STATE OF CONNECTICUT

PUBLIC UTILITIES REGULATORY AUTHORITY

DOCKET NO. 26-05-10

APPLICATION OF THE CONNECTICUT LIGHT AND POWER COMPANY D/B/A EVERSOURCE ENERGY TO AMEND ITS RATE SCHEDULES

DIRECT TESTIMONY

OF

JUAN-PABLO VELEZ

ON BEHALF OF

CONSERVATION LAW FOUNDATION AND SIERRA CLUB

OCTOBER 21, 2026

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Mr. Velez Sponsors the Following Exhibits:

- **JPV-1:** Curriculum Vitae of Juan-Pablo Velez
- **JPV-2:** Data Sources and Methodology
- **JPV-3:** Representative Home Load Profile
- **JPV-4:** HP Rate Derivation

I. INTRODUCTION

Q. Please state your name, business address, and occupation.

A. My name is Juan-Pablo Velez, and my business address is 461 W 126th St #5W, New York, NY 10027. I am the Founder and Executive Director of Switchbox.

Q. Please describe Switchbox.

A. Switchbox is a research non-profit that produces quantitative evidence on the impact of state clean energy policies, with expertise in economics, energy modeling, and regulatory issues. Our clients have included Environmental Defense Fund, Natural Resources Defense Council, Earthjustice, Acadia Center, Green Energy Consumers Alliance, Rewiring America, and others. Our reports have been covered by numerous national and local press outlets.

Q. Please summarize your education and professional experience.

A. I have a BA in Sociology from the University of Chicago. I took post-graduate math courses in probability theory, mathematical statistics, and vector calculus at Columbia University and NYU.

Before founding Switchbox, I was a staff machine learning engineer at Spotify, where I helped build some of the company's large-scale AI systems. Before that, I worked as a data scientist for a boutique data science consultancy called Polynumeral.

I founded and have led Switchbox for the past four years, where I have authored reports covering heat pump rates, building electrification and weatherization incentive programs, green hydrogen blending, non-pipeline alternatives, the economics and grid impacts of all-electric new construction mandates, and other topics. Our reports are based on quantitative economics and engineering models, implemented in software.

I have presented our work on heat pump rate design at Northeast Energy Efficiency Partnership's annual Heating Electrification Workshop and before the Illinois Commerce Commission.

Q. Have you previously testified before the Connecticut Public Utilities Regulatory Authority?

A. No.

Q. Have you previously testified in regulatory proceedings before other state Public Utilities Commissions?

A. Yes. I submitted expert testimony to the Maryland Public Service Commission (MDPSC) on heat pump rates in September 2026 (Case 9888), the Rhode Island Public Utilities Commission (RIPUC) on heat pump rates in March 2026 (Case 25-45-GE), and to the Illinois Commerce Commission (ICC) on Non-Pipeline Alternatives in May 2026 (Case 26-0065).

In addition, Switchbox's reports have been submitted as evidence by intervenors in regulatory proceedings across multiple states, including:

- Case No. 24-E-0165 before the New York State Public Service Commission (NYPSC), on heat pump rates
- Case No. 25-08 before the Massachusetts Department of Public Utilities (DPU), on heat pump rates
- Case No. 24-15 before the DPU, on tiered low-and-moderate income (LMI) discounts
- Case No. 24-194 before the DPU, on National Grid's targeted electrification pilot proposal
- Case No. GR23030102 before the New Jersey Board of Public Utilities, on green hydrogen blending in gas distribution

- Case No. 24-0158 before the Illinois Commerce Commission (ICC), the state's Future of Gas proceeding
- The People's Gas Non-Pipeline Alternatives workshop resulting from the ICC's order in Case No. 24-0081
- Case No. 18-M-0084 before the NYPSC, on the state's energy efficiency programs
- Case No. 25-M-0149 before the NYPSC, on the state's implementation of the All-Electric Building Act

Q. On whose behalf are you testifying in this proceeding?

A. I am testifying on behalf of Conservation Law Foundation and Sierra Club.

Q. What is the purpose of your testimony?

A. To demonstrate that the Company's R1 residential rates are overcharging heat pump customers in violation of cost causation principles and the state's policy goals; to critique the Company's proposed rate for heat pump customers, R6; and to propose an alternative rate design for heat pump customers, Rate HP, that eliminates the overcharge by lowering volumetric rates for distribution and transmission.

Q. How is your testimony organized?

A. My testimony is organized into the following sections:

- **Section I** introduces my qualifications and the scope of my testimony.
- **Section II** summarizes my findings and recommendations to the Authority.
- **Section III** documents how CL&P's current residential rates overcharge heat pump customers relative to their cost-causation, creating a cross-subsidy within the residential class. I show that generation charges track costs fairly, but distribution and transmission charges do not.

- **Section IV** shows how this overcharge undermines Connecticut's building electrification goals. Under current rates, the average natural gas-heated household — the largest group of fossil fuel-heated customers — would see its total energy bills *increase* after switching to a heat pump, turning what should be a savings opportunity into an operating cost penalty.
- **Section V** introduces the Company's proposed Rate 6 heat pump rate, its structure, and its overall impact on overpayments and customer bills.
- **Section VI** shows that Rate 6 unduly discriminates against customers who heat with natural gas and customers who installed heat pumps before 2026.
- **Section VII** shows that Rate 6's discount is far too low to eliminate the overcharge, and that the Company has not justified setting the discount so close to the ceiling rather than the marginal cost floor.
- **Section VIII** demonstrates that Rate 6's block rate design is regressive — directing more of the discount to higher-income households — because lower-income customers have lower base loads and therefore capture less of the Block 2 discount.
- **Section IX** shows that Rate 6's block structure is systematically biased against natural gas-heated customers, who also have lower base loads, and that no single threshold can fix these problems.
- **Section X** presents my proposed remedy: Rate HP, a new residential rate schedule for heat pump customers that eliminates the overcharge by lowering winter volumetric rates for distribution and transmission.
- **Section XI** shows the impact of Rate HP on heat pump customers' energy bills.

- **Section XII** describes how customers would be enrolled in Rate HP through automatic enrollment.
- **Section XIII** discusses alternative rate designs and explains why I recommend a seasonal volumetric reduction over redesigning the default rate, raising the fixed charge, or layering on time-of-use price signals.
- **Section XIV** concludes my testimony.
- **Section XV** is a list of references.

II. SUMMARY AND RECOMMENDATIONS

Q. Please summarize your findings to the Authority.

A. I demonstrate that the volumetric rates associated with the Company's default residential tariff (Rate 1) are overcharging heat pump customers relative to costs they cause when adopting a heat pump. This creates a substantial cross-subsidy *within* the residential customer class, which flows from electric customers that heat with heat pumps to those that heat with fossil fuels. To establish this, I provide evidence that CL&P's electric customers with heat pumps are overcharged by an average of $1,040 per year on distribution and transmission — far in excess of any marginal infrastructure costs their heat pumps actually cause.

Charging heat pump customers far in excess of their cost-causation has two serious consequences: first, it violates intra-class equity, one of the key principles of cost-of-service ratemaking. Second, it undermines the state's ambitious building policy goals: as a direct result of being overcharged, only 57% of CL&P's electricity customers that heat with fossil fuels can currently lower their energy bills by switching to heat pumps.

To stop overcharging heat pump customers, I propose that the Company create a new rate schedule for heat pump customers, Rate HP, with lower volumetric rates for distribution and

transmission during the winter months. The purpose of lowering these rates is to decrease the total revenue collected from heat pump customers for distribution and transmission, in order to bring the incremental revenue collected from customers installing heat pumps in line with the incremental marginal costs they cause.

By better aligning rates for heat pump customers with their actual cost-causation, this proposal would eliminate the significant cross-subsidy that exists between heat pump and fossil-heating electric residential customers, thus making the Company's rates more fair. As our analysis shows, this proposal would also make it cheaper to heat with heat pumps than fossil fuels for 83% of Connecticut households, thus eliminating a key obstacle to the state's building electrification goals.

Q. Please summarize your recommendations to the Authority.

A. I recommend that the Authority:

1. Create a new residential rate schedule, Rate HP, for Company electric customers who use a heat pump for heating.
2. Set a lower Distribution Energy Charge for Rate HP **during the winter months** (November through March), compared with Rate 1. The rate should be set at a level that reflects the distribution cost-of-service of heat pump customers, and ends cost over-recovery from these customers. At present, we estimate that the winter Distribution Energy Charge should be 71% lower than Rate 1's Distribution Energy Charge.
3. Set a lower Transmission Service Rate under the Transmission Adjustment Clause for Rate HP **during the winter months**, compared with Rate 1. The rate should be set at a level that reflects the bulk transmission cost-of-service of heat pump customers, and ends cost over-recovery from these customers. At present, we estimate that the winter

Transmission Service Rate should be 75% lower than Rate 1's Transmission Service Rate.

4. Auto-enroll all electric customers newly installing heat pumps into schedule Rate HP, at the time of installation. Customers would be identified through any existing or new programs that track heat pump adoption, while also offering an attestation and certification option for installation that may happen outside of these programs.
5. Auto-enroll all known electric customers that have previously installed heat pumps into schedule Rate HP.
6. Recalibrate the delivery service and transmission rates associated with Rate HP in subsequent rate cases or relevant proceedings, to reflect the evolving marginal distribution and transmission costs associated with heat pump customers as adoption grows and grid conditions change.

Q. Have you prepared exhibits to accompany your testimony?

A. Yes. I have prepared Exhibits JPV-1 through JPV-4:

- **JPV-1:** Curriculum Vitae of Juan-Pablo Velez
- **JPV-2:** Data Sources and Methodology
- **JPV-3:** Representative Home Load Profile
- **JPV-4:** HP Rate Derivation

III. HOW THE COMPANY IS OVERCHARGING HEAT PUMP CUSTOMERS

Q. How much electricity do the Company's residential customers that heat with fossil fuels consume over the course of the year?

A. Residential customers that heat with fossil fuels consume an average of 7,211 kWh of electricity per year.[1] Figure 1 shows this consumption broken down by month.

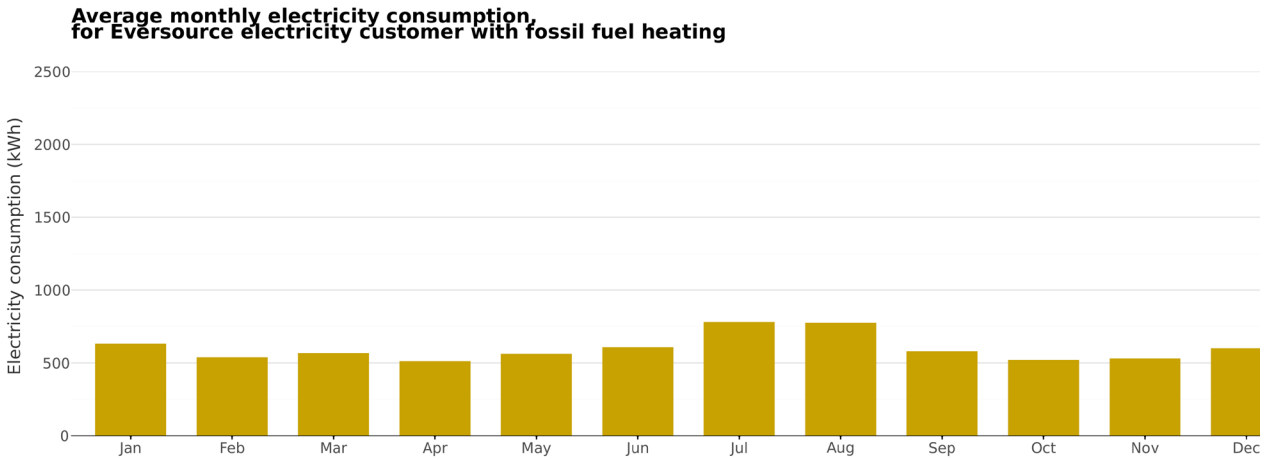

Figure 1: Average monthly electricity consumption for simulated Eversource CT residential electric customers who heat with natural gas, heating oil, or propane.

On average, residential customers that heat with fossil fuels use slightly more electricity in the summer — primarily for air conditioning.

Q. How much do the Company's residential customers that heat with fossil fuels pay for this electricity per year?

Figure 2 shows the average annual bill for residential customers on Rate 1 that heat with fossil fuels, broken down by charge type.[2]

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[1] Average monthly consumption was calculated from a sample of 3,539 residential buildings from NREL's 2024 ResStock residential building energy simulations (NREL 2024b), which model each home's heating fuel and equipment. I relied on ResStock because the Company does not have this information for its own customers. Asked in discovery for hourly residential load profiles broken out by heating fuel, the Company stated that it "does not track heating sources." Response to CLF-SC-009, Docket No. 26-05-10 (Sept. 18, 2026) (Eversource, Parsons, and Davis 2026). Asked separately for hourly usage of heat-pump customers, the Company stated that it "does not employ AMI meters and does not have the data requested." Response to CLF-SC-008, Docket No. 26-05-10 (Sept. 18, 2026) (Eversource, Davis, and Parsons 2026). While the Company was able to provide calculated hourly loads by rate class, my analysis requires residential load profiles broken out by heating fuel and equipment, which are mixed within rate classes. The ResStock sample is statistically representative of Connecticut's building stock, geographically filtered to Eversource's service territory.

[2] Electricity bills computed by applying Eversource's proposed Rate 1 tariff to a representative sample of residential load profiles from ResStock 2024. See Exhibit JPV-2, Section 2.

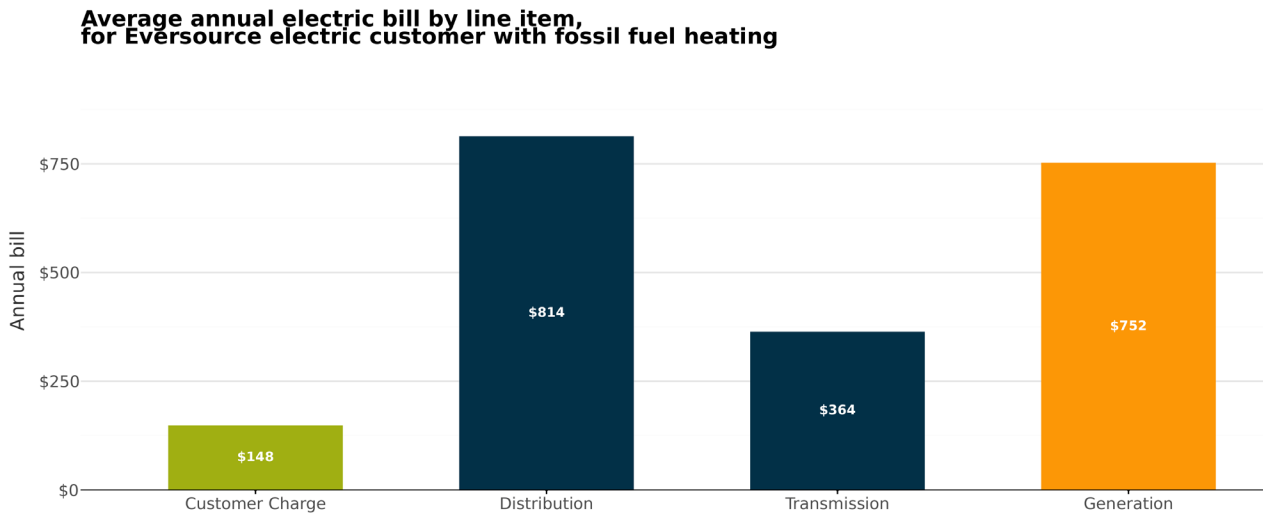


Figure 2: Annual electric bill breakdown by component for fossil fuel-heated homes in Eversource CT's territory, before heat pump installation.

On average, they pay a total of $2,078 per year, broken down as follows:

- $148 in fixed monthly customer charges,
- $814 for distribution, collected by the Distribution Service Rate and its associated riders (ESI, RDM, SBC, etc.) in Rate 1,[3]
- $364 for transmission, collected by the Transmission Charge under the Transmission Adjustment Clause in Rate 1, and
- $752 for generation, collected by the Generation Service Charge in Rate 1.

Q. When residential customers that heat with fossil fuels install heat pumps, how does their electricity consumption change?

[3] Beyond the distribution energy charge and transmission, Rate 1's volumetric delivery rate carries several pass-through riders: the Competitive Transition Assessment (CTA) and the Public Benefits charges — Systems Benefits Charge (SBC), Conservation Adjustment Mechanism (CAM), Renewable Energy, and the non-bypassable FMCC Delivery Charge. Each adjusts through its own reconciliation clause rather than this rate case; at their filed values (Exhibit CLP-RATES-3, Docket No. 26-05-10) (Eversource 2026f) they total -0.911 ¢/kWh.

A. When these customers install heat pumps, they shift their primary heating fuel from fossil fuels to electricity, leading to a significant change in their monthly load shape. Figure 3 shows the result. [4]

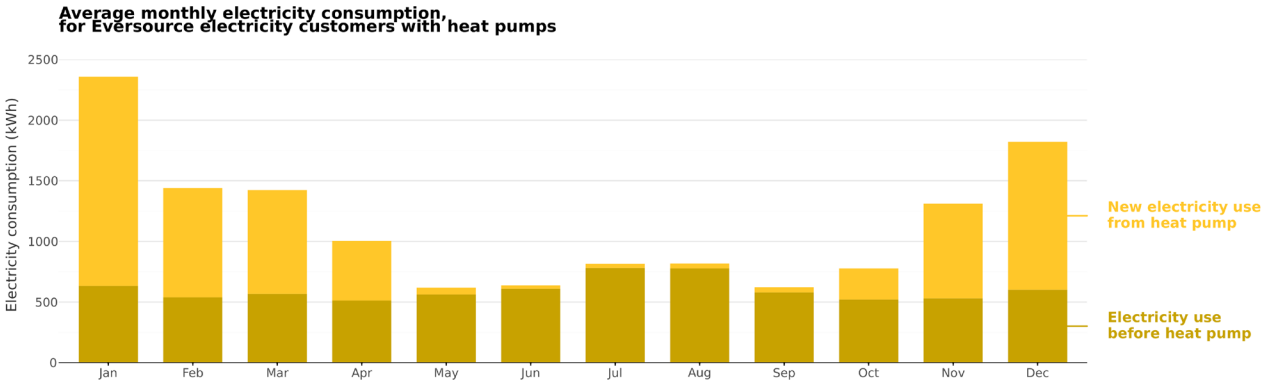


Figure 3: Average monthly electricity consumption for simulated Eversource residential electric customers, before (dark yellow: non-electric heating) and after (light yellow: electric heating) heat pump installation.

