



MASSACHUSETTS
**DEPARTMENT OF
ENERGY RESOURCES**

Bill & Distributed Energy Resources (DER) Impacts

Targeted Conversation | July 9, 2025

This presentation will be used to guide the Massachusetts Electric Rate Task Force's targeted conversation, designed to facilitate an open, inclusive dialogue and frame critical questions and opportunities.

Note: The contents of this presentation do not necessarily reflect the views or positions of the Massachusetts Department of Energy Resources.

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Ground rules & engagement

This work is complex – and your insight matters; let's focus on learning, listening, and shaping together!

Participation, Engagement, & Respect

- Everyone's perspective is valuable – this space works best when all voices are heard
- Respect differences in background, experience, and priorities
- Bring curiosity – ask questions and offer potential answers
- Focus on understanding others' goals and values, not just their positions
- It's okay not to have a solution – help us shape the right questions

Collaboration, Not Consensus

- This body is deliberative, it is not a decision-making space
- We don't need to agree on everything, but we should work toward shared understanding
- Where we disagree, help clarify what the tension is and why it matters

Transparency & Trust

- We'll be clear about how input is used
- Share what you can; identify when you're speaking on behalf of your organization or personally
- Materials, summaries, and key findings will be shared openly to support accountability

Focus & Productivity

- Stay on topic and honor the scope of the Task Force
- Raise related concerns, but help us stay anchored in the rate design and regulatory issues at hand
- Use the structures provided (i.e., expert sessions, targeted conversations, office hours) to deepen discussion
- Avoid discussion about open and ongoing proceedings at the DPU



Bill and DER Impacts Expert Presentations

I. IRWG Bill Impact Recommendations

Massachusetts Clean Energy Center, Sarah Cullinan

Present recommendation for more granular bill impact analysis

II. Opportunities and Challenges in Rate Design

Energy and Environmental Economics, Inc., Ari Gold-Parker, Mike Sontag, & Vivan Malkani

Present on the Household Energy Expenditure Model (HEEM) for considering bill impacts, implications of cost-reflective rates for bills, DERs, and complementary programs

III. Evolution of DER Programs in Hawai'i

Hawaii Public Utilities Commission, Abby Austin & Clarice Schafer

Present the implementation of long-term DER programs in Hawaii that includes smart DER tariffs and bring-your-own-device tariffs

IV. Impacts on Existing DER Policies and Incentive Programs

Massachusetts Department of Energy Resources, Samantha Meserve

Present the impacts of time of use rates on existing policies and incentive programs that incentivize solar and storage resources in the Commonwealth

Build technical knowledge

Provide an opportunity for **knowledge-building** by and amongst stakeholders, including those who have not traditionally been involved



Develop shared understanding

Converge towards **shared understandings** of the challenges and priorities



Targeted Conversations

The Rate Task Force brings together diverse stakeholders to reimagine how electric rates and the regulatory framework can drive an affordable, equitable, and decarbonized energy future.

- Targeted conversations are intended to facilitate open, inclusive dialogue and frame critical questions and opportunities
- The Rate Task Force will use the Massachusetts Interagency Rates Working Group's Long-Term Ratemaking Study and Recommendations as a starting point for discussion and knowledge building on rate designs, ratemaking, and regulatory mechanisms.

Facilitate open, inclusive dialogue

Engage in **open, inclusive dialogue** about complex ratemaking and regulatory issues outside of a regulatory proceeding

Frame critical questions and opportunities

Empower stakeholders to identify **critical questions and opportunities** for the advancement of rate design and ratemaking reform

Agenda

- i. Introduction (10 minutes)
- ii. Bill Impacts (45 minutes)
- iii. Break (5-10 minutes)
- iv. DER Impacts (50 minutes)
- v. Closing (5 minutes)



