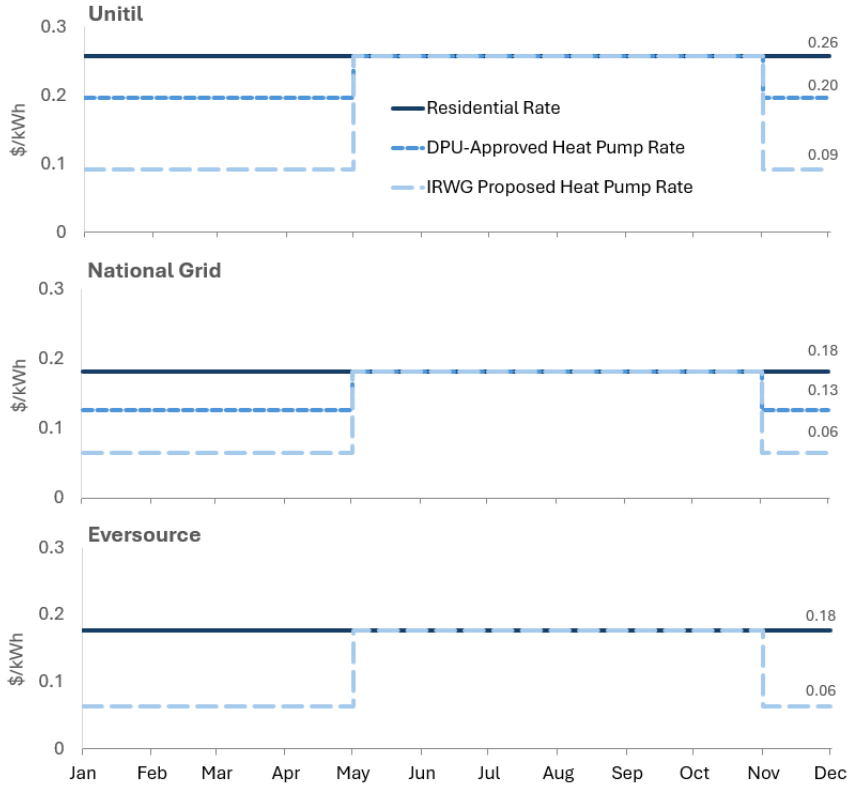
Design of heat pump rates will drive effectiveness

Unitil's heat pump rate reduces, but does not remove, the barrier to home electrification



Source: Energy and Environmental Economics, Inc., Near-Term Rate Strategy Report, Figure 31

Heat pump rates can be modified to remove the barrier to home electrification



Source: Interagency Rates Working Group, Near-Term Rate Recommendations, Figure 4

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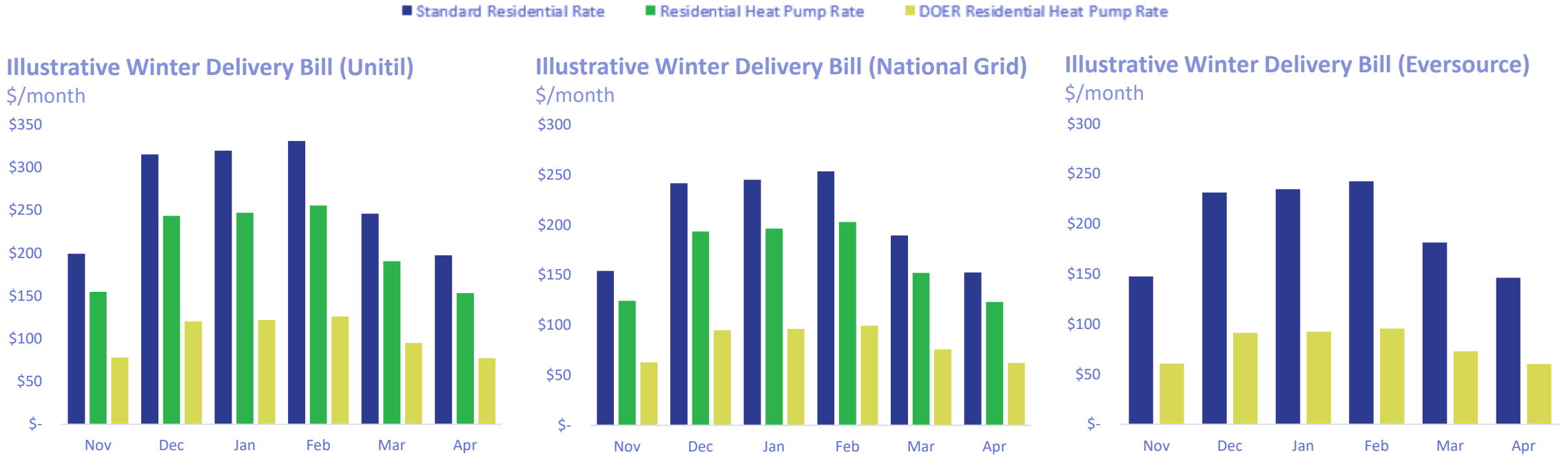
DOER requested the DPU direct electric companies to offer a heat pump rate consistent with the IRWG's recommendation



Customer saves $364 during winter on current residential heat pump rate

Customer would save $990 during winter on DOER's residential heat pump rate

Customer saves $244 during winter on current residential heat pump rate

Customer would save $744 during winter on DOER's residential heat pump rate

Customer would save $712 during winter on DOER's residential heat pump rate

MASSACHUSETTS DEPARTMENT OF ENERGY RESOURCES

Following DOER's petition for heat pump rates consistent with the IRWG's recommendation, the DPU. . .

directed Eversource to file a heat pump rate

- Eversource currently does not offer a heat pump rate
- Consistent access to heat pump rates allows all electric distribution companies (EDCs) to leverage statewide Mass Save marketing campaigns
- Department of Public Utilities (DPU) directed Eversource to file a proposed revenue-neutral heat pump rate for the 2025-2026 heating season by May 15, 2025 (D.P.U. 25-55)
  - Proposal needs to be similar to the Department-approved heat pump rates for Unitil and National Grid, adjusting the base distribution charge in a revenue-neutral manner to reflect the higher winter usage of heat pump customers relative to customers heating with fossil fuels

opened an investigation on the heat pump rates

- DPU will investigate whether all EDCs should implement a modified heat pump rate design as recommended by DOER at some time after the 2025-2026 heating season, issues on marketing, education, and outreach, in addition to promotion of customer enrollment.
- DPU intends to complete the inquiry in time for the 2026-2027 heating season and has requested comments from any interested stakeholders by June 2, 2025 (D.P.U. 25-08) on the following issues:
  - The merits of the IRWG recommendations including seasonally differentiated volumetric delivery rates, inclusive of base distribution charges and all reconciling mechanisms; and
  - The merits of the IRWG recommendations regarding customer marketing, outreach, and education methods.

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Thank You!