On average, their electricity usage grows by 6,432 kWh per year (89%) after replacing their fossil heating system with a heat pump, from 7,211 to 13,643 kWh per year. 97% of this incremental usage occurs between October and April, due to the electrification of their heating load.

The smaller increase between May and September reflects the fact that not all of these homes currently have full air conditioning. Installing a heat pump provides cooling capacity to

[4] Same data sources as Figure 1: ResStock 2024.2 modeled load profiles for Eversource's service territory. "Before" is the baseline (pre-retrofit) population; "after" is the same buildings retrofitted with high-efficiency cold-climate air-source heat pumps with electric resistance backup — variable speed, 90% capacity retention at 5°F, SEER2 19 / HSPF2 9.4 (ducted) or SEER2 20 / HSPF2 9.9 (ductless) (Upgrade 2 in the ResStock 2024.2 release). See Exhibit JPV-2, Section 2.

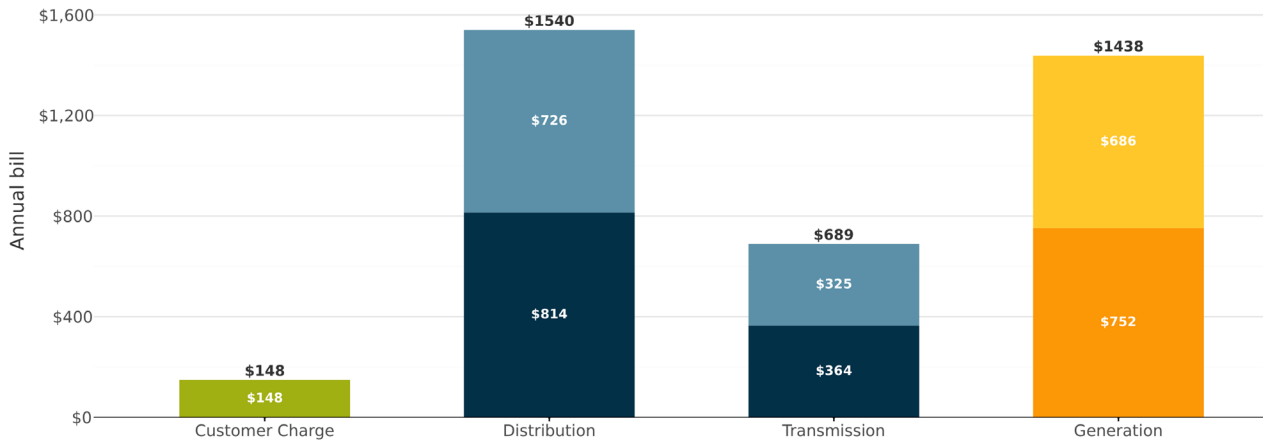
100% of the home, so homes that previously had partial or no air conditioning see a modest increase in summer electricity use.[5]

The bottom line: on average, when homes in the Company's territory that heat with fossil fuels install heat pumps, they experience a very minor increase in summer electricity usage, from additional cooling, and a major increase in winter electricity usage, from the full electrification of their heating.

Q. How do these customers' electricity bills change after installing heat pumps?

A. Because the Company recovers most costs through volumetric per-kWh charges, the increase in electricity consumption leads to higher annual bills across every line item. Figure 4 shows the result.[6]

Average annual electric bill by line item, for Eversource electric customers with heat pumps



[5] Because only 34% of the Company's fossil-fuel-heated customers currently have full cooling coverage, the chart above shows the average change in summer usage, post-heat pump installation, across a representative sample of homes that already had full AC, homes that had partial coverage (e.g., window units in some rooms), and homes that had no cooling at all — each of which sees a different summer increase. This cooling-coverage figure is derived from NREL's ResStock 2024.2 building stock dataset (NREL 2024b), which assigns cooling equipment characteristics to each simulated dwelling based on probability distributions drawn from the EIA's 2020 Residential Energy Consumption Survey (RECS) and other federal surveys; the sample is geographically filtered to Eversource CT's service territory.

[6] Same data sources as Figure 2: monthly kWh from ResStock 2024.2 applied to Eversource's proposed Rate 1 delivery rates (Exhibit CLP-RATES-3, Schedule E-1.1, Docket No. 26-05-10) (Eversource 2026f). See Exhibit JPV-2, Section 2.

Figure 4: Annual electric bill breakdown by component for all Eversource fossil fuel-heated homes, before and after heat pump installation.

After customers that heat with fossil fuels install a heat pump, their average annual electricity bill rises by $1,736 (84%), from $2,078 to a total of $3,815 per year. The increases break down as follows:

- The Customer Charge stays at $148 per year — it is a fixed monthly charge that does not vary with usage
- Distribution increases by $726 (89%) per year, from $814 to $1,540
- Transmission increases by $325 (89%) per year, from $364 to $689
- Generation increases by $686 (91%) per year, from $752 to $1,438

The question my testimony addresses is whether all of these bill increases are consistent with cost-causation.

Q. What is the principle of cost causation?

A. Cost causation is a foundational principle of sound rate design: a utility's costs should be borne by the customers on whose behalf the costs are incurred.[7] In other words, if a customer's usage causes a cost, that customer should be charged for it — and if it does not, they should not be charged as though it does.

Q. Is the bill increase that customers pay for generation after installing heat pumps consistent with the cost-causation principle?

A. Yes. When fossil fuel-heated residential customers install heat pumps, their annual electricity consumption increases by an average of 6,432 kWh. Every one of those new kWh requires the

[7] The cost-causation principle originates in the sixth of the eight Bonbright principles of a sound rate structure: *"Fairness of the specific rates in the apportionment of total costs of service among the different consumers."* (Bonbright 1961).

Company to procure additional electricity supply on the customer's behalf. In other words, the incremental usage resulting from heat pump adoption directly causes new generation costs: if the customer had not consumed that extra electricity, the Company would not have had to incur the cost of procuring it. Therefore, to satisfy the cost-causation principle, these customers should indeed be charged an additional $686 per year, on average, to cover these incremental generation costs.

Q. Is the bill increase that customers pay for distribution and transmission after installing heat pumps consistent with the cost-causation principle?

A. No. The Company is currently overcharging heat pump customers for distribution and transmission costs. I will demonstrate this in the following questions.

Q. You testified that every kWh of electricity consumption causes generation costs. Does every kWh also cause transmission and distribution (T&D) costs?

A. No.

For generation, every kWh a customer consumes causes a generation cost: someone has to generate the electricity that customer is consuming, and the Company has to pay for it. This is true at every hour of the year — a kWh consumed at 3 a.m. in February costs money to generate, as does a kWh consumed at 5 p.m. in August.

In terms of cost causation, transmission and distribution are fundamentally different from generation: very few of the kWh a customer consumes causes a new (or marginal) T&D cost. Distribution and transmission are networks of existing infrastructure that deliver electricity to customers. When a customer uses electricity, it flows over this existing infrastructure. The vast majority of the time, this flow *causes no costs*: the infrastructure is already there, and it has the capacity to deliver the load, without the need for capacity upgrades. (And while this existing

infrastructure does need to be paid for, those are *sunk* costs tied to old investments, not *marginal* costs, or costs caused by customer usage in the present.)

So when does customer usage actually cause new distribution and transmission costs? When the grid is **constrained**: during the small number of peak hours that a customer's demand pushes their local distribution feeder/substation, or the upstream bulk transmission system, near its capacity limits. This triggers the need for capacity upgrades — larger transformers, reconductored feeders, etc. — whose costs, according to the cost-causation principle, should be borne by the customers who caused them.

Bottom line: unlike generation, only usage during **peak hours** causes marginal T&D costs to be incurred by the Company. Usage outside of peak hours simply flows over existing infrastructure, without triggering any new investment.

Q. You testified that customer usage only causes new T&D costs when it occurs during peak hours. When do the Company's distribution peak hours occur?

A. To answer this, I used the hourly marginal distribution costs the Company provided in its response to OCC-863. Those costs start from the Company's system-wide marginal upstream distribution cost of $20.17/kW-year, grossed up for secondary losses to $21.22/kW-year. This annualized cost is then allocated using a probability-of-peak analysis prepared by the Company to each combination of month, hour, and day type (weekday vs. weekend.). I placed these $/kWh-year values on the 2025 calendar and scaled them so the year totals $21.22/kW-year ("Docket 26-05-10: Response to OCC-863" 2026). The full methodology is described in Exhibit JPV-2, Section 3.[8] Figure 5 shows the results.

[8] As part of this rate case, the Company filed an MCOS study (Eversource 2026c, 2026d) that quantifies three categories of marginal distribution cost: (1) individual customer-related costs ($28.98/month for Rate 1), covering meters, service drops, billing, and customer accounts; (2) local distribution facilities costs ($24.51/customer-month for Rate 1), covering lateral primary conductors, transformers, and secondary conductors sized to the design demand

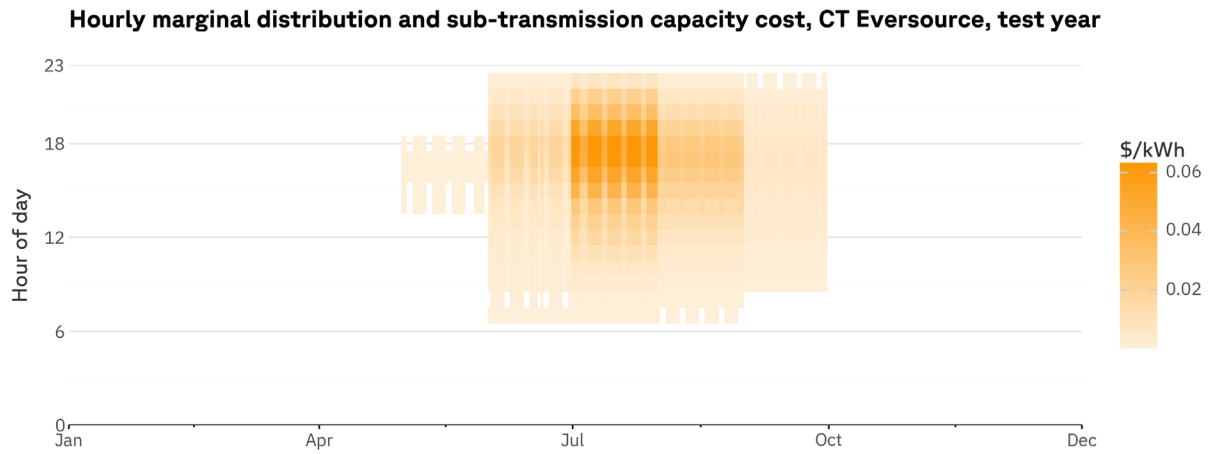


Figure 5: Hourly marginal distribution and sub-transmission capacity costs, CT Eversource, 2025.

Each little rectangle (or cell) in Figure 5 represents one hour during the year. Cells with colors indicate **peak hours**, when additional customer load would trigger the need for new capacity investment, causing new distribution costs. White cells are non-peak hours, when the system has spare capacity and additional load causes no new costs.

Q. When do the Company's transmission peak hours occur?

A. To answer this, I estimated the marginal cost of bulk transmission capacity for every hour of the year. The annual cost is the avoided Pool Transmission Facility cost of $69/kW-year (2024 dollars) from the 2024 Avoided Energy Supply Components study (Synapse 2024), inflated to 2026 dollars (U.S. Bureau of Labor Statistics 2025). I spread that cost across hours using the same probability-of-peak method the Company's witness Amparo Nieto described in the

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of a small set of neighboring customers; and (3) upstream distribution costs ($20.17/kW-year, system-wide), covering bulk-to-local transmission substations, local transmission lines, local-transmission-to-distribution substations, and trunkline primary feeders whose expansion is driven by growth in peak load. To calculate marginal T&D costs, I use only the third category — upstream distribution costs — because the scenario at issue is an existing customer who installs a heat pump, not a new customer connecting to the grid. Customer-related and local facilities costs are incurred when a customer first takes service; they do not change when an existing customer increases their usage. We assume fossil-fuel-heated customers already pay for customer-related and local facilities costs through their monthly bills. The only *marginal* distribution cost that an existing customer's incremental load can trigger, then, is the upstream cost — the cost of expanding substation and feeder capacity when peak demand grows.

response to OCC-733 (Eversource and Nieto 09-11-26), applied to New England system load for 2022 through 2025 (ISO-NE n.d.). The full methodology is described in Exhibit JPV-2, Section 3. Figure 6 shows the result.

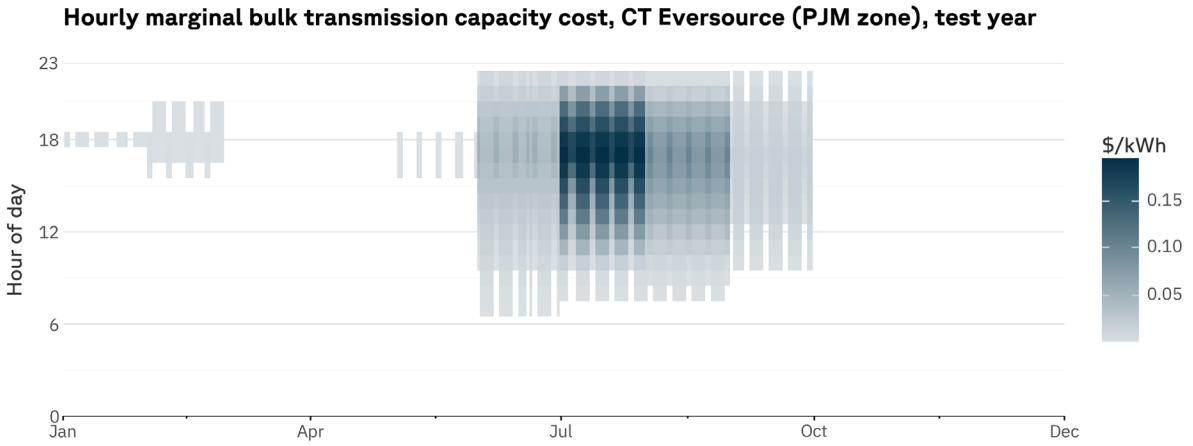

Figure 6: Hourly marginal bulk transmission capacity costs, CT Eversource, 2025.

Distribution and transmission marginal costs display the same seasonal pattern: they are concentrated entirely in the summer.

Q. How many new T&D costs does the average fossil fuel-heated home cause per year, before installing a heat pump?

A. I've established that customer usage only causes new T&D costs during peak hours. Every residential customer that consumes electricity during those hours causes new T&D costs – not just heat pump customers.

So, to calculate how many new T&D costs the average fossil fuel-heated home causes per year, I first identified how many kWh such a home consumes during peak hours every year. Figure 7 revisits the monthly electricity consumption of these customers, with the portion consumed during peak hours highlighted in red.[9]

[9] Average hourly load from CAIRO's ResStock building-stock simulation of CL&P residential customers. An hour is classified as "peak" when it carries a marginal distribution or bulk transmission capacity cost exceeding

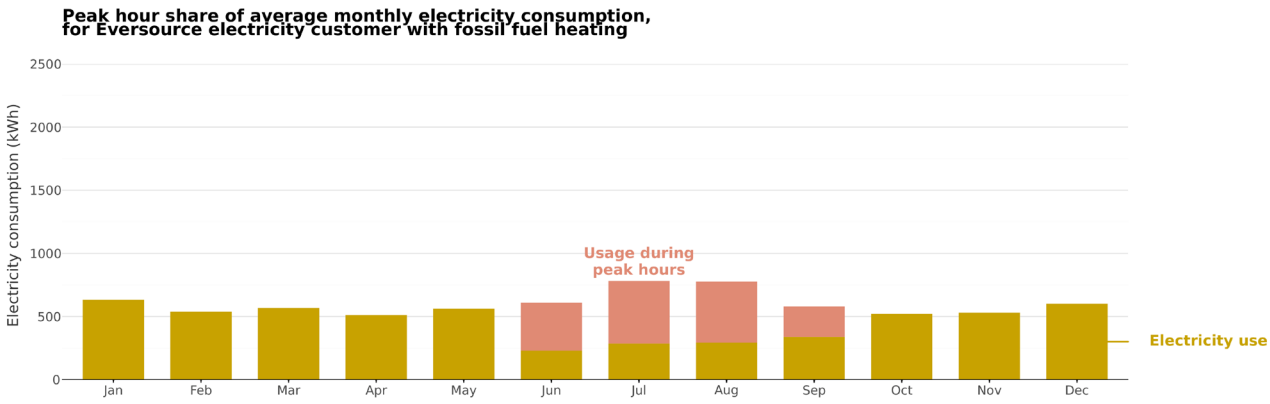

Figure 7: Average monthly electricity for simulated Eversource fossil fuel-heated homes before heat pump installation, with peak-hour usage highlighted. Peak hours are defined as hours where marginal T&D capacity cost exceeds 0.5¢/kWh, capturing 99% of total annual marginal cost.

In total, these customers consume an average of 1,599 kWh during peak hours — just 22% of their total annual usage. As Figure 7 shows, 100% of this peak hour usage occurs during the summer.

Next, I identified the marginal T&D cost caused by each of those peak-hour kWh. On average, each peak-hour kWh causes approximately 2.1¢ of new distribution costs and 5.3¢ of new transmission costs.[10]

We now have both ingredients: the number of peak-hour kWh each fossil fuel-heated customer consumes, on average, and the marginal T&D cost of each one. Multiplying them together — hour by hour, across the full year — gives us the total marginal T&D costs that the

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0.5¢/kWh. This de minimis threshold excludes hours with trace probability-of-peak allocations that collectively account for less than 1% of total annual marginal capacity cost. See Exhibit JPV-2, Sections 2 and 3.