Bill Impacts

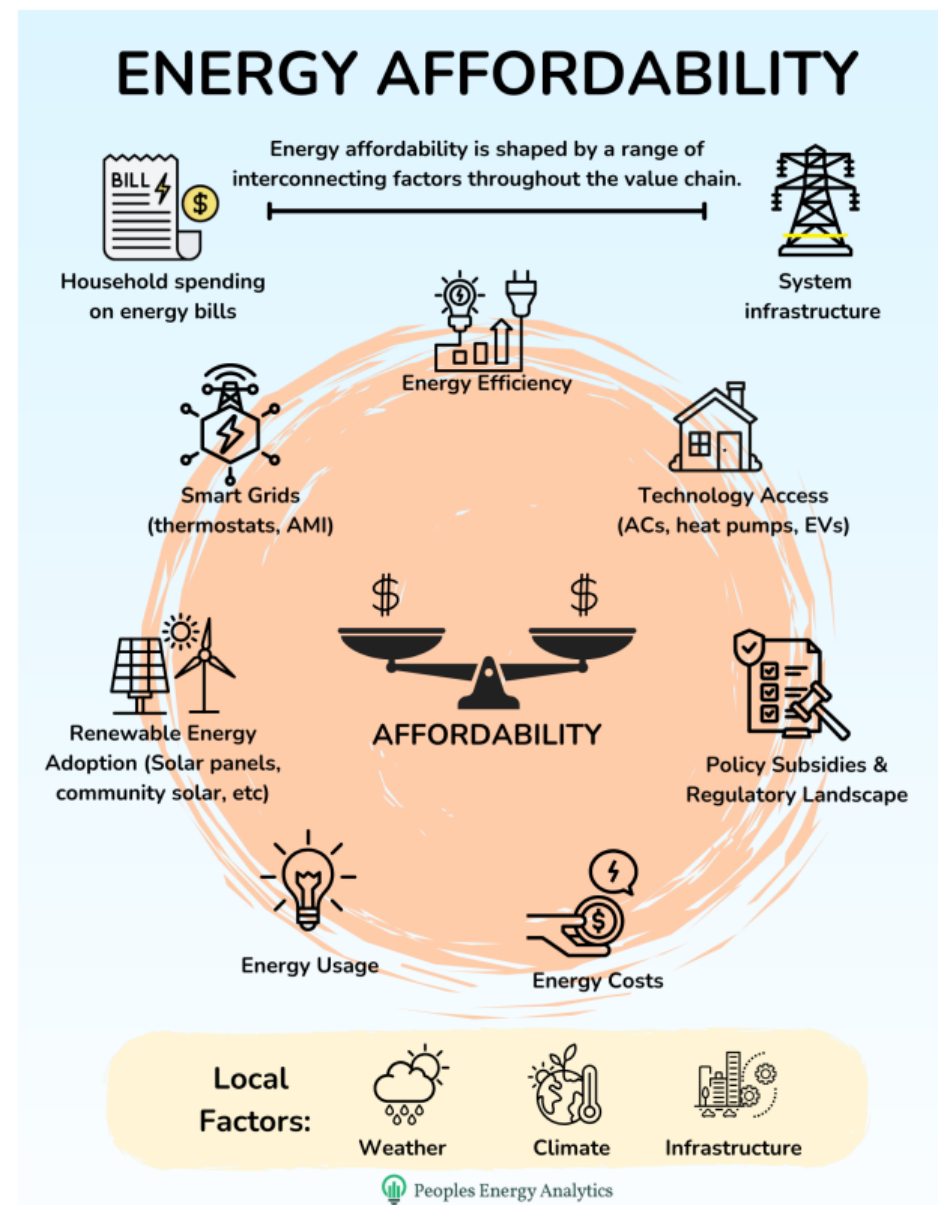
Energy Affordability

Assessing affordability and impacts to vulnerable customers

- Dr. Nock (Peoples Energy Analytics) recommended a clear definition of energy affordability for the IRWG
 - “Energy affordability ensures that households can access the energy they need to maintain comfortable living conditions, participate in modern society, and manage energy costs without facing energy poverty or undue financial strain. This means having access to enough reliable, clean energy to meet essential needs such as heating, cooling, lighting, cooking, and powering appliances, while still having sufficient financial resources to cover other living expenses. Energy affordability also necessitates a balanced approach, where the cost of energy is reasonable relative to household income and individual circumstances, preventing individuals from having to choose between paying for energy and other basic needs like food, healthcare, or housing. Conversely, energy is not affordable if the cost of energy influences an individual’s ability to heat and cool their home to avoid adverse health risks.”

Source: Near-Term Rate Strategy, Appendix: Defining Energy Affordability

- Energy affordability encompasses several components, including those identified in the visual. How can rate structures or rate design help achieve affordability? What are the limits of rate design addressing affordability?



Bill Impacts for Income-Qualified Customers

Low-Income Discount Rate & Tiered-Discount Rates

- The discount rate applies a percentage reduction to qualifying customers' total bill. Each utility offers a distinct discount rate, and the cost is recovered from all the customers in that service territory

Electric Utility	% Discount
Eversource	42%
National Grid	32%
Unitil	40%

- The DPU approved a tiered discount rate for National Grid (D.P.U. 23-150) and is exploring a tiered discount rate for utilities in D.P.U. 24-15
 - Provides varying discount levels based on income bands, may be designed to achieve a certain energy burden target
- Massachusetts has statutory authority to offer moderate-income discount rates