[10] The per-kWh cost varies by hour: distribution ranges from 0.6¢ to 6.3¢, and transmission from 0.5¢ to 19.6¢. Marginal costs are higher during the most constrained hours. The full methodology for how I derived these hourly costs is described in Exhibit JPV-2, Section 3.

average fossil fuel-heated home causes per year. Figure 8 shows the result, broken down by season.[11]

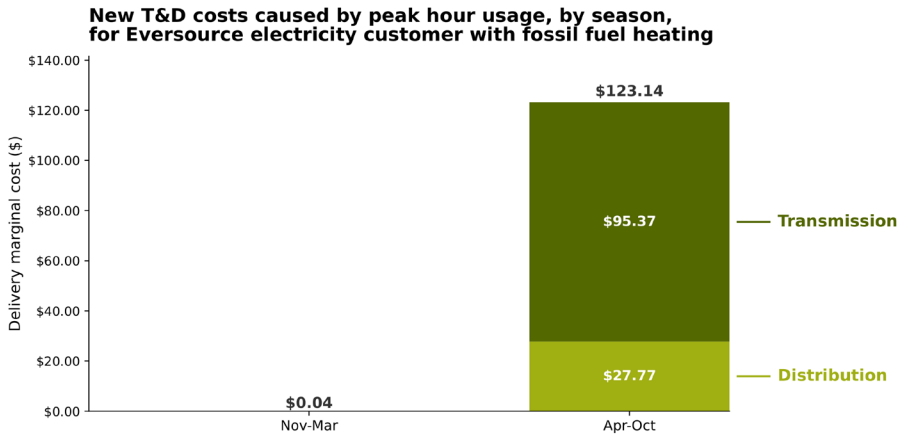

Figure 8: Seasonal delivery marginal cost for all Eversource fossil fuel-heated homes before heat pump installation.

The 1,599 kWh consumed during peak hours by the average fossil fuel-heated customer cause a total of $28 in new distribution costs and $95 in new transmission costs, per year. As Figure 8 shows, this combined marginal T&D cost of $123 is caused entirely by peak hour usage during the summer.

This is the status quo of T&D cost causation for fossil fuel-heated homes. The key question is: after these homes install heat pumps, do they start causing *more* than $123 in new T&D costs per year? If so, under the cost-causation principle, their T&D bills should increase by that increment — their *incremental* marginal T&D cost — and no more.[12]

Q. What *additional* new transmission and distribution costs does the average fossil fuel-heated customer cause per year after installing a heat pump?

[11] Weighted-average hourly load from CAIRO's ResStock simulation multiplied by the hourly marginal-cost schedule derived in Exhibit JPV-2, Section 3, summed by season. See Exhibit JPV-2, Section 4.

[12] By "incremental marginal T&D cost," I mean the *increase* in a customer's annual marginal T&D costs that results from installing a heat pump — not the total marginal T&D cost. Every residential customer already causes some marginal T&D cost from summer peak-hour usage. The question is how much *more* a heat pump adds.

A. As previously established, only usage during peak hours causes new T&D costs. Before installing a heat pump, the average fossil fuel-heated customer consumed 1,599 kWh during summer peak hours every year, causing a total of $123 in T&D costs per year.

After installing the heat pump, these customers add thousands of kWh in winter — but as I showed in the preceding questions, winter kWh carry near zero marginal T&D cost. Virtually all incremental peak-hour usage comes from a modest increase in summer cooling, as some homes gain full air conditioning for the first time. That amounts to just 114 additional peak-hour kWh per year, on average.

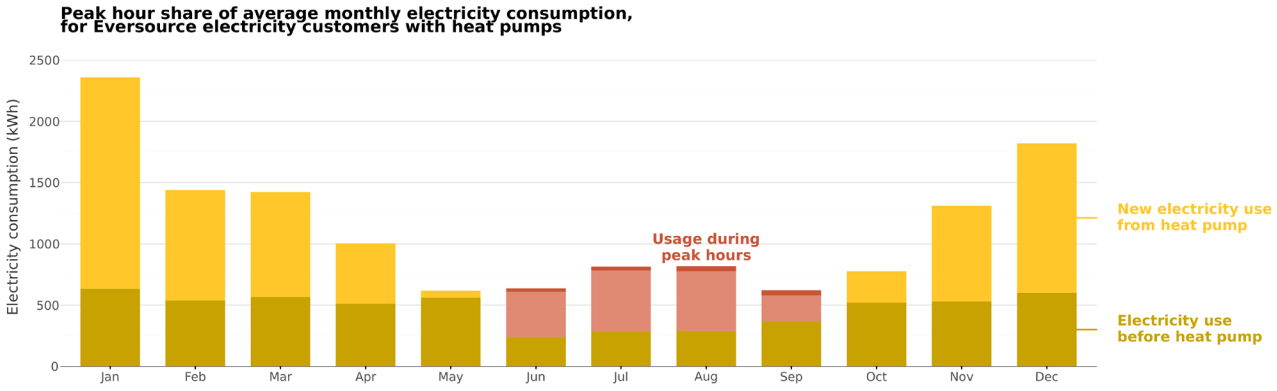

Figure 9: Average monthly electricity for all simulated Eversource fossil fuel-heated homes, before and after heat pump installation, with peak-hour usage highlighted. The darker red at the top of each bar is the new peak-hour demand added by the heat pump; the lighter red below it is peak-hour demand the home already had before the heat pump. Peak hours are defined as hours where marginal T&D capacity cost exceeds 0.5¢/kWh, capturing 99% of total annual marginal cost.

Figure 9 makes this visible. When fossil fuel-heated customers install heat pumps, 97% of their incremental load falls between October and April — when there are no peak hours and

therefore zero marginal T&D cost. Of the thousands of new kWh these customers add each year, only 114 coincide with peak hours (shown in red) — less than 1.8% of the total.

So what do those 114 additional kWh of peak-hour usage do to these customers' marginal T&D costs? Figure 10 shows the answer.[13]

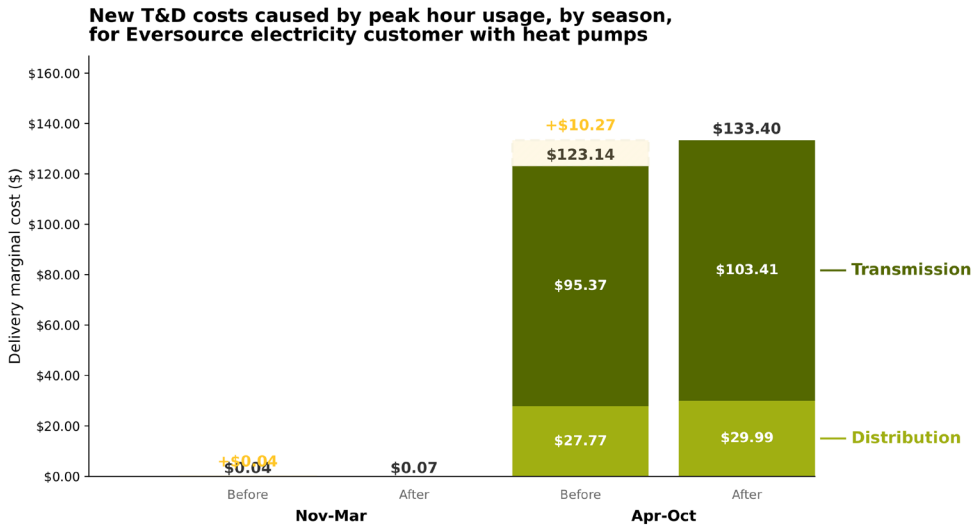

Figure 10: Seasonal delivery marginal cost for all Eversource fossil fuel-heated homes, before and after heat pump installation.

Before adopting heat pumps, fossil fuel-heated customers caused virtually *zero* new T&D costs in winter, and that remains the case after they electrify their heating. In summer, their marginal T&D costs barely move: $133, up from $123. Their **incremental marginal T&D cost** is therefore just $10 per year, on average.

Q. Why is it the case that fossil fuel-heated customers cause nearly zero new T&D costs in winter?

A. The Company's own Marginal Cost of Service (MCOS) study assigns near-zero marginal distribution costs to winter hours.

[13] Same data sources as Figure 8, showing both the fossil-heated and heat pump profiles.

That result reflects a basic physical reality on the Company's distribution system: there is massive spare capacity in the feeders that deliver electricity to customers. Figure 11 ranks every feeder on Eversource's distribution system by how close its peak demand comes to its rated capacity, from most to least utilized:[14]

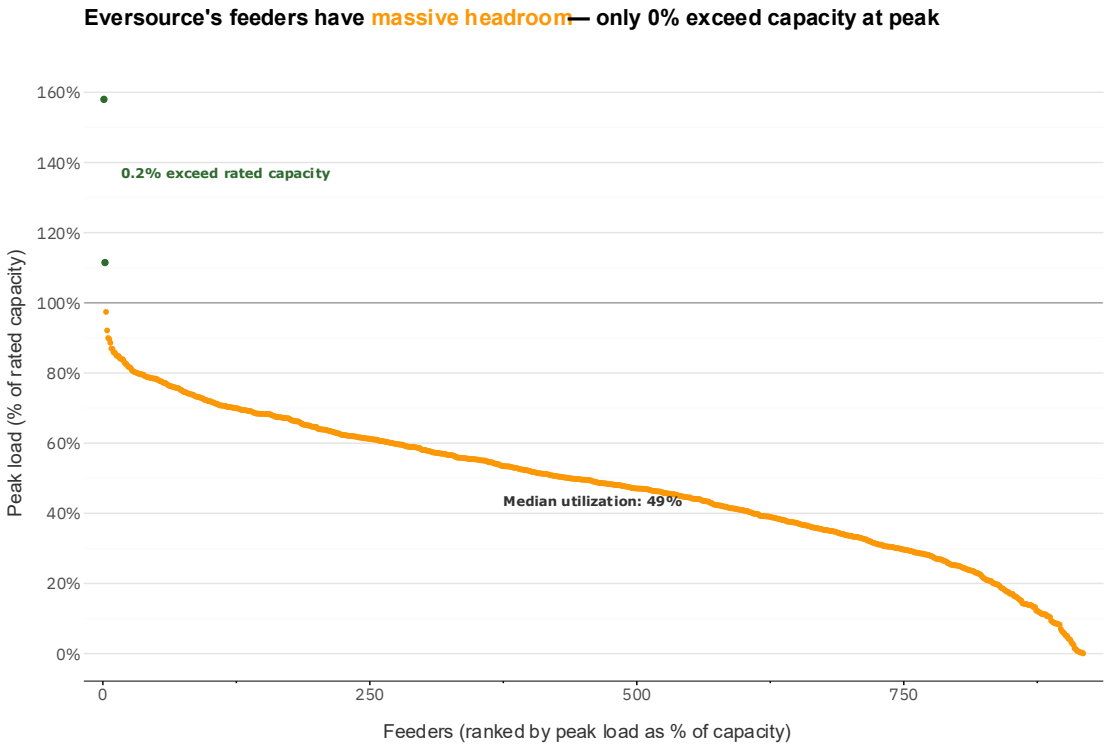

Figure 11: Peak demand as a percentage of rated capacity for every feeder on Eversource CT's distribution system, ranked from most to least utilized. The gray line marks 100% of rated capacity. Source: Eversource response to System Data Requirement No. 2.

Of the 918 feeders with loading data, only **2 feeders** — 0.2% — have peak demand that exceeds their rated capacity. Those feeders serve just 4,903 customers, or 0.4% of the Company's 1,218,177 customers on feeders with data. The median feeder operates at just 49% of capacity, meaning **the typical feeder has 51% headroom** even at its annual peak.

[14] Data from the Company's response to System Data Requirement No. 2, OCC-365, Attachment 28, Docket No. 26-05-10. Peak demand is the most recent available annual maximum loading (2025 where reported, otherwise 2024). Capacity is the feeder's rated capacity in KVA.

The Company has not yet provided data identifying whether each feeder's peak occurs in summer or winter.[15] Until that data is produced, I have conservatively assumed that the peaks shown in Figure 11 are summer peaks.[16] Under that assumption, the chart depicts the distribution system at its *most stressed* — and even then, the vast majority of feeders have substantial spare capacity.

In winter, the headroom is certainly even greater. Connecticut is a summer-peaking system: virtually every home and business has air conditioning, which drives the summer peak. By contrast, fewer than 18% of Connecticut households heat with electricity — the vast majority heat with natural gas and fuel oil, loads that the electric grid does not carry at all.[17] The winter electric peak is therefore almost certainly well below the summer peak across the Company's distribution system, which means the headroom shown in Figure 11 — already substantial — would be even larger in winter. This is consistent with the MCOS study assigning near-zero marginal distribution costs to winter hours: there is simply no capacity pressure on the distribution grid during the heating season.

Q. Is the bill increase that customers pay for distribution and transmission after installing heat pumps under Rate 1 justified by the additional T&D costs they cause after making this transition?

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[15] We requested summer and winter peaks through discovery but the Company has not yet provided it. What was provided is each feeder's annual maximum and minimum demand across the past five years, without identifying the date, hour, or season at which the peak occurred.

[16] The Company reported each feeder's annual maximum demand but did not identify the season. Connecticut is a summer-peaking system, so most feeders' annual peaks almost certainly occur in summer. Even if some turn out to be winter peaks, this makes our headroom estimate *more* conservative, not less: the annual maximum is by definition higher than the winter peak alone, so the true winter headroom on those feeders would be even greater than what Figure 11 shows.

[17] U.S. Census Bureau, American Community Survey 1-Year Estimates (2023), Table B25040, "House Heating Fuel." In Connecticut, 34% of occupied housing units heat with utility gas, 32% with fuel oil, and 18% with electricity (including both heat pumps and electric resistance).

A. No, these customers are being overcharged.

Under the cost-causation principle, these customers should pay for that additional $10 in new T&D costs they cause, on average — but no more. Yet under proposed Rate 1, their distribution and transmission charges increase by $1,051 per year — roughly 102 times the new T&D costs they actually cause.

Figure 12 shows the gap between the incremental T&D charges that the average fossil fuel-heated customer pays after installing heat pumps, and the incremental marginal T&D costs they cause.[18]

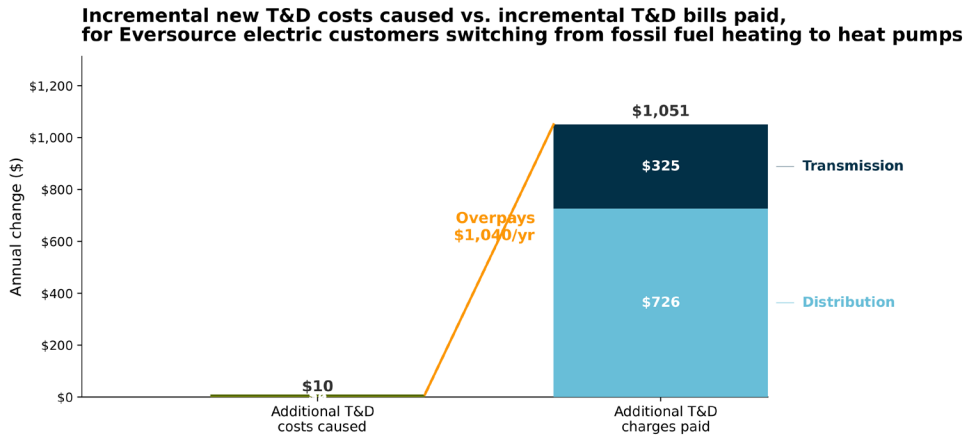

Figure 12: Change in annual T&D costs caused vs. T&D charges paid when a fossil fuel-heated home installs a heat pump under proposed Rate 1.

At present, fossil fuel-heated customers that install heat pumps overpay by an average of $1,040 a year — an amount equal to 44% of their entire post-heat-pump T&D bill.[19] This is a gratuitous surcharge that penalizes customers who electrify their heating, in order to lower the

[18] Charges computed by applying Eversource's proposed Rate 1 tariff to the same representative sample of residential load profiles. Costs from the hourly marginal-cost schedule described in Exhibit JPV-2, Section 3. See Exhibit JPV-2, Section 4 for the full methodology.

[19] $1,040 overcharge ÷ $2,377 total post-heat-pump T&D bill = 44%.

bills of customers who continue to heat with fossil fuels. (See next question for an explanation of how this transfer occurs.)

Q. You've shown that fossil fuel-heated customers are overpaying for T&D by $1,040 a year — on average. Does the overpayment vary by customer?

A. Yes, it varies significantly. Figure 13 shows the entire distribution of annual T&D overpayments across all fossil fuel-heated customers in the Company's territory after switching to heat pumps, under the proposed Rate 1 tariff.[20]

Overpayments are defined as each customer's incremental T&D charges (from Rate 1 being applied to their heat pump's incremental load), minus their incremental T&D marginal cost (the *additional* new T&D costs caused by that incremental load during peak hours).

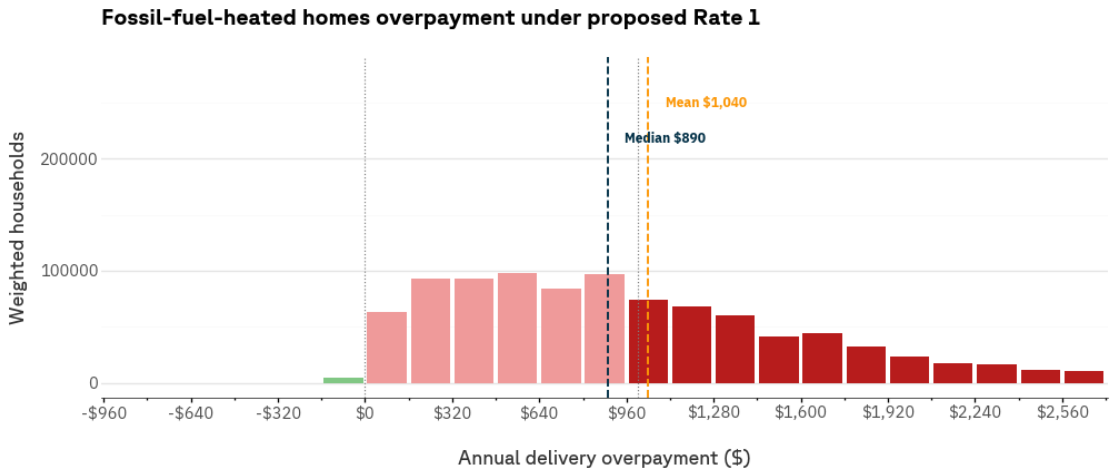

Figure 13: Annual delivery overpayment for all fossil fuel-heated CT Eversource homes switching to heat pumps, under proposed Rate 1.

The overpayment here is calculated as their total delivery bill after they install heat pumps, minus the sum of the incremental marginal costs caused by the installation and their total

[20] Per-building overpayment = incremental delivery revenue − incremental delivery marginal cost. Positive values indicate the customer is being overcharged; negative values indicate the customer is being undercharged. See Exhibit JPV-2, Section 4.

delivery bill before the installation. Positive values indicate overpayment — that customer is being charged above their incremental marginal cost; negative values indicate underpayment. 0 indicates a customer whose post-heat pump bill only increases by the costs they cause due to the heat pump, their incremental marginal costs. Under a perfectly fair rate (from a cost-causation perspective), all customers would be at 0.

Figure 13 confirms that overcharging is the norm, not the exception: virtually all fossil fuel-heated homes that switch to heat pumps are being overcharged for transmission and distribution, with most overpaying between several hundred and well over a thousand dollars per year.

The overpayment distribution is right-skewed — some homes overpay far more than the average — because homes with larger heating loads add more incremental kWh, and each of those kWh is charged at the full volumetric rate regardless of whether it causes new infrastructure costs.

Q. Why do fossil fuel-heated customers who install heat pumps end up being overcharged for T&D under Rate 1?

A. Under the cost-causation principle, if a customer's usage does not cause new costs, they should not be charged as though it does. Rate 1 does exactly that: it charges the same volumetric rate for every kWh — whether that kWh flows over the grid at 2 a.m. in January, when the system has abundant spare capacity, or at 5 p.m. on the hottest day of the year, when the system is strained.

When a customer installs a heat pump and adds 6,432 kWh per year, the tariff treats every one of those kWh as though it triggers new infrastructure investment. But 97% of those

new kWh fall between October and April, when there are no peak hours and therefore zero marginal T&D cost. The tariff does not distinguish — it charges the same rate regardless.

Q. Is the Company aware that fossil fuel-heated customers who adopt heat pumps are being overcharged under Rate 1?

A. Yes. Though the Company does not use the term "overpayment" or "overcharge", it is indeed aware of the large gap between the incremental revenue that Rate 1 extracts from heat pump customers, and the incremental cost those customers actually impose on the grid, as the proposed discount under Rate 6 is justified by the existence of, and applied directly to, this gap.

When asked how it determined the level of the Rate 6 discount, the Company responded: "The discounted rate is set to cover the incremental cost of serving the additional load the converting customer adds, which establishes the floor; the standard residential rate establishes the reference point above it. The discount is the space between those two, and it is sized to be no deeper than that space."[21]

In other words, the Company is claiming that the discount could legitimately be set anywhere within the gap between the incremental revenue produced by applying Rate 1 to incremental heat pump load, and the incremental marginal T&D cost associated with that load. (As will be shown in Section VII, the Company's proposed Rate 6 sets the discount far closer to the "ceiling" than the "floor".)

Why does the Company see incremental marginal T&D cost as the floor? Because it guarantees that the discount does not shift costs to non-heat pump customers: "A Rate 6

[21] Response to CLF-003(b), Docket No. 26-05-10 (Sept. 3, 2026) (Eversource 2026b).

customer pays to cover the incremental cost of serving that customer, such that no portion of that customer's cost of service is redistributed to non-adopting customers."[22]

The implication is clear: everything that Rate 1 collects from a heat pump customer's incremental load *above* that customer's incremental cost of service is revenue in excess of what cost causation requires — an overpayment, in our terminology. The Company could eliminate all of the entire overpayment — discount the rate all the way down to the floor — and customers newly installing heat pumps would still be paying their full incremental cost of service, still satisfying cost causation, without negatively affecting the bills of non-heat-pump customers.

Q. What is a cross-subsidy, and how do volumetric rates create one within the residential customer class?

A. A cross-subsidy within a rate class arises when one identifiable group of customers systematically pays more than their cost of service, and that excess revenue allows the customers of another identifiable group to pay less than their cost of service.

The mechanism is straightforward: when fixed costs — like the embedded costs of the transmission and distribution system — are predominantly recovered through volumetric charges, customers with higher-than-average usage pay a greater share of those fixed costs, effectively subsidizing the customers with lower-than-average usage.[23]

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[22] Response to CLF-003(b), Docket No. 26-05-10 (Sept. 3, 2026) (Eversource 2026b).

[23] This principle is well established in the cost-of-service and rate-design literature. Bonbright explains that a uniform per-kWh rate, "in treating the total cost of the business as if it varied directly with changes in the kilowatt-hour output of energy — a grossly false assumption — violates the most widely accepted canon of fair pricing, the principle of service at cost," because many costs (capacity and customer costs) are not a function of kWh output. James C. Bonbright, *Principles of Public Utility Rates* (Columbia Univ. Press, 1961), at 304–305, 345–346 (Ch. XVI and XVIII). The NARUC cost allocation manual establishes the foundational framework, classifying transmission and distribution costs as primarily **demand-related** (varying with kW peak demand, not kWh consumption), so that recovering them through volumetric energy charges violates cost-causation principles. NARUC, *Electric Utility Cost Allocation Manual* (1992), Ch. 2 §V, Ch. 6. Most directly, the RAP manual identifies this as "essentially a question of a potential intraclass cross-subsidy between types of residential customers" — specifically between electric-heating and non-heating customers — and notes that "seasonally differentiated rates, if based appropriately on cost causation, can achieve the same distributional impact as separate rate classes." Jim

The Company's own MCOS witness, Amparo Nieto, addresses how volumetric cost recovery creates cross-subsidies, noting that current rate structure produces "existing cross-subsidies within the class (higher usage customers disproportionally paying more than cost of service)" and recommending that the Company "reduce the over-reliance of fixed distribution cost recovery through usage charges" in order to "increase equity across customers within the class." [24] (We address the relationship between intra-class cross-subsidies and intra-class equity below.)

Q. You've established that heat pump customers are overpaying for T&D. Why do these overpayments contribute to a cross-subsidy within the residential customer class?

A. The fossil fuel-heated homes that install heat pumps become higher-usage customers, on average, because they effectively shift their largest energy load — space heating — from fossil fuels to electricity.

With their significantly higher kWh, volumetric T&D rates lead these customers to pay significantly higher T&D bills — $1,051 more per year, on average (Figure 12).

If these higher bills equaled the new T&D costs they were causing after switching to heat pumps — $10 per year — not only would the cost-causation principle be satisfied, but these higher bills would not contribute to a cross-subsidy: their incremental T&D bills of customers installing heat pumps would simply be covering the incremental T&D costs caused by that transition.

However, as I have established, heat pump customers are actually overpaying for T&D by $1,040, and this overpayment contributes directly to a cross-subsidy to electric customers that heat with fossil fuels, via the exact mechanism described in the preceding question.

Lazar, Paul Chernick & William Marcus, *Electric Cost Allocation for a New Era: A Manual* (RAP, 2020), §5.2; *see also* §6.1.2, Ch. 28.

[24] Direct Testimony of Amparo Nieto, Exhibit CLP-MCOS-1 at p. 8 (Eversource 2026c).

Q. Why is the cross-subsidy associated with heat pump adoption a problem that the Authority should address?

A. Because it represents a significant violation of intra-class equity, and directly undermines Connecticut's building electrification policies. I will address each in turn.

Q. Why does the cross-subsidy you've identified represent a significant violation of intra-class equity?

A. While the overpayments heat pump customers experience violate the cost-causation principle, the cross-subsidy they produce violates **intra-class equity** — the principle that rates should not produce significant cross-subsidies between identifiable groups of customers within the same rate class.[25]

The Company's own witness identifies intra-class equity as a foundational rate design objective. Witness Nieto lists "ensuring equitable rates or mitigating intra-class cross-subsidies" as one of "the major ratemaking objectives,"[26] and ACOS witness Nieto identifies "intra-class equity" as a core rate design objective.[27]

I claim that the cross-subsidy from heat pump to non-heat pump customers represents a significant violation of intra-class equity because it is *systematic*, *substantial*, and will continue to *grow with electrification*.

Q. Why is the cross-subsidy from heat pump to non-heat pump customers systematic, substantial, and growing with electrification?

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[25] The Company shares this definition of intra-class equity as the absence of intra-class cross-subsidies, because MCOS witness Nieto recommends that the Company "reduce the over-reliance of fixed distribution cost recovery through usage charges" in order to both "increase equity across customers within the class" and reduce "existing cross-subsidies within the class." Exhibit CLP-MCOS-1 at p. 8.

[26] Direct Testimony of Amparo Nieto, Exhibit CLP-MCOS-1 at p. 5 (Eversource 2026c).

[27] Direct Testimony of Amparo Nieto, Exhibit CLP-ACOS-1 at p. 8 (Eversource and Nieto, n.d.).

A It is true that under any volumetric rate, some customers will subsidize others. But the cross-subsidy I have identified is not incidental, it is *systematic*. Installing a heat pump means shifting a home's largest energy load — space heating — from fossil fuels to electricity. This is a fundamental transformation of a customer's load shape, and it virtually guarantees that the heat pump customer is now subsidizing electricity customers who heat with fossil fuels.

The cross-subsidy is also *substantial*. Because space heating is the single largest residential energy end use, the overpayment per household is not marginal — it is hundreds of dollars per year.

Finally, the cross-subsidy *grows with electrification itself*. The overpayment is not limited to a few customers making unusual choices — it is a built-in consequence of a retrofit that the State of Connecticut is asking every fossil fuel-heated household to undertake over the next couple of decades. Every household that embraces clean heat by installing a heat pump overpays, and will continue to overpay, for as long as Rate 1 remains structured this way.

In summary, the cross-subsidy I have identified is not a random distribution of small over- and underpayments. It is a large and growing flow of excess revenue from one identifiable group of customers to another — a systematic and substantial transfer that grows with every heat pump adopted, at a time when the state is gearing up to accelerate adoption.

Q. Is the Company aware that overpayments from heat pump customers contribute to a cross-subsidy within the residential customer class which violates intra-class equity?

A. Yes. The Company demonstrates an acute awareness of cross-subsidy risk, from heat pump to non-heat pump customers, as well as in the other direction. But it only explicitly discusses the latter risk, despite the fact that the former is the overwhelming reality under Rate 1.

The Company designed Rate 6 so that the discounted rate never falls below the incremental marginal T&D cost of customers installing heat pumps. Its rate witness explains: "The discounted rate is set to cover the incremental cost of serving the additional load the converting customer adds, which establishes the floor."[28] It further states that "a Rate 6 customer pays to cover the incremental cost of serving that customer, such that no portion of that customer's cost of service is redistributed to non-adopting customers."[29] And in explaining why summer kWh receive no discount at all, the Company states: "such customers need to pay the full rate so other customers are not subsidizing the rate, which would be at cross-purposes from an affordability perspective."[30]

The Company is clearly worried about creating a cross-subsidy running *from* non-heat-pump customers *to* heat pump customers — about the discount "overshooting" the incremental marginal costs associated with heat pump installations.

But the Company never explicitly acknowledges the cross-subsidy that already exists, and runs in precisely the opposite direction, *from* heat-pump customers *to* non-heat pump customers. Nevertheless, the Company is clearly aware of it: Rate 6 keeps "incremental load priced above the marginal cost of serving it" because "spreading fixed costs over a larger sales base places downward pressure on average rates for all customers over time,"[31] which is precisely the mechanism through which a cross-subsidy originating from heat pump customers produces lower bills for non-heat pump customers.

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[28] Response to CLF-003(b), p. 2, Docket No. 26-05-10 (Sept. 3, 2026) (Eversource 2026b).

[29] Response to CLF-003(b), p. 2, Docket No. 26-05-10 (Sept. 3, 2026) (Eversource 2026b).

[30] Exhibit CLP-RATES-1, Direct Testimony of Edward A. Davis and Kimberly R. Parsons, p. 33, Docket No. 26-05-10.

[31] Response to CLF-003(a), p. 1, Docket No. 26-05-10 (Sept. 3, 2026) (Eversource 2026b).

In fact, the word "cross-subsidy" appears in the Company's testimony only as a danger to be guarded against in designing Rate 6 — never as a description of what Rate 1 is already doing. This emphasis is curious: as proposed, Rate 6's discount is nowhere close to falling below incremental marginal cost — the level below which it would begin to create a cross-subsidy from non-heat-pump to heat pump customers. Meanwhile, precisely *because* the discount stays so far above that floor, Rate 6 leaves 76% of the existing cross-subsidy running in the other direction firmly in place. The Company appears highly concerned about a cross-subsidy risk that is not remotely close to materializing, while consciously perpetuating a cross-subsidy that is already here: a cross-subsidy running *from* heat pump customers *to* non-heat pump customers, which represents a fundamental violation of intra-class equity.

Q. Why does the cross-subsidy you've identified directly undermine Connecticut's building electrification policies?

A. By raising the bills of heat pump customers in order to lower the bills of fossil fuel-heated customers, the cross-subsidy significantly inflates heat pump operating costs, creating an economic barrier to the very adoption that Connecticut's climate policies are designed to accelerate. I address this problem in detail in the following section.

IV. OVERCHARGING HEAT PUMP CUSTOMERS UNDERMINES CONNECTICUT'S BUILDING ELECTRIFICATION POLICIES

Q. What are Connecticut's building electrification targets?

A. Connecticut law requires the state to reduce economy-wide greenhouse gas (GHG) emissions at least 45% below 2001 levels by 2030, 65% below 2001 levels by 2040, and to achieve economy-wide net-zero emissions by 2050.[32] The Connecticut Department of Energy and

[32] Conn. Gen. Stat. § 22a-200a, as amended by Public Act 08-98 (2008), Public Act 18-82 (2018), and Public Act 25-125 (2025). The 2008 Global Warming Solutions Act established the 2020 and 2050 targets; the 2018

Environmental Protection's (DEEP) most recent Greenhouse Gas Emissions Inventory finds that the state is not on track to meet these targets: at current trends, Connecticut will achieve approximately a 40% reduction from 2001 levels by 2030 — about 5 percentage points short of the statutory goal.[33]

Reducing emissions from buildings is central to meeting these GHG reduction targets. Residential and commercial buildings together account for roughly one-third of Connecticut's greenhouse gas emissions. [34] In DEEP's own assessment, reducing residential building emissions at the pace required by the 2030 target will require the average rate of emission reductions in the residential sector to increase nearly threefold between 2023 and 2030.[35] DEEP has identified the electrification of building heating through heat pumps as a primary strategy for reducing these building-sector emissions, and the state's 2025–2027 Conservation and Load Management Plan describes heat pump technologies as "a staple component of the Companies' decarbonization strategies."[36]

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amendment added the 2030 interim target; and PA 25-125 added the 2040 target and clarified the 2050 target as economy-wide net-zero.

[33] Connecticut DEEP, *Connecticut Greenhouse Gas Emissions Inventory: 1990–2023* (August 2025), p. 7 ("emissions are declining, but not yet at a rate that would meet the 2030 goal") and p. 17 ("A linear best fit for emissions between the years 2001 … indicates the state is not on track to meet those targets. If the current rate of emissions decline were to hold to 2050, the state would emit over 5.6 MMTCO2e more than the statutory targets").

[34] Connecticut DEEP, *Connecticut Greenhouse Gas Emissions Inventory: 1990–2023* (August 2025), pp. 9–11. In 2023, residential buildings emitted 6.7 MMTCO2e and commercial buildings 4.3 MMTCO2e, out of 35.0 MMTCO2e economy-wide.

[35] Connecticut DEEP, *Connecticut Greenhouse Gas Emissions Inventory: 1990–2023* (August 2025), pp. 19–20 ("the average rate of reductions must increase nearly threefold between 2023 and 2030 to be consistent with the 2030 emissions reduction goal").

[36] Cadeo-DNV, *Heat Pump and Electrification Market Study* (May 2025), p. 1, quoting the Companies' 2025–2027 C&LM Plan ("Heat Pump and Electrification Study" 2025).

Connecticut has also committed, through the New England Heat Pump Accelerator, to a target of heat pumps comprising 65% of residential HVAC and water heating equipment sales by 2030 and 90% by 2040.[37]

Q. What building electrification policies has Connecticut put in place to achieve these targets?

A. Connecticut is actively driving heat pump adoption through two main vehicles: a ratepayer-funded incentive program and a major new federal grant that significantly expands it.

The state's primary tool is the **Conservation and Load Management (C&LM) program**, administered by Eversource and United Illuminating through EnergizeCT. The C&LM program currently offers residential heat pump rebates of up to $1,000 per ton — up to $10,000 per home — for customers replacing natural gas, oil, propane, or electric resistance heating with a qualifying heat pump. Enhanced incentives of $1,500 per ton are available for low-and-moderate-income customers and for customers replacing electric resistance (baseboard) heating.[38]

In July 2024, the C&LM program received a major boost: Connecticut led a five-state coalition — including Massachusetts, Rhode Island, Maine, and New Hampshire — that secured a $450 million grant from the U.S. Environmental Protection Agency's Climate Pollution Reduction Grant program to create the **New England Heat Pump Accelerator**, the largest

[37] U.S. EPA, *Climate Pollution Reduction Grants: New England Heat Pump Accelerator* (awarded July 2024). The grant agreement between EPA and Connecticut DEEP commits the five-state coalition to "an increase in heat pump adoption such that heat pumps comprise 65% of heating, ventilation, and air conditioning (HVAC) and water heater sales by 2030 and 90% of sales by 2040." See also Connecticut DEEP, *New England Heat Pump Accelerator* (portal.ct.gov/deep/energy/new-england-heat-pump-accelerator).