Interaction of TOU Rates and Policy Fixed Charge

- Interaction of TOU rates
 - The discount rate would apply to a qualifying customer's total bill under TOU, mitigating risk of high bills from consuming during peak periods
 - Maintains the peak-to-off peak price ratio, but reduces absolute differences between consumption during peak and off-peak periods, reducing the signal to load shift
- Interaction of policy fixed charge
 - Larger discounts or higher enrollment increases total costs recovered from other ratepayers, currently collected volumetrically
 - Ideally, the costs of discounts would be funded outside of electric rates; however, a policy fixed charge can reduce the electrification disincentive and fund this safety net equitably across all ratepayers



IRWG recommended more granular rate impact analysis that considers energy cost impacts on a variety of Massachusetts households

Current Bill Impact Analysis

- Analyze rate impacts based on limited sample of usage, typically focuses on the “average” customer
- Evaluates bill impact in year one of implementation and typically evaluates a limited charge adjustments

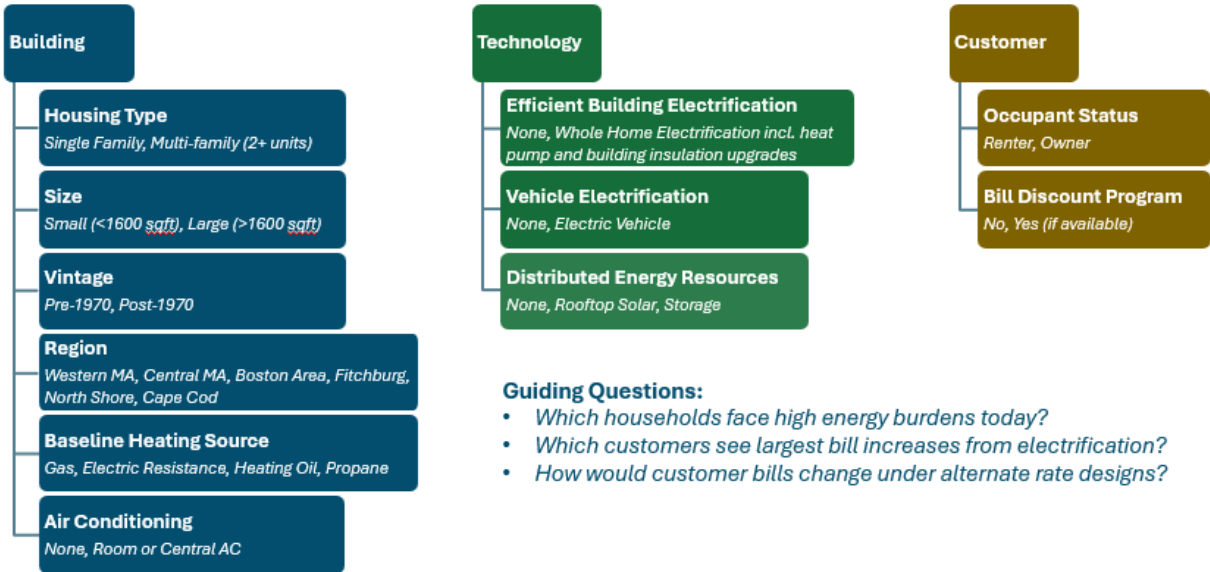
Massachusetts Electric Company
Impact of Proposed October 1, 2024 Rates
Calculation of Monthly Typical Bill

Impact on R-1 Basic Service Customers

Monthly KWh	Present Rates			Proposed Rates			Overall	
	Total	Basic Service	Retail Delivery	Total	Basic Service	Retail Delivery	Increase (Decrease) Amount	%
125	\$49.95	\$22.77	\$27.18	\$54.75	\$22.74	\$32.01	\$4.80	9.6%
250	\$92.88	\$45.53	\$47.35	\$98.50	\$45.48	\$53.02	\$5.62	6.1%
500	\$178.76	\$91.07	\$87.69	\$185.97	\$90.96	\$95.01	\$7.21	4.0%
600	\$213.11	\$109.28	\$103.83	\$220.97	\$109.15	\$111.82	\$7.86	3.7%
750	\$264.65	\$136.60	\$128.05	\$273.48	\$136.44	\$137.04	\$8.83	3.3%
1,000	\$350.50	\$182.13	\$168.37	\$360.94	\$181.92	\$179.02	\$10.44	3.0%
1,250	\$436.38	\$227.66	\$208.72	\$448.44	\$227.40	\$221.04	\$12.06	2.8%
1,500	\$522.26	\$273.20	\$249.06	\$535.91	\$272.88	\$263.03	\$13.65	2.6%
2,000	\$694.00	\$364.26	\$329.74	\$710.88	\$363.84	\$347.04	\$16.88	2.4%