[38] EnergizeCT, *Residential Energy Optimization Incentive Details* (2026), available at energizect.com/rebates-incentives/heating-cooling/heat-pumps/residential-energy-optimization. Enhanced incentives of $1,500 per ton took effect April 1, 2026.

regional heat pump deployment effort in the country.[39] Connecticut DEEP serves as the lead implementing agency. Midstream incentives through the Accelerator launched in early 2026, and DEEP is developing a state heat pump pilot funded by the grant.[40]

The General Assembly has also directed DEEP to develop a statewide plan for the deployment of heat pumps, with a report due to the legislature by January 1, 2027.[41]

In short, Connecticut has binding climate targets that require large-scale building electrification, and the state is actively spending hundreds of millions of dollars to drive heat pump adoption. But as I show below, the Company's default residential rate is actively working against these ambitions.

Q. Under the Company's proposed Rate 1, what happens to a household's total annual energy bills when they switch from fossil fuel heating to a heat pump?

A. The answer depends significantly on whether the household currently heats with natural gas, or with delivered fuels like heating oil or propane.

Q. Under the Company's proposed Rate 1, what happens to the average natural gas-heated household's total annual energy bills when they switch to a heat pump?

A. Approximately 34% of the Company's residential customers heat with natural gas.[42] As shown in Figure 14, I find that under the Company's Rate 1 and the various residential gas rates

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[39] U.S. EPA, *Climate Pollution Reduction Grants: States of Connecticut, Maine, Massachusetts, New Hampshire, and Rhode Island* (July 2024), available at epa.gov/inflation-reduction-act/states-connecticut-maine-massachusetts-new-hampshire-and-rhode-island. Connecticut DEEP finalized the five-year grant agreement with EPA in October 2024.

[40] Connecticut DEEP, *DEEP Update to Energy Efficiency Board* (September 9, 2026): "VEIC is under contract with DEEP as the program implementer." Midstream heat pump incentives launched in early 2026, with spending exceeding $4 million per month by September 2026. DEEP issued a Request for Information on the state heat pump pilot design in November 2025, and as of September 2026, Connecticut will implement its pilot through an approved sole-source procurement.

[41] Public Act 25-125, § 9 (effective October 1, 2025), requiring the Commissioner of Energy and Environmental Protection to "develop a plan for the installation of efficient heat pumps for affordable heating and cooling systems in the state" and report to the Environment and Energy and Technology committees by January 1, 2027.

of the gas utilities serving the Company's electrical customers, the average natural gas-heated household would see its total annual energy bill — electricity plus natural gas — change from $3,257 before the heat pump to $3,745 after, an increase of $488 per year.[43]

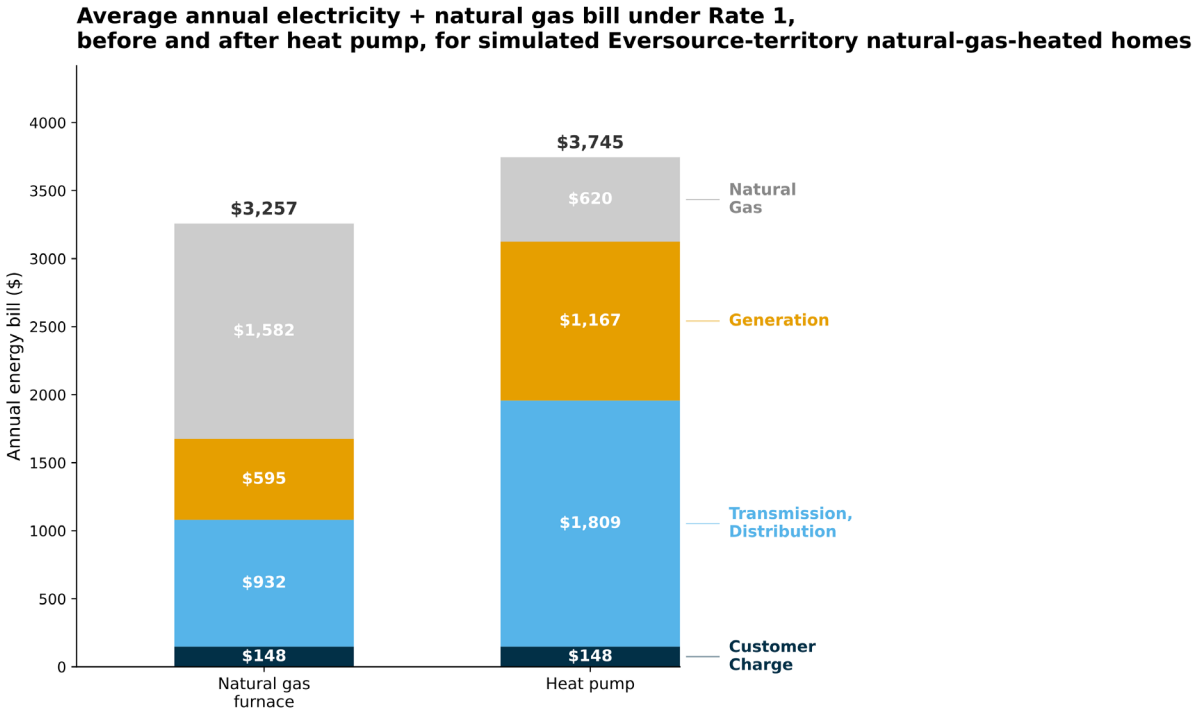


Figure 14: Average annual energy bills for simulated Eversource-territory natural gas-heated homes, before and after heat pump installation. Electric and natural gas consumption from NREL ResStock, bills calculated using CAIRO model.

The heat pump eliminates most of the household's natural gas bill — replacing it with additional electricity consumption for space heating. (The remaining gas bill is for hot water and cooking.) But due to the overpayment problem documented in Section III, the $877 increase in

[42] Computed from NREL's ResStock 2024 building stock model for Connecticut, restricted to buildings assigned to CL&P's service territory based on their approximate location (NREL 2024a). Each sampled building carries a statistical weight representing the number of actual customers it stands for; the share is the weighted fraction of buildings whose baseline heating system is a natural gas furnace or boiler.

[43] Electric and natural gas consumption from NREL ResStock 2024.2 simulation (weighted average of CL&P-territory natural gas-heated buildings), bills calculated using CAIRO model (NREL 2026) with proposed Rate 1 electric rates and the filed residential gas rates of the gas utility serving each home (CT Natural Gas, Southern CT Gas, Yankee Gas, or Norwich Public Utilities). See Exhibit JPV-2, Section 1.

transmission and distribution bills more than offsets the gas bill savings, causing the customer's total annual energy bills to increase.

This means the average natural gas-heated customer does not experience lower energy bills after switching to a heat pump under the Company's Rate 1.

Q. You've shown bill impact outcomes for the *average* natural gas-heated households. How do bill impacts vary across the full population of the Company's residential electric customers that heat with natural gas?

A. The overpayment problem documented in Section III affects all customers switching to heat pumps, so it is instructive to analyze the average impact these overpayments have on household energy bills post-installation.

That said, the Company serves a diverse residential housing stock — homes across its territory vary in size, insulation quality, and baseline energy consumption — so there is a wide distribution of bill impacts around that average. To understand this full range, I performed the same before-and-after analysis for a statistically representative sample of homes from the Company's territory[44] — 3,539 buildings, representing the Company's approximately 1,212,521 residential electricity customers.

Figure 15 shows the full range of bill outcomes for natural gas-heated customers installing heat pumps under the Company's Rate 1.[45] Each bar shows the share of customers whose total annual energy bill would increase or decrease after switching to a heat pump, under the Company's Rate 1 and the applicable gas utility's residential rates.

[44] NREL's ResStock 2024 building stock model for Connecticut, restricted to buildings assigned to CL&P's service territory based on their approximate location. (NREL 2024a)

[45] Population-level bill calculations from NREL ResStock 2024.2 and CAIRO rate simulation, using CL&P's proposed Rate 1 electric tariff and the filed residential gas tariff of the gas utility serving each home. Each building carries a statistical weight; the chart shows weighted shares.

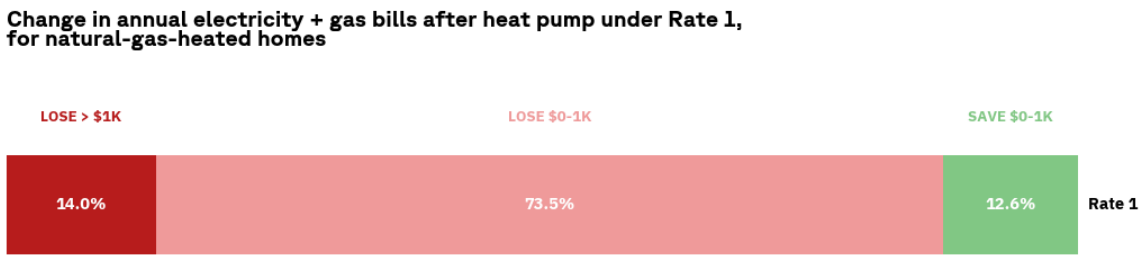


Figure 15: Change in total annual energy bill for natural gas-heated homes after switching to a heat pump, under CT Eversource's proposed Rate 1.

Under current rates, only 13% of the Company's residential electricity customers that heat with natural gas would lower their total annual energy bills after switching to a heat pump. These are homes where the avoided gas costs outweigh the inflated electric delivery charges. The remainder would see higher total energy bills after switching to a heat pump, which creates a significant barrier to heat pump adoption in the Company's territory. Figure 19 shows the same analysis for delivered fuel-heated homes.[46]

Q. If the Company stopped overcharging heat pump customers, what would happen to the energy bills of the average natural gas-heated customer after switching to a heat pump?

A. The difference is dramatic. Under the Company's proposed Rate 1, the average natural gas-heated customer installing a heat pump is overcharged approximately $865 per year in transmission and distribution costs — they pay $865 more in T&D charges than the cost they actually impose on the grid. (The average overpayment figure I gave in Section III — $1,040 per year — is for the entire population of fossil fuel-heated customers, both natural and delivered fuels. The Company's customers who heat with natural gas have lower heating loads, on average, so their mean overpayment is also lower.)

[46] Same methodology as Figure 15; delivered fuel bills use EIA (EIA 2024) residential heating oil and propane prices.

Because of the overcharge, the average natural gas-heated customer's total annual energy bills increases by $488 after switching to heat pumps. But if the overcharge were removed, their total annual energy bill would actually decrease by $377 after making the switch, as shown by Figure 35.

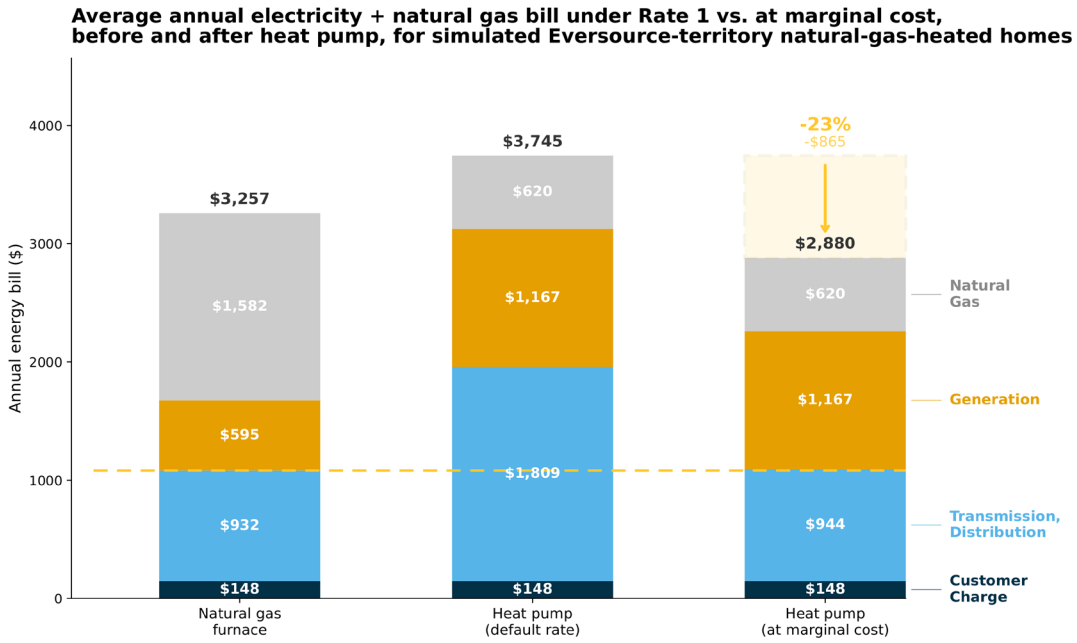


Figure 16: Average annual energy bills for simulated Eversource-territory natural gas-heated homes: before heat pumps, after heat pumps under Rate 1, and after heat pumps with incremental load charged at marginal cost.

Under a perfectly fair rate — where each customer that installs a heat pump is only incrementally charged for the new T&D costs actually caused by that heat pump — the average natural gas customer's total annual energy bill would fall from $3,257 with a gas furnace to $2,880 with a heat pump — a savings of $377 per year.[47]

[47] The third bar shows what happens if each customer's incremental heat pump load were charged at marginal T&D cost — as if a separate meter applied the hourly transmission and distribution marginal cost to just the new electricity from the heat pump. Generation charges are unchanged. See Exhibit JPV-2, Section 4.

This is precisely the outcome a well-designed rate should produce: a customer who switches from a gas furnace to an efficient heat pump should see lower energy bills, because efficient electrification reduces the total cost of energy. The Company's Rate 1 turns what should be savings into losses by overcharging heat pump customers for transmission and distribution.

Q. You've shown that if the Company stopped overcharging heat pump customers, the *average* natural gas customer installing heat pumps would cut their energy bills by switching. How prevalent is that savings outcome across the entire population of natural gas-heated customers?

A. Figure 25 compares the change in total annual home energy bills for natural gas-heated homes switching to a heat pump under Rate 1 versus a fair rate that eliminates each customer's delivery overcharge entirely.[48]

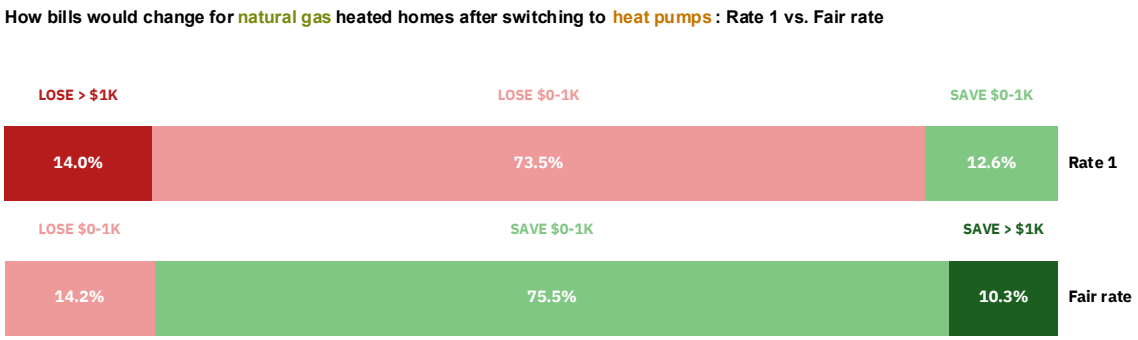


Figure 17: Change in total annual energy bill for natural gas-heated CT Eversource homes switching to a heat pump, under Rate 1 vs. a fair rate that eliminates the overcharge.

The transformation is stark. Under Rate 1, only 13% of natural gas-heated customers would see lower total energy bills after switching to a heat pump, and those who save would save

[48] Same methodology as Figure 15. The "fair rate" removes each building's incremental delivery overcharge (incremental delivery revenue minus incremental delivery marginal cost) from the Rate 1 bill change — the theoretical outcome if no customer were overcharged. See Exhibit JPV-2, Section 4.

an average of $134 per year. Under a fair rate that eliminates the overcharge for every customer, **86%** would save, and they would save an average of $487 per year.

In other words, the overcharge produced by the Company's proposed Rate 1 is the single largest barrier to favorable bill outcomes for natural gas-heated customers considering heat pumps. Remove it, and the economics flip: an overwhelming majority of natural gas customers would save money by switching. Keep it, and the overwhelming majority would lose money.

Q. Under the Company's proposed Rate 1, what happens to the average delivered fuel-heated household's total annual energy bills when they switch to a heat pump?

A. Approximately 46% of the Company's residential customers heat with delivered fuels like heating oil or propane.[49]

Unlike with natural gas, the average delivered fuel-heated customer does see a reduction in its total energy bills after switching to a heat pump under the Company's Rate 1, because heating oil and propane are substantially more expensive per unit of useful heat than natural gas. As shown in Figure 18, the average delivered fuel-heated customer sees its total annual energy bill decrease from $5,212 to $4,595 after installing heat pumps under Rate 1, a net decrease of $618 per year.[50]

[49] This figure was derived using the same methodology as for natural gas: the weighted fraction of CL&P-territory ResStock buildings whose baseline heating system uses heating oil or propane.

[50] Electric and delivered fuel consumption from NREL ResStock 2024.2 simulation (weighted average of CL&P-territory delivered fuel-heated buildings), bills calculated using CAIRO model with proposed Rate 1 rates and EIA oil/propane prices. See Exhibit JPV-2, Section 1.

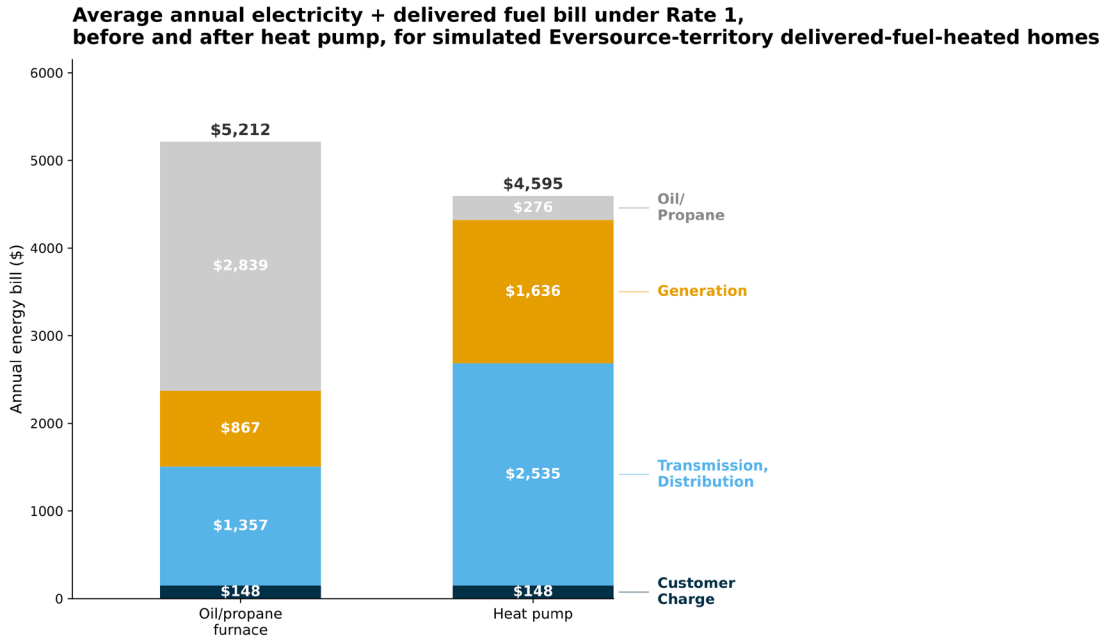


Figure 18: Average annual energy bills for simulated Eversource-territory delivered fuel-heated homes, before and after heat pump installation. Electric and delivered fuel consumption from NREL ResStock, bills calculated using CAIRO model.

Q. You've shown bill impact outcomes for the *average* delivered fuel-heated household. How do bill impacts vary across the full population of the Company's residential electric customers that heat with delivered fuels?

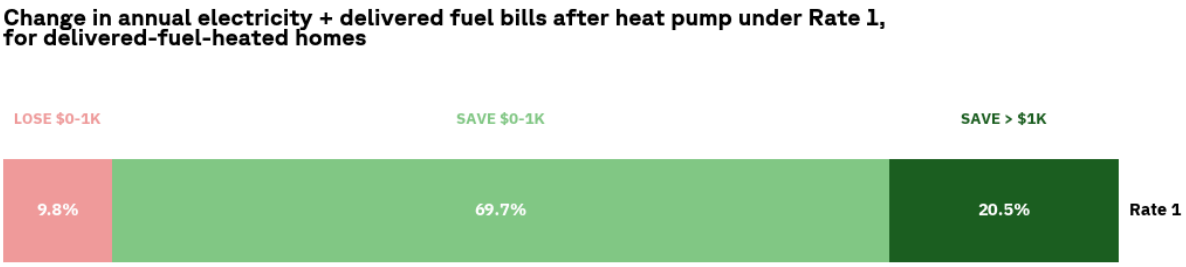


Figure 19: Change in total annual energy bill for delivered fuel-heated homes after switching to a heat pump, under CT Eversource's default rate.

Residential electricity customers that heat with delivered fuels fare better overall when switching to heat pumps than those that heat with natural gas: the savings from eliminating expensive delivered fuels more than offset the inflated electric prices for the vast majority of these homes. 90% of delivered fuel-heated households would see their total energy bills decrease after switching to a heat pump, even under the Company's current Rate 1 rates.

However, the fact that these households save money overall does not mean they are being fairly charged for electricity. The same overpayment documented in Section III of my testimony applies to delivered fuel customers just as it does to natural gas customers: these households are still paying more for distribution and transmission than cost-causation would dictate. If delivered fuel customers were not being overcharged, their savings would be larger, and the incentive to adopt a heat pump correspondingly stronger.

Q. How would delivered fuel-heated customers' bill outcomes change if the overcharge were removed?

A. Delivered fuel customers already tend to save money on net after switching to a heat pump under Rate 1, because heating oil and propane are expensive fuels. But the overcharge suppresses those savings below what they should be.

Figure 36 adds a third bar to the delivered fuel bill comparison: under a rate that fully eliminates the overcharge, the average delivered fuel customer's total annual energy bill would fall from $5,212 with an oil or propane furnace to $3,426 with a heat pump — a savings of $1,786 (34%) per year, compared to savings of only $618 (12%) under Rate 1.

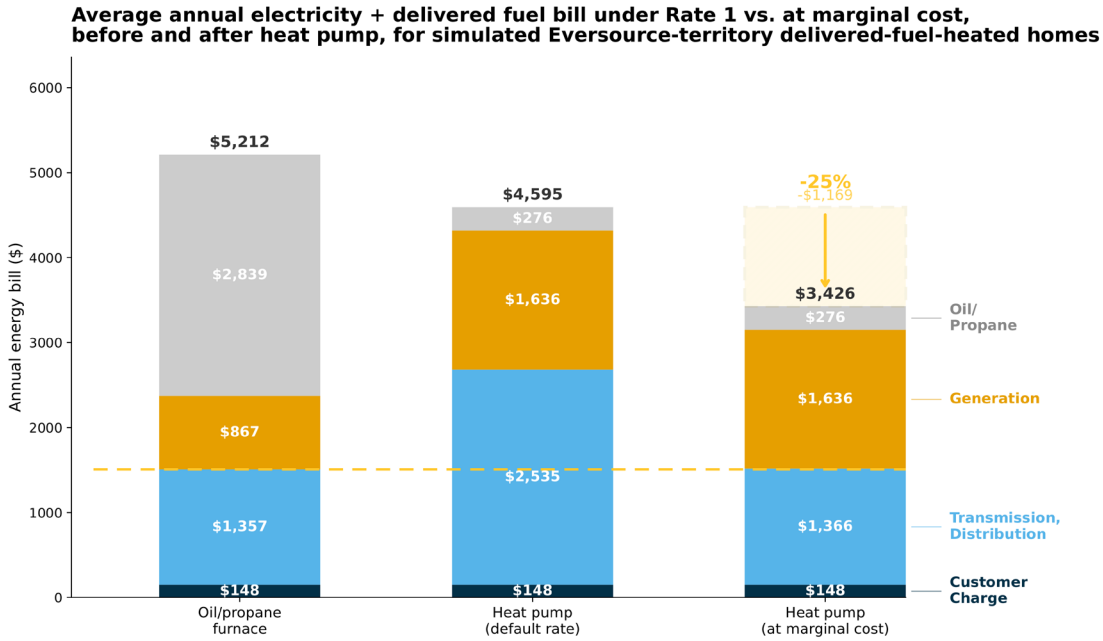
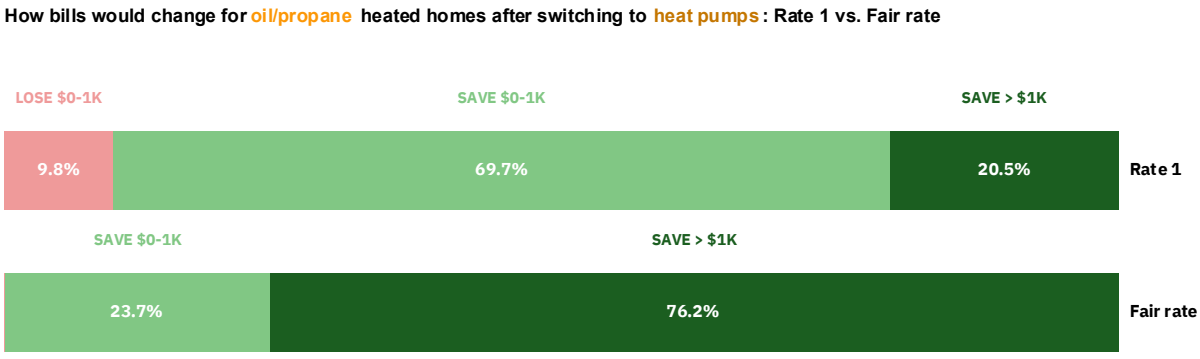


Figure 20: Average annual energy bills for simulated Eversource-territory delivered fuel-heated homes: before heat pumps, after heat pumps under Rate 1, and after heat pumps with incremental load charged at marginal cost.

This is a meaningful difference: an annual energy bill savings of 34% is significantly more likely to induce a customer to switch to a heat pump than a savings of 12%, all else equal. Figure 21 shows the population-level comparison.[51]



[51] Same methodology as Figure 25; delivered fuel bills use EIA residential heating oil and propane prices.

Figure 21: Change in total annual energy bill for oil/propane-heated CT Eversource homes switching to a heat pump, under Rate 1 vs. a fair rate that eliminates the overcharge.

Under Rate 1, 90% of delivered fuel-heated customers would save, and those who save would save an average of $712 per year. Under a fair rate that eliminates the overcharge, **100%** would save, and they would save an average of $1,798 per year.

In summary: the overcharge paid by delivered fuel customers under Rate 1 does not prevent most of them from saving money by switching, but it meaningfully reduces how much they save. Larger savings create a stronger financial incentive to switch — the difference between a customer who considers a heat pump and one who acts on it.

Q. Can you summarize why the overcharging of heat pump customers under Rate 1 undermines Connecticut's building electrification policies?

A. Connecticut's building electrification policies are aimed at increasing the rate of heat pump adoption. As demonstrated in this section, the Company's overcharge of heat pump customers under Rate 1 is largely responsible for poor bill outcomes when customers switch to heat pumps. Poor bill outcomes, in turn, undermine heat pump adoption through two distinct mechanisms.

First, Rate 1 turns what should be savings into losses. Under the Company's proposed Rate 1, 87% of natural gas-heated customers would see their total energy bills *increase* after switching to a heat pump. When customers learn that their bills would go up — or when their neighbors report that theirs did — they are much less likely to switch, regardless of available rebates or incentives. This is the most direct barrier that overcharging creates to adoption: the overcharge makes heat pumps look like a bad deal for the majority of natural gas customers, when in fact, without this arbitrary penalty, most gas-heated customers would actually save money by switching.

Second, even for customers who would save money, the overcharge suppresses savings below the level needed to overcome inertia. Switching from a familiar heating system to a heat pump involves real and perceived costs — the hassle of installation, unfamiliarity with the technology, and uncertainty about performance. For customers to act on potential savings, those savings need to be large enough to overcome inertia and status quo bias. The overcharge shrinks these savings: natural gas customers who do save under current rates would save more under fairer rates. Delivered fuel customers, most of whom already save under Rate 1, would see meaningfully larger savings — making the case for switching from oil or propane to a heat pump that much more compelling.

In both cases, the overcharge creates a drag on adoption by reducing the financial incentive below what it would otherwise be.

V. THE DESIGN AND IMPACT OF RATE 6

Q. What heat pump rate has the Company proposed in this proceeding?

A. The Company has proposed Rate 6, an Optional Residential Space Heating Rate. As proposed, Rate 6 would be available to residential customers who heated with a delivered fuel (oil or propane) and have installed air-source heat pumps on or after January 1, 2026, as well as new homes built after July 1, 2027 with heat pumps.[52] Enrollment is voluntary; eligible customers may remain on Rate 1 if they choose.

Table 1: Rate 1 vs. Rate 6 distribution and transmission rates

	Rate 1	Rate 6 — Block 1 (≤ 700 kWh, winter; all kWh, summer)	Rate 6 — Block 2 (> 700 kWh, winter only)

[52] Response to CLF-002(a), Docket No. 26-05-10 (Sept. 3, 2026) (Eversource 2026a).

Distribution — Customer Charge ($/month)	$12.36	$30.95	—
Distribution — Energy Charge (¢/kWh)	12.196	9.431	7.517
Transmission — Transmission Service Rate (¢/kWh)	5.050	5.050	5.050
Total delivery volumetric (distribution + transmission + riders, ¢/kWh)	16.335	13.570	11.656

Rate 6 raises Rate 1's monthly customer charge from $12.36 to $30.95, and the added fixed charge revenue allows the Company to lower the volumetric distribution rate from 12.2 to 9.4 ¢/kWh. In effect, Rate 6 starts by shifting some of Rate 1's cost recovery from variable to fixed charges.

Next, Rate 6 tries to charge the heat pump's incremental load a lower rate than 9.4 ¢/kWh, by introducing a two-block structure in winter months (November through March): the first 700 kWh in a month are billed 9.4 ¢/kWh, and any kWh above 700 are billed at a lower Block 2 rate of 7.5 ¢/kWh. (In non-winter months (April through October), all kWh are billed 9.4 ¢/kWh, without any discount.)

Public benefits, generation, and transmission rates are identical to Rate 1 — despite the fact that heat pump customers are also overpaying for transmission, so it should also be discounted.

Q. Does Rate 6 provide a large enough discount to eliminate the overcharge you documented in Section III?

A. No. Under Rate 1, the average fossil fuel-heated customer switching to a heat pump is overcharged $1,040 per year in delivery costs; if Rate 6 were offered to all natural gas-customers, that overcharge falls to $787 — still a substantial surcharge above the customer's incremental marginal cost. In other words, Rate 6 eliminates only 24% of the average annual overpayment I documented in Section III. (I am aware that the Company is not proposing Rate 6 for natural gas-heated customers. I oppose this position, and argue against it in Section VI. I offer Figure 22 for illustrative purposes, to show how Rate 6 as proposed would affect the full overpayment distribution shown in Figure 13)

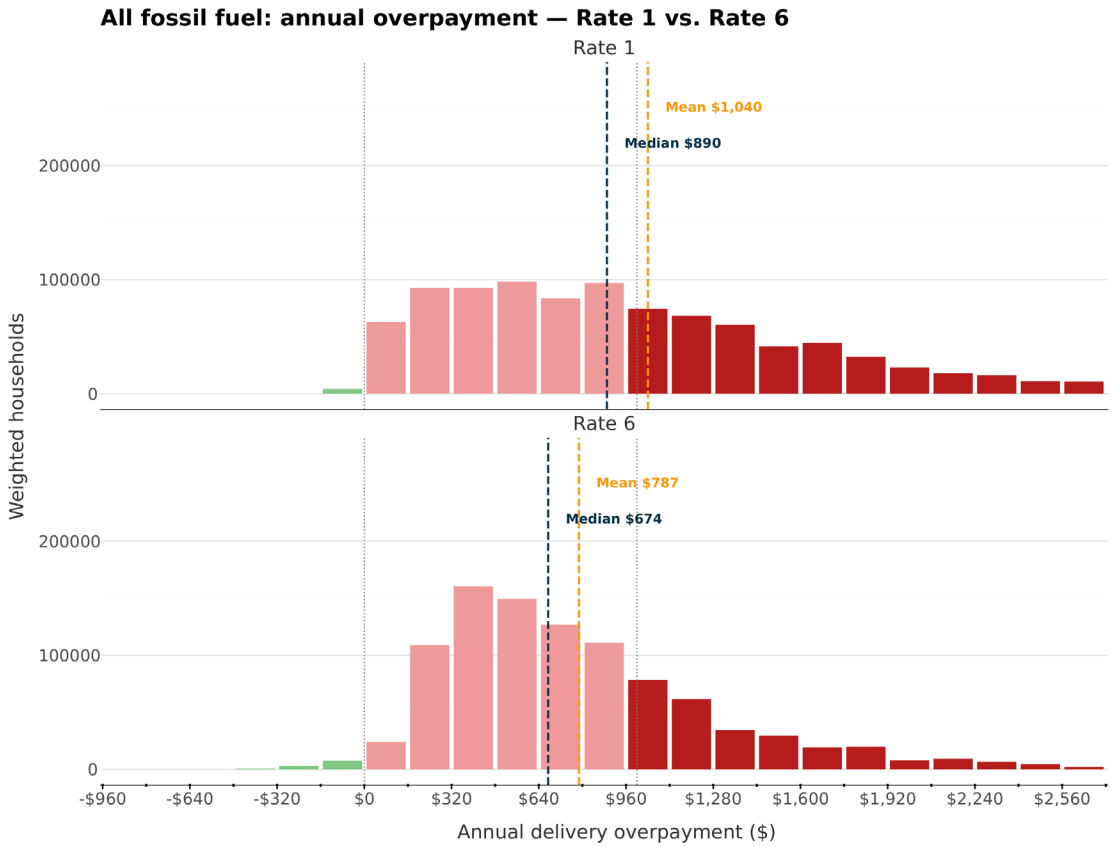


Figure 22: Annual delivery overpayment for all fossil fuel-heated CT Eversource homes switching to heat pumps: proposed Rate 1 (top) vs. proposed Rate 6 (bottom).

Figure 22 compares the distribution of annual delivery overpayments under Rate 1 (top) and Rate 6 (bottom), using the same methodology as Figure 13 in Section III. The entire histogram shifts left — confirming that Rate 6 does provide some relief — but the bulk of the distribution remains well above zero. As designed, Rate 6 narrows the overcharge; it does not come close to eliminating it.

Q. Does Rate 6's modest reduction in the overcharge significantly improve bill outcomes for natural gas-heated customers who switch to heat pumps?

A. Rate 6 barely moves the needle. Figure 23 compares the bill outcomes for natural gas-heated homes installing heat pumps under three scenarios: Rate 1 (the status quo), Rate 6 (the Company's proposal), and a fair rate that perfectly eliminates the overcharge for every customer.