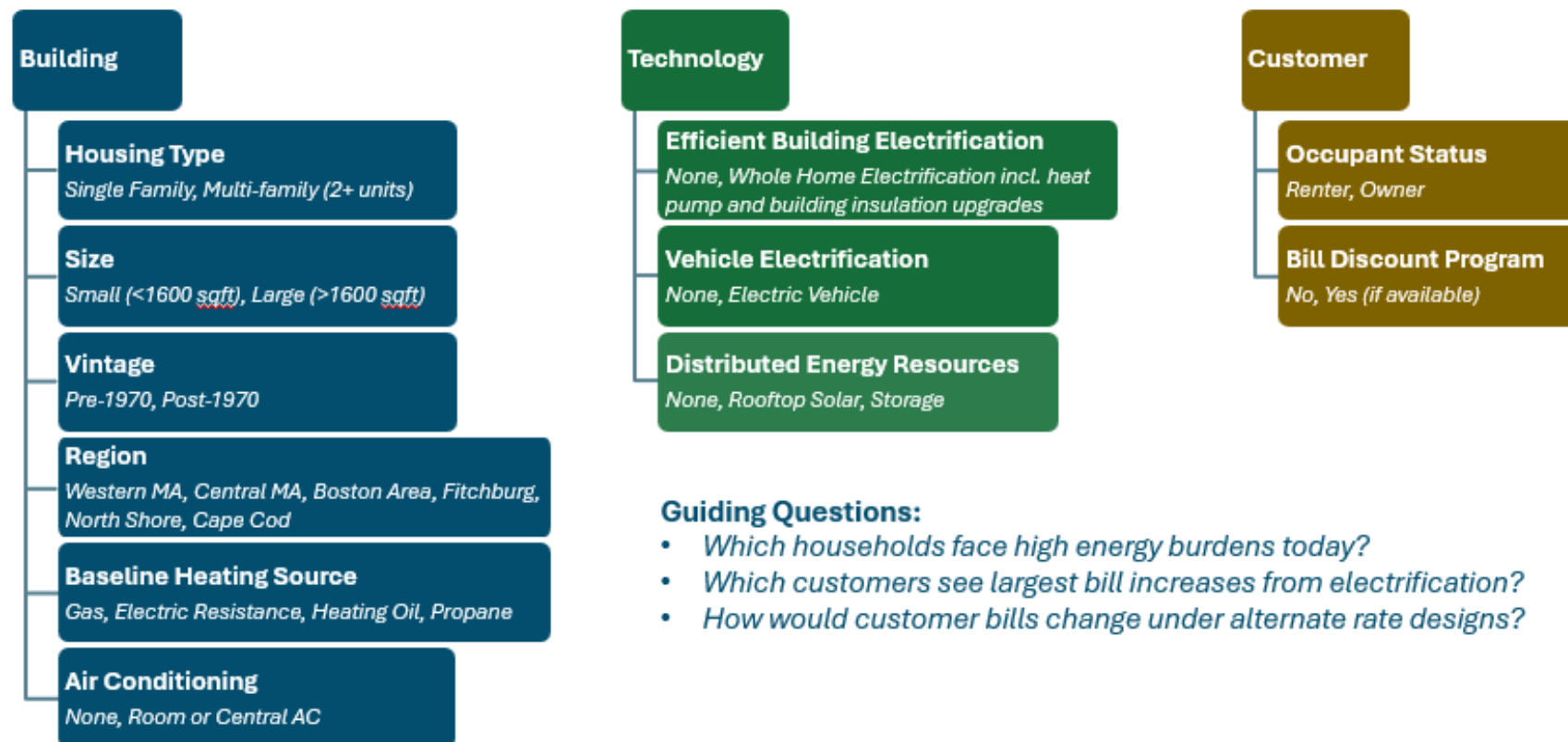
Household Energy Expenditure Model (HEEM)

- Extends bill impact analysis to representative sample of MA energy customers, considers several variables (e.g., heating fuel, home vintage, etc.) to capture diverse customer profiles
- Allows for a more holistic understanding of bill impacts



Evaluating the bill impact analysis for a variety of Massachusetts households

- Dr. Nock was retained by the IRWG to assess affordability and impacts to vulnerable ratepayers and HEEM helps to address some of her recommendations.
- Other vulnerable customers include households with medical equipment, households with young children, and households with caregiving for people with disabilities



- What is missing in this model? What should bill impacts reflect? How might we incorporate any additions?

**Break: 5-10 minutes
(if time allows)**





DER Impacts

DER Policies and Programs

TOU rates can provide price signals to encourage DER dispatch and load management as customers increasingly adopt new technologies.

TOU rates will have various impacts on existing programs and policies that incentivize the use and adoption of DER, as well as impacts on different types of DER customers that utilize said policies and programs.

- Renewable Portfolio Standard (RPS)
- Clean Peak Standard (CPS)
- Net Energy Metering (NEM)
- Solar Massachusetts Renewable Target (SMART)

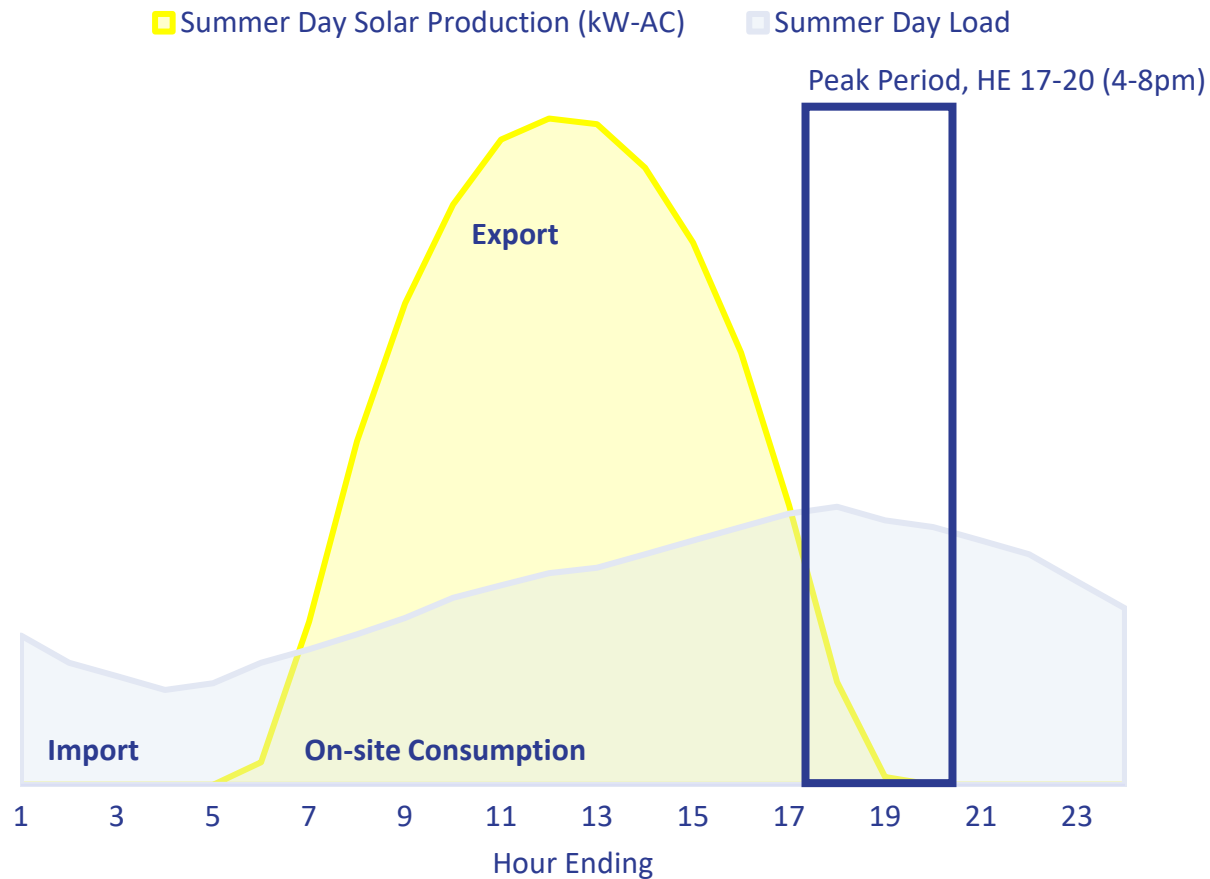
The Rate Task must consider these impacts as it discusses TOU rates.

Next, we will analyze illustrative examples of three of the most common DER customers in the Commonwealth that would be impacted by a TOU rate, focusing on residential customers:

1. Behind-the-meter solar customers
2. Behind-the-meter storage customers and
3. Electric vehicle customers

The IRWG acknowledged that it will be necessary to design rates and programs in a coordinated fashion. Complementary rates and programs can ensure that diverse customers with different degrees of flexibility have a range of options to manage consumption and lower their bills.

TOU Rates and DER: Solar



Total On-Site Load: 34 kWh
Total Solar Production: 41 kWh
Net Export: 7 kWh

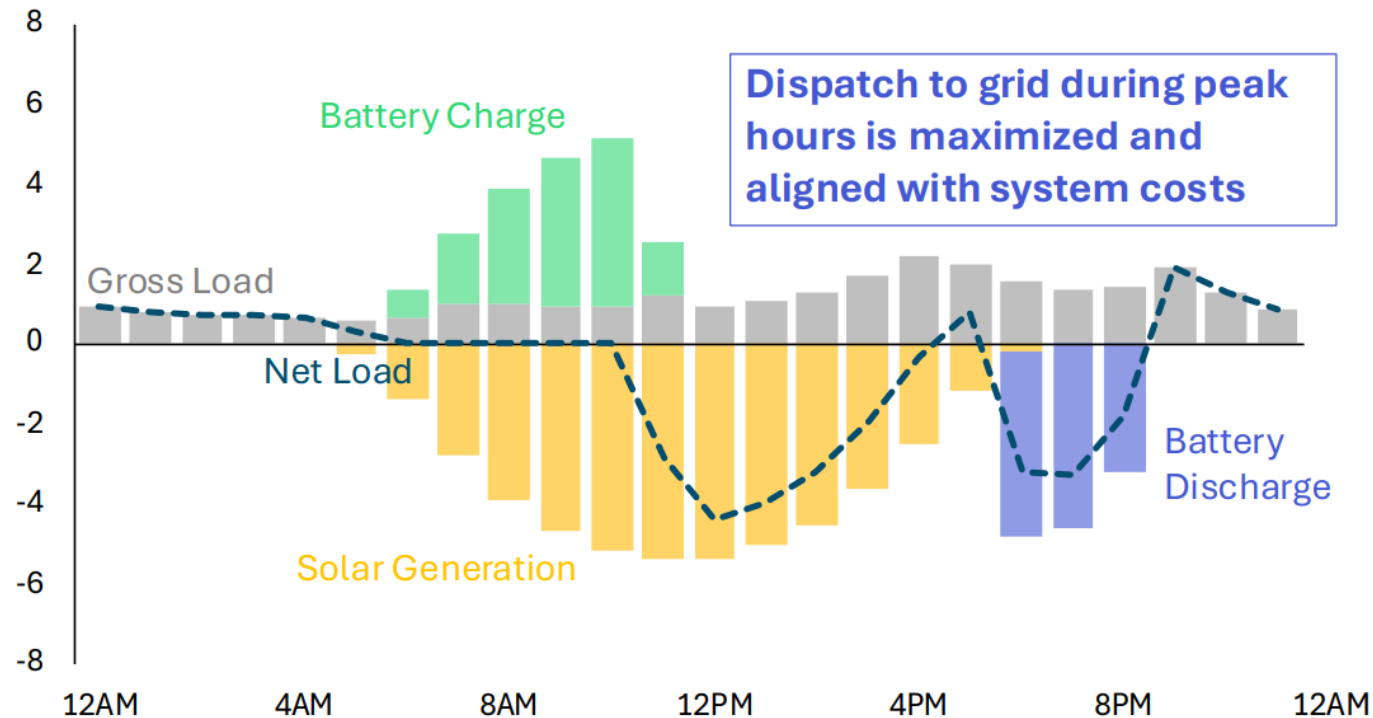
Gross Peak: 2.05 kW (HE18)
Net Peak: 1.9 kW (HE20)

- TOU rate differentiates higher and lower cost periods to consume electricity
 - Solar production (export) tends to occur mostly off-peak
 - Customer consumption (import) tends to occur largely on-peak
- Net metering compensates export through credits regardless of timing, which does not incentivize customer to shift load to off-peak hours
 - Net metering credits based on time-varied prices provides an incentive to export when grid needs it
 - SMART incentivizes solar development and TOU rate will affect calculation of value of energy

• How else can TOU rates impact solar customers and solar adoption? Or net metering and SMART?

TOU Rates and DER: Storage

Hourly Load
kW

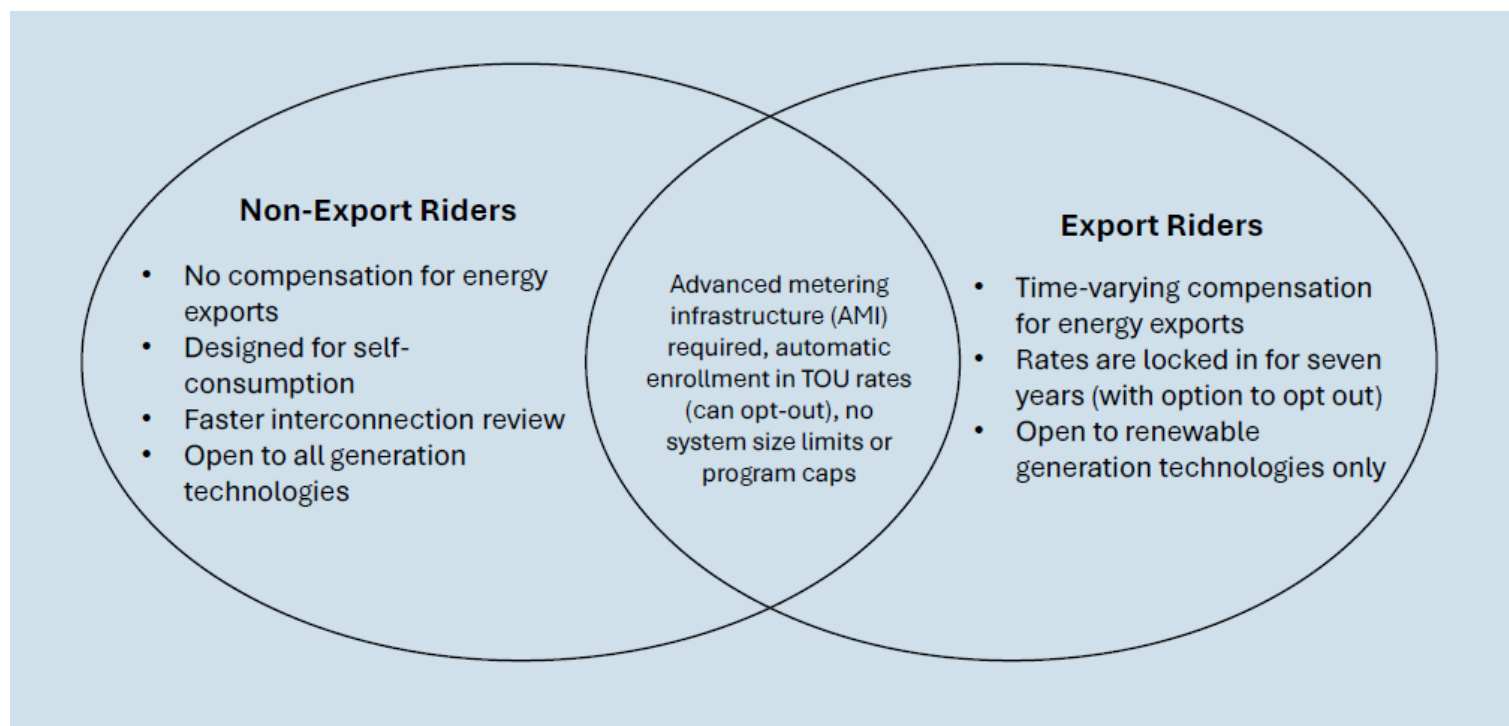


Source: Long-Term Ratemaking Study, E3 (March 2025)

- Storage enables more customer flexibility to export at higher value times, as shown to left
- Customer can provide electricity to the grid during on-peak hours
- Storage can be home battery storage system or an EV with vehicle-to-grid (V2G) capabilities
- Clean Peak Energy Standard (CPS) similarly incentivizes charging during periods of low demand and dispatch during high periods

- How else can TOU rates impact battery storage customers or battery adoption? Or CPS?

Hawai'i SMART DER Programs



- Non-Export Riders and Export Riders are available to customers, replacing net metering and other legacy DER programs

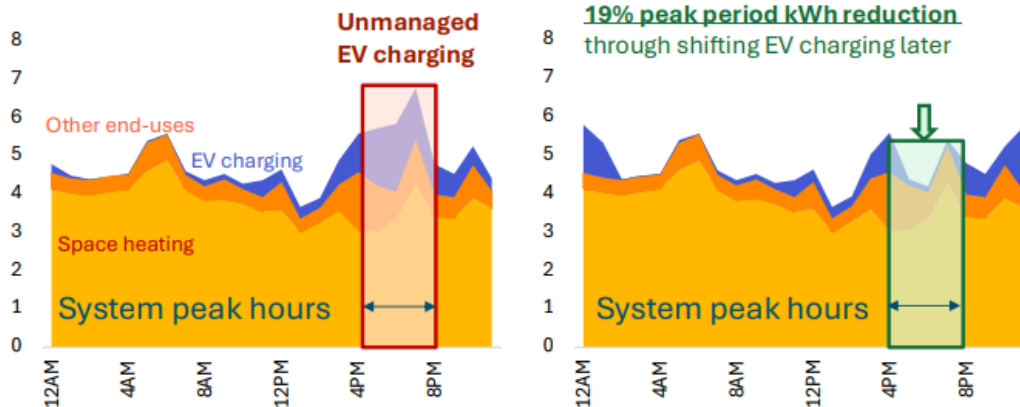
- Are there benefits to offering a non-export rider or export rider beyond TOU rates for DER customers?
- How might these SMART DER programs complement, supplement, or frustrate existing DER programs?

TOU Rates and DER: EV

Flexibility of EV Charging

- Customers with flexible EV charging can shift charging before or after on-peak periods, avoiding on-peak rates associated with incremental grid needs

Daily Energy Consumption, coldest day of 2035
kWh/day



Source: Long-Term Ratemaking Study, E3 (March 2025)

What is Managed Charging?

- Programs** to align EV charging with grid conditions, aiming to spur off-peak charging, defer grid infrastructure upgrades, and reduce electricity costs
- Types of managed charging include:
 - Passive managed charging** – uses price signals to encourage off-peak charging *without real-time control*
 - Active managed charging** – allows utilities or aggregators to *directly control* EV charging based on grid conditions
- National Grid offers seasonal residential and fleet off-peak charging rebate programs:
 - Off-peak hours:** 9:00 P.M. until 1:00 P.M.
 - Incentives:**
 - \$50 one-time enrollment reward
 - Summer:* \$0.05 per kWh
 - Non-summer:* \$0.03 per kWh
- Eversource and Unitil proposed similar off-peak rebate programs. The DPU is currently reviewing these proposals.

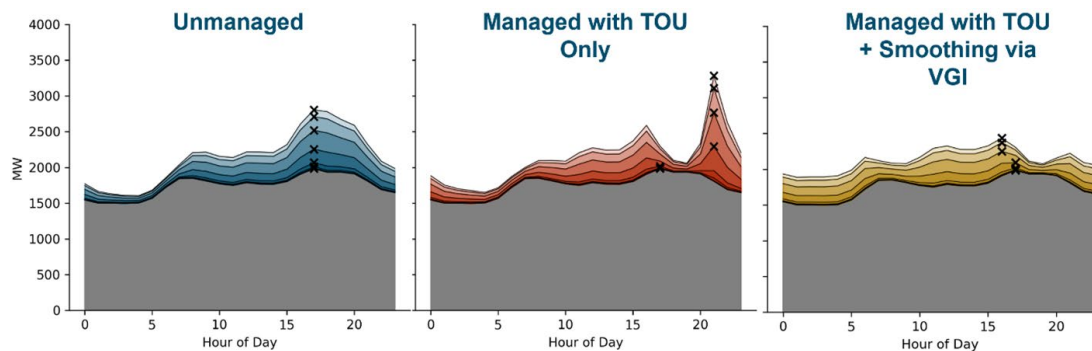
EV Managed Charging and TOU Rates



Evolution of Managed Charging

- Rebound peaks, or timer peaks, can result at the end of a peak period, as shown below
- Active management and vehicle-grid integration (VGI) can address this concern

Example Peak Winter Weekday Loads in Nova Scotia (E3 2023)



Source: Long-Term Ratemaking Study, E3 (March 2025)

Impacts from TOU Rates – Mild

- **TOU rates are an effective complement to managed charging programs.**
- Whole home TOU rates can enhance the effectiveness of managed charging programs by offering further price signals that encourage efficient energy consumption
- Managed charging enables load flexibility that whole home TOU rates cannot, so it is able to address more *localized* grid needs, while TOU rates can address system needs.

Potential Mitigation

- Managed charging and TOU rates share similar objectives: **encourage off-peak consumption and support the adoption of electrified technologies**
- Managed charging and TOU rates take different approaches to addressing similar objectives: (1) **Managed charging sends price signals** to EV charging customers on when to reduce EV demand and (2) **whole-home TOU rates send a market signal to ALL customers** on when to reduce total demand or dispatch resources
- To avoid sending mixed messages to system owners or negating the impact of one policy over another, managed charging and TOU rate implementation should be **aligned**

- How else can TOU rates impact EV customers or EV adoption? Or CPS?

Coordination of Rates and Programs is Essential

Coordination is necessary to ensure clear customer price signals aligned with system costs and other grid benefits

	Rates	Programs
Purpose	Rates may be reformed to support policy goals such as encouraging electrification and providing price signals that support load flexibility.	Programs can help fill “missing money” gaps to incentivize technologies and behavior that are aligned with the Commonwealth’s policy goals.
Applicability	TVR can capture differences in avoidable costs to the bulk system. However, TVR may be ill-suited to capture local distribution costs given high geographic variability.	Programs may be better suited to capture local distribution system benefits given flexibility of offering location-specific incentives, as well as support response from specific technologies, and manage potential rebound peaks from TVR.
Timing	Bulk system costs driven by net peak, <i>i.e.</i> , periods of high system demand and low renewable availability.	Local distribution system needs driven by local gross peak, which may occur at different times in different places.



Closing

Next Steps

Optional Office Hours

July 16, 2025 from 2-4pm

- Optional office hours for further conversation, serving as a structured opportunity to work towards common understandings and positions. We also encourage participants to have discussions amongst each other beside formal Task Force sessions
- Please reach out to Chris Connolly, at chris.connolly2@mass.gov to request a meeting.