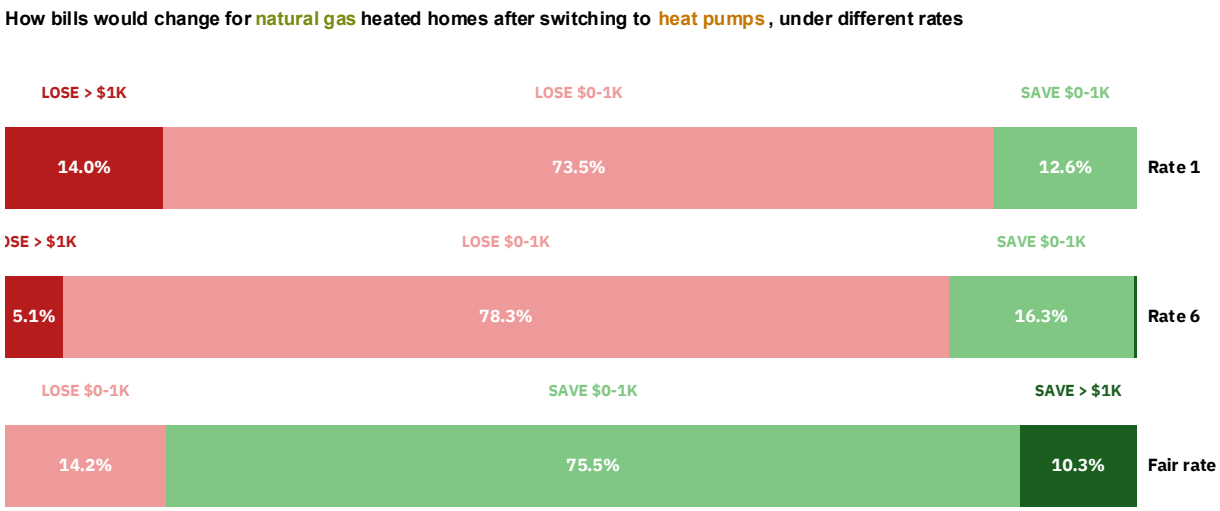


Figure 23: Change in total annual energy bill for natural gas-heated CT Eversource homes switching to a heat pump, under Rate 1 vs. Rate 6 vs. a fair rate that eliminates the overcharge.

Under Rate 1, only 13% of natural gas-heated customers would see lower total energy bills after switching to a heat pump.

Under Rate 6, 17% of natural gas-heated customers would save — only a 4% point improvement over Rate 1, and still leaving the vast majority of customers in the red after switching. Under a rate that fully eliminates the overpayment, 86% of natural gas-heated customers would save by switching — a 73% point improvement over Rate 1, and a complete transformation of heat pump economics.

Another way to evaluate Rate 6 is to compare each rate's average bill change. Under Rate 1, the average natural gas-heated customer's annual bill would increase by $463 after switching; under a fair rate, it would *decrease* by $402. In other words, if these customers stopped being overcharged, we would expect the average customer's bill outcome to improve by $865 compared to Rate 1. Under Rate 6, the average annual bill would still increase, by $306 — an improvement of just $156 over Rate 1, or **less than a fifth** of that $865 improvement.

Q. What is the impact of Rate 6 for delivered fuel-heated customers who switch to heat pumps?

A. The pattern is the same, though the starting point is more favorable because delivered fuels are more expensive than natural gas. Figure 24 shows the same three-way comparison for oil- and propane-heated homes.

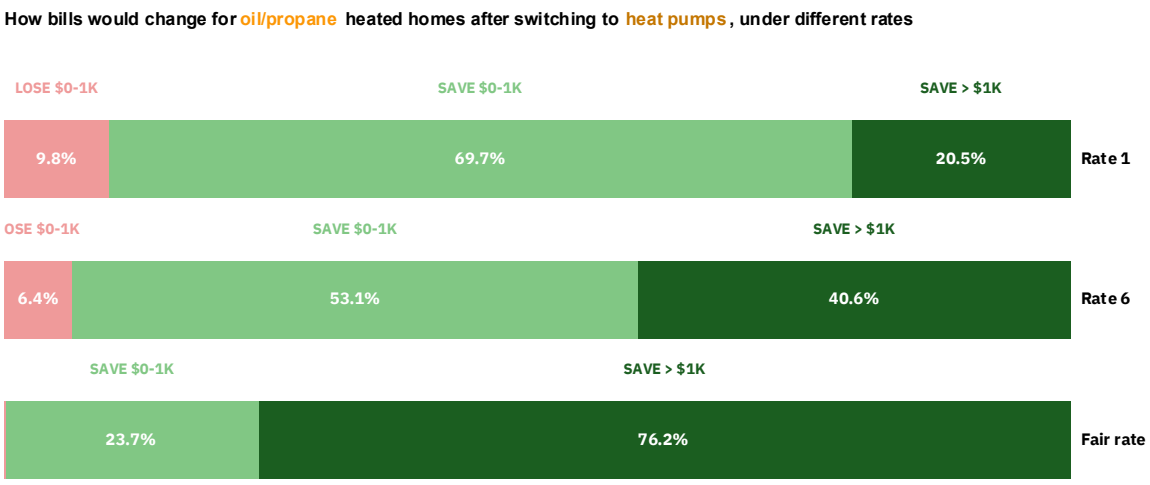


Figure 24: Change in total annual energy bill for oil/propane-heated CT Eversource homes switching to a heat pump, under Rate 1 vs. Rate 6 vs. a fair rate that eliminates the overcharge.

Under Rate 1, 90% of delivered fuel-heated customers would already see lower total energy bills after switching to a heat pump. Under Rate 6, 94% would save — a 3% point improvement. Under a fair rate, 100% of customers would save. But since most delivered fuel customers already save under Rate 1, the key question about Rate 6 is not whether they save, but by how much they save.

To evaluate this, we can compare the average bill change under each of these rates. Under proposed Rate 1, the average delivered fuel customer saves $628 per year after switching; under a fair rate, they would save $1,796. In other words, if these customers stopped being overcharged, we would expect their post-heat-pump savings to increase by $1,169, on average. Under Rate 6, they would save $952 — an improvement of $324 over Rate 1, or roughly **a quarter** of the $1,169 bill improvement a fair rate would deliver to the average customer in this

population. In other words: even for the population where heat pumps already tend to pencil out, Rate 6 leaves nearly three-quarters of the potential savings on the table.

Q. Can you walk through how the Company arrived at the rate design for Rate 6?

A. Yes. The Company's derivation is documented in Exhibit CLP-RATES-6, the Rate 6 Rate Design Worksheet. It proceeds in two steps: first, raise the fixed charge; second, set the volumetric rates.

Step 1 — Increased customer charge. The Company's MCOS study found that customer-related costs— service lines, meters, billing, and other costs that can be tied to individual customers — are $28.98 per customer per month. Rate 1's customer charge of $12.36 per month recovers less than half of that amount. The Company set Rate 6's customer charge at $30.95 per month — $28.98 grossed up by the 6.8% Gross Earnings Tax — in a bid to recover (marginal) customer-related costs entirely through the fixed charge.

Step 2 — Lowered volumetric rate. Raising the customer charge from $12.36 to $30.95 collects an additional $233 million in fixed-charge revenue across the rate class. That reduces the amount that needs to be collected through the volumetric energy charge from approximately $1.03 billion to $796 million. The Company recalculated the volumetric energy charge at 9.431 ¢/kWh — down from Rate 1's 12.196 ¢/kWh. In effect, the Company's starting point for Rate 6 was to redesign Rate 1 to rely less on volumetric energy charges to recover costs, and more on fixed charges. This rebalancing is designed to be revenue neutral within the residential rate class — if all Rate 1 customers (given their existing heating systems) were charged $30.95 per month (instead of $12.36) and 9.431 c/kWh for all kWh (instead of 12.196 c/kWh), the Company would collect the same amount of total revenue from this rate class.

Step 3 — Targeting incremental load with a discounted rate. Steps 1 and 2 redesign the rate structure but do not yet provide a discount for heat pump customers — they simply shift how existing residential revenue is collected. The discount comes from the block rate structure the Company layered on top: in winter months (November through March), the first 700 kWh a heat pump customer consumes during a billing period are billed at the Block 1 rate of 9.431 ¢/kWh, and any consumption above 700 kWh — which the Company treats as a proxy for the heat pump's incremental load — is billed at a lower Block 2 rate of 7.517 ¢/kWh. In non-winter months, all kWh are billed at 9.431 ¢/kWh with no discount.

To arrive at the Block 2 rate, the Company decomposed the 9.431 ¢/kWh distribution energy charge that resulted from Step 2 into two sub-charges:

- A **local facilities charge** (3.894 ¢/kWh), which recovers the cost of "local facilities," i.e., distribution infrastructure sized to serve a small number of neighboring customers — lateral primary conductors, secondary conductors, and primary-to-secondary transformers. The 3.894 ¢/kWh rate was derived from the MCOS marginal facilities cost of $24.51 per customer per month (Eversource 2026c), spread across all billed kilowatt-hours for all Rate 1 customers.
- An **upstream distribution charge** (5.537 ¢/kWh), which recovers the cost of upstream distribution infrastructure shared by hundreds to thousands of customers — bulk substations, local transmission line, distribution substations, trunkline primary feeders, etc. — whose expansion is driven by growth in each component's peak load.

Table 2: Rate 6 Block 2 distribution charge decomposition (Source: Exhibit CLP-RATES-6)

	Block 1 (¢/kWh)	Block 2 (¢/kWh)	MC floor (¢/kWh)	Discounted?
Local facilities	3.894	3.894	0	No
Upstream distribution	5.537	3.623	0.258	Partially
Distribution energy charge	**9.431**	**7.517**	**0.258**	—

The Company did not discount the local facilities charge at all — it remains at 3.894 ¢/kWh in both Block 1 and Block 2.

Only the upstream distribution charge was discounted, by 1.914 ¢/kWh. We discuss why this discount is insufficient below.

Q. What problems do you see with the design of Rate 6 as proposed?

A. I claim that the Company should aim to eliminate overpayments for all customers who choose to switch to heat pumps. From that perspective, I see three problems with the Company's Rate 6 design:

1. Rate 6 excludes natural gas-heated customers.
2. Rate 6 unduly discriminates against customers who installed heat pumps before 2026.
3. The volumetric rate discounts are too low: the discount on upstream distribution rate is too small; volumetric local facilities and transmission rates are not being discounted at all.
4. A block rate with a one-size-fits-all threshold is regressive.
5. A block rate with a one-size-fits-all threshold is biased against natural gas-heated customers.

I will address each of these in turn.

VI. RATE 6 EXCLUDES CUSTOMERS COMING FROM NATURAL GAS OR WHO INSTALL HEAT PUMPS BEFORE 2026

Q. Why does the Company exclude natural gas-heated customers from their proposed Rate 6?

A. When asked by CLF intervenors why the proposed Rate 6 is not available to customers converting from natural gas, the Company responded that it "designed the rate to avoid encouraging conversions that would likely result in higher customer household energy."[53] The Company explained that "for customers heating with natural gas, conversion to a heat pump typically increases the household's total energy bill at current prices,"[54] and that therefore "while natural gas conversions may produce emissions benefits, Rate 6 is designed to deliver bill savings, and eligibility was scoped accordingly."[55]

Q. Is the Company's reasoning for excluding natural gas customers sound?

A. No. The Company's reasoning is circular. As I have just shown, the reason natural gas customers' total energy bills typically increase after switching to a heat pump is the overcharge documented in Section III — the gap between what these customers pay in incremental T&D charges and the incremental T&D costs their heat pumps actually cause.

[53] Response to CLF-002(b), Docket No. 26-05-10 (Sept. 3, 2026) (Eversource 2026a).

[54] Response to CLF-002(b), Docket No. 26-05-10 (Sept. 3, 2026) (Eversource 2026a).

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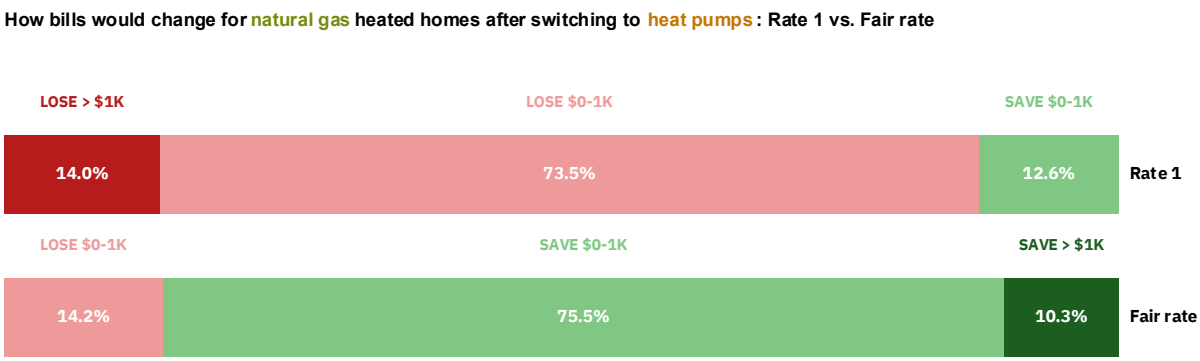

Figure 25: Change in total annual energy bill for natural gas-heated CT Eversource homes switching to a heat pump, under Rate 1 vs. a fair rate that eliminates the overcharge.

As I showed in Section IV, under a fair rate that eliminates the overcharge, 86% of natural gas-heated customers would save money by switching.[56]

The Company is aware that heat pump customers are being overcharged — it is the entire basis on which it justifies Rate 6.[57] Yet it uses the *consequences* of the overcharge — higher bills for natural gas customers who switch — as the reason not to stop overcharging them. In effect, the Company is saying: we cannot stop overcharging these customers, because if we did, it would encourage them to switch to heat pumps, and switching to heat pumps raises their bills — because we overcharge them.

In other words: the Company has identified a problem (the gap between Rate 1 and marginal cost) created by status-quo rates, proposed an insufficient fix (Rate 6), and then excluded the customers most harmed by the problem from the fix — on the grounds that the problem harms them.

[56] See Figure 25 in Section IV.

[57] See Section III, above, "Is the Company aware that overpayments from heat pump customers contribute to a cross-subsidy within the residential customer class which violates intra-class equity?".

If instead the Company followed its own premises to their conclusions — that the discount can legitimately extend to the marginal-cost floor, for *both* transmission and distribution, without shifting costs to other customers (indeed, by simply unwinding an unfair cost-shift that exists in the other direction) — it could offer offer a rate to heat pump customers that still makes them pay for any additional costs they impose on the system. And it turns out that by making rates fair, the Company could transform heat pumps into a reliable way to cut heating bills for the vast majority of natural gas customers, too.

Q. Does Rate 6 exclude other types of heat pump customers?

A. Yes. As proposed, Rate 6 is available only to customers who installed heat pumps on or after January 1, 2026 (and who previously heated with delivered fuels). Customers who installed heat pumps before that date — even though they are already being overcharged under Rate 1, by the same amount and for the same reasons as post-2026 adopters — are ineligible.

Q. Is there any cost-causation basis for this cutoff?

A. No. The date a customer installs a heat pump has no bearing on the costs currently caused by that customer's yincremental load. A kWh consumed by a heat pump installed in December 2025 imposes exactly the same marginal distribution and transmission costs going forward as a kWh consumed by a heat pump installed in January 2026. Both customers add load to the same substations and feeders, and both are served under the same physical conditions. The installation date is entirely irrelevant to cost causation.

Q. Does this cutoff constitute undue discrimination?

A. Yes. Rate-making principles have long held that charging different rates to customers who receive substantially the same service, under similar conditions, at the same cost of service,

constitutes undue discrimination. The standard references on public utility rate design are uniform on this point.

Bonbright identifies what he calls "personal discrimination" — "whereby different customers are charged different rates for substantially the same service, rendered under similar conditions" — as the most overt form of rate discrimination, one that public utility statutes forbid "without qualification."[58] He further observes that there is "general agreement" among economists that "the practice of exacting different charges for different classes of service rendered at the same marginal costs constitutes discrimination."[59] Rate 6's eligibility cutoff fails both tests: pre-2026 and post-2026 heat pump customers receive physically identical service at the same marginal cost, yet are charged different rates.

The Regulatory Assistance Project's widely referenced manual on electric cost allocation warns that when regulators adopt differential treatment of new versus existing loads, they "should be careful to ensure adoption of such techniques is not arbitrary or discriminatory and is grounded in solid reasoning."[60] RAP's examples of legitimate differential treatment — Seattle City Light's 1980 cost allocation, the Bonneville Power Administration's pricing for new large single loads, Chelan County's bitcoin mining tariff — all involve situations where new loads genuinely impose *different costs* on the system, typically because they drive the need for expensive new resources.[61] Here, the costs are the same. The cutoff has no grounding in cost-of-service analysis; it is arbitrary.

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[58] James C. Bonbright, *Principles of Public Utility Rates* (New York: Columbia University Press, 1961), Ch. XIX ("Discrimination, Due and Undue").

[59] *Id.*

[60] Jim Lazar, Paul Chernick, and William Marcus, *Electric Cost Allocation for a New Era: A Manual*, Regulatory Assistance Project (January 2020), Ch. 16.

[61] *Id.*, Ch. 16, §16.2.

Q. What do you recommend?

A. As stated in my recommendations, any heat pump rate adopted by the Authority should be available to all residential customers with heat pumps, regardless of installation date, or of which heating system they had previously.

VII. RATE 6'S DISCOUNTS ARE TOO LOW

Q. Why is the proposed discount on the volumetric upstream distribution rate too small?

A. Heat pump customers are overpaying for upstream distribution costs. The Company has a choice about how much of this overpayment to remove, and therefore how much of the cross-subsidy to eliminate.

As the Company sees it, the Block 2 discount applied to the upstream distribution rate could be set anywhere between "the incremental cost of serving the additional load the converting customer adds, which establishes the floor" and the Block 1 upstream distribution rate which "establishes the reference point above it."[62] The Company's MCOS study puts that floor — the marginal cost of upstream distribution — at just 0.258 ¢/kWh, for any given hour of the year.[63]

Under that framework, which I agree with, the Company could therefore have set the Block 2 upstream distribution charge anywhere between 0.258 ¢/kWh (the marginal cost floor) and 5.537 ¢/kWh (the Block 1 rate, i.e. no discount). The Company chose to set it at 3.623 ¢/kWh — only 36% of the way from the ceiling to the floor.

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[62] Response to CLF-003(b), Docket No. 26-05-10 (Sept. 3, 2026) (Eversource 2026b).

[63] This 0.258 ¢/kWh is a static, class-average marginal cost from the MCOS — a single number applied uniformly to every kWh regardless of when it is consumed. A dynamic marginal cost, by contrast, varies by hour: a kWh consumed during a winter peak hour imposes far higher upstream distribution costs than a kWh consumed on a mild spring afternoon. The hourly marginal cost analysis I present in Section III uses the Company's own upstream distribution cost figure allocated dynamically across peak hours. The static MCOS figure is nonetheless the relevant benchmark here, because it is the number the Company used in its own Rate 6 worksheet to determine the Block 2 discount.

In response to CLF's questioning, the Company offered this rationale for why they didn't set the discount at the floor: it wants to keep "incremental load priced above the marginal cost of serving it" because "spreading fixed costs over a larger sales base places downward pressure on average rates for all customers over time."[64] In other words, as established in Section V, Rate 6 purposely preserves some of the cross-subsidy from heat pump to non-heat pump customers. However, none of the Company's testimony explains why they chose to keep the discount so close to the ceiling. Given the magnitude of overpayment that heat pump customers experience under Rate 1,[65] I do not think this is a defensible choice.

The point of creating a heat pump rate is to eliminate (or at least meaningfully reduce) the overpayment problem, in order to alleviate the severe problems of intra-class equity and artificially high operating costs that persist under Rate 1. The Company's current design does not do that.

But even if the Company argues for maintaining some cross-subsidy, the rate should be set much closer to the floor than the Company proposes. As designed, Rate 6 strikes the wrong balance: it is much less about removing the thumb on the scale against heat pumps than it is about preserving the status-quo cross-subsidy that benefits everyone else.

Q. Why are volumetric local distribution facilities and transmission rates not being discounted at all, and why should they be discounted?

A. The Company does not explain why neither of these rates are being discounted, despite the fact that heat pump customers are overpaying for both: being volumetric rates, when these

[64] Response to CLF-003(a), p. 1, Docket No. 26-05-10 (Sept. 3, 2026) (Eversource 2026b).

[65] The overpayment methodology is described in Section III of this testimony. I compute each customer's incremental marginal T&D cost from the Company's own MCOS cost inputs, allocated hourly, and compare it to the incremental T&D revenue collected under the filed rates. The detailed methodology — including the construction of before-and-after consumption profiles and the hourly marginal-cost schedule — is presented in Exhibit JPV-2.

undiscounted c/kWh charges are applied to the heat pump's incremental load, the Company collects revenue far in excess of the incremental marginal transmission and local facilities costs caused by that additional usage.

Because the transmission rate under Rate 6's Block 2 is undiscounted, heat pump customers overpay for transmission by the same amount as under Rate 1: they only cause an average of $8 in incremental marginal transmission costs, but they are charged $325 extra a year for transmission, leading to a transmission overcharge of $317 (as shown in Section III Figure 12).

Then there's the local facilities rate. The Company claims that the marginal local facilities cost is $24.51 per month.[66] A customer with an average monthly consumption of 700 kWh, which the Company treats as the cutoff for a customer's pre-heat pump load, would pay $27.26 per month in local facilities costs under the proposed Rate 6 local facilities rate of 3.894 ¢/kWh. This means that the average customer profile that the Company used to design Rate 6 would already be slightly overpaying for local facilities *before* the heat pump is installed. After the heat pump is installed, all incremental revenue — collected by applying Block 2's undiscounted local facilities rate of 3.894 ¢/kWh to that customer's incremental heat pump load — would count as an overpayment.

Put another way, when an existing residential customer installs a heat pump, they connect to local facilities that already exist, and which they were already paying for through their pre-heat pump usage, so their incremental marginal local facilities cost (IMLFC) is zero. (That is, unless an existing customer's installation of a heat pump sometimes triggers upgrades to local

[66] While this is technically the average cost of building local facilities for *new* residential customers, the vast majority of customers adopting Rate 6 would be existing customers, so the Company appears to use this $/month marginal cost figure as a proxy for the embedded local facilities cost in their Rate 6 design.

facilities, which the Company does not indicate is occurring. In that case, however, the IMLFC would likely be much closer to 0 ¢/kWh than to 3.894 ¢/kWh.)

Q. What would be the impact of Rate 6 if the Company set Block 2 rates for upstream distribution, local distribution, and transmission at marginal cost?

A. Here is what such a rate would look like. Table 3 reproduces the Block 2 decomposition from above, now including transmission, alongside the marginal cost floor for each component:

Table 3: Rate 6 Block 2 decomposition with marginal cost floor, including transmission

	Block 1 (¢/kWh)	Block 2 (¢/kWh)	Block 2 at MC (¢/kWh)
Local facilities	3.894	3.894	0
Upstream distribution	5.537	3.623	0.258
Transmission (Rider 1)	5.050	5.050	0.788
Total	**14.481**	**12.567**	**1.046**

The "Block 2 at MC" column shows what each component would be if the Company charged only the marginal cost that a heat pump customer's incremental consumption actually imposes on the system. For local facilities, the floor is 0 ¢/kWh: when an existing customer installs a heat pump, they connect to poles and wires that already exist. For upstream distribution, the floor is 0.258 ¢/kWh from the Company's own MCOS. For transmission, the floor is 0.788 ¢/kWh: the same AESC 2024 avoided PTF cost of $69/kW-year (Synapse 2024) that I used to produce the hourly bulk transmission marginal cost heatmap in Figure 6, divided by 8,760 hours to yield a flat per-kWh equivalent.[67]

[67] The heatmap in Figure 6 spreads the AESC cost across hours by probability of peak, producing a marginal cost that is high in summer afternoons and zero in most other hours. Dividing by 8,760 instead yields the flat per-kWh rate that would recover the same annual cost — 0.788 ¢/kWh — which is the appropriate benchmark for a flat

In other words, the all-in Block 2 rate for these three cost components would fall from **12.567 ¢/kWh** under the Company's proposed Rate 6 to approximately **1.046 ¢/kWh** — a 92% reduction. The Company's current Block 2 rate of 12.567 ¢/kWh is twelve times the marginal cost these customers actually impose on the delivery and transmission system.

To test what this means for customers, I simulated a modified Rate 6 that preserves the 700 kWh block threshold and the monthly customer charge of $30.95, but sets the Block 2 rates for all three components at their marginal cost floor.

Q. What effect does this modified Rate 6 have on delivery overpayments?

A. As I showed previously, fossil fuel-heated customers switching to a heat pump under Rate 1 are overcharged by an average of $1,040 per year, and the Company's proposed Rate 6 eliminates only 24% of that average overpayment.

Under a modified Rate 6 with the Block 2 rates for transmission, upstream distribution, and local distribution facilities all set at marginal cost, the average overpayment falls to $195, eliminating 81% of the Rate 1 overcharge.

The three panels in Figure 26 show the distribution of annual delivery overpayments under Rate 1 (top), Rate 6 as proposed (middle), and the modified Rate 6 (bottom).

volumetric rate like Rider 1. Either way, the current 5.050 ¢/kWh rider charges more than six times the marginal cost.

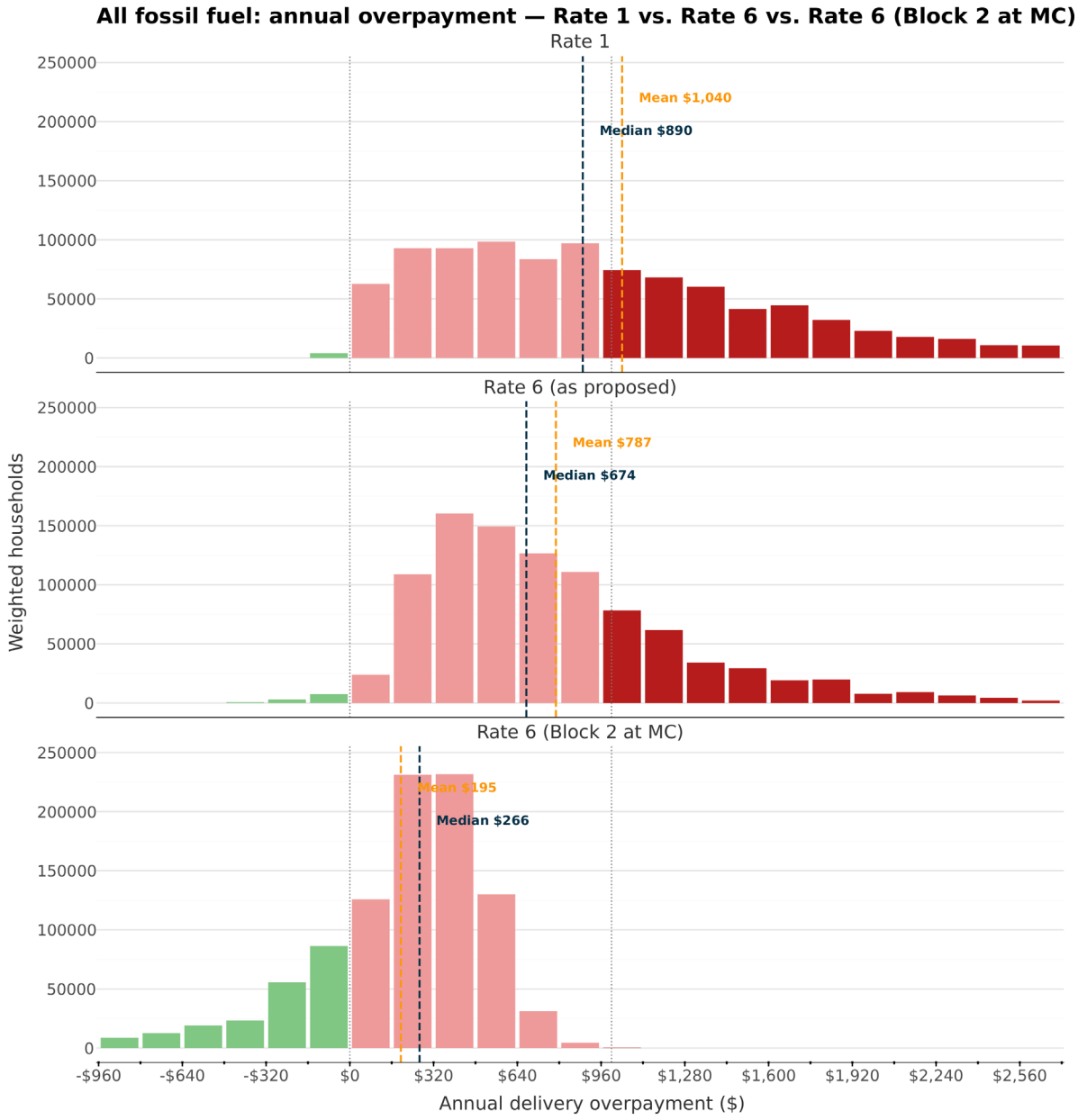

Figure 26: Annual delivery overpayment for all fossil fuel-heated CT Eversource homes switching to heat pumps: Rate 1 vs. Rate 6 vs. Rate 6 with Block 2 at marginal cost.

Q. How would natural gas-heated customers' total energy bills change under this modified Rate 6?

A. Figure 27 compares bill outcomes for natural gas-heated homes under four scenarios: Rate 1 (the status quo), Rate 6 (the Company's proposal, applied to both delivered fuel and natural gas

customers, for illustrative purposes), the modified Rate 6 with all Block 2 components at marginal cost (also applied to all fossil fuel-heated customers), and the fair rate that fully eliminates the overcharge.

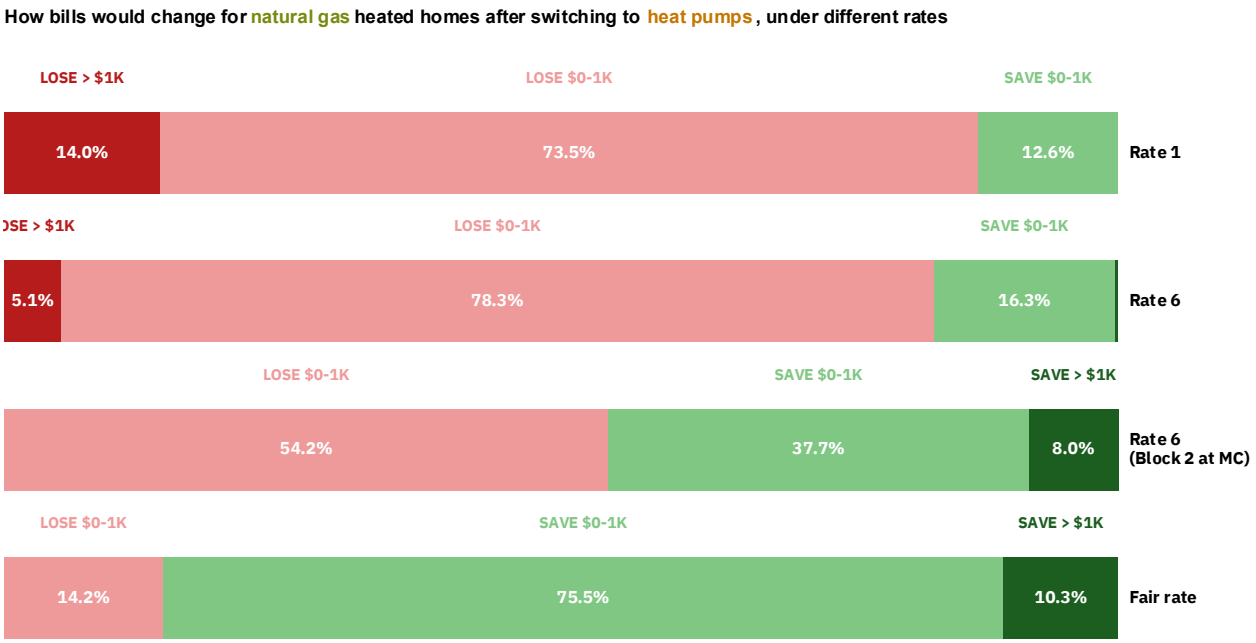

Figure 27: Change in total annual energy bill for natural gas-heated CT Eversource homes switching to a heat pump, under Rate 1 vs. Rate 6 vs. Rate 6 with Block 2 at marginal cost vs. a fair rate.

As I showed above, under Rate 1, only 13% of natural gas-heated customers would see lower total energy bills after switching to a heat pump. Under Rate 6, that improves to 17% — a marginal gain. Under the modified Rate 6, 46% would save. Under a fair rate that fully eliminates the overcharge, 86% would save. The modified Rate 6 closes 45% of the gap between Rate 1 and the fair rate in share of customers who save; Rate 6 as proposed closes only 5%. I will explain why the modified Rate 6 fails to close the remaining gap — even with correctly sized

discounts — in Section VIII, where I show that Rate 6's block structure itself misallocates the discount.

Q. How would delivered fuel-heated customers' total energy bills change under this modified Rate 6?

A. Figure 28 shows the same four-way comparison for oil- and propane-heated homes.

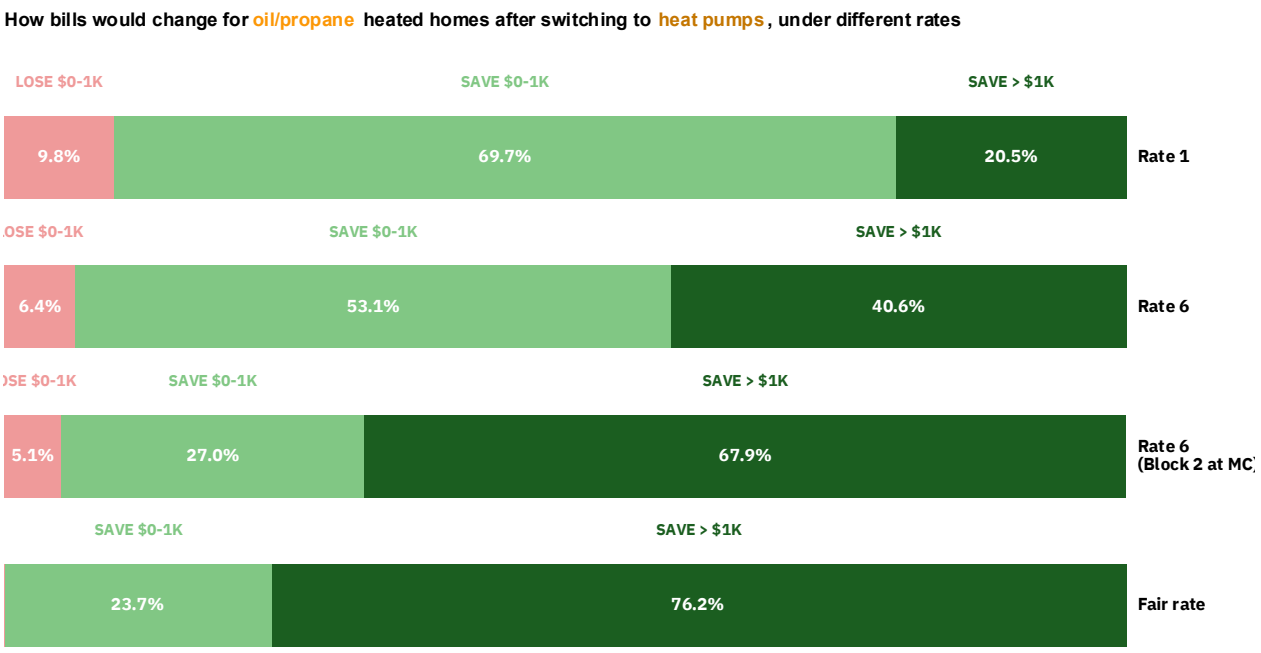

Figure 28: Change in total annual energy bill for oil/propane-heated CT Eversource homes switching to a heat pump, under Rate 1 vs. Rate 6 vs. Rate 6 with Block 2 at marginal cost vs. a fair rate.

As I showed above, the vast majority of delivered fuel customers already save under any rate: 90% under Rate 1, 94% under Rate 6, 95% under the modified Rate 6, and 100% under a fair rate.

The average delivered fuel customer's annual savings after switching are $1,796 under a fair rate. Under Rate 1, the average customer captures only 35% of those savings ($628). Under Rate 6, that rises to 53% ($952). Under the modified Rate 6, 92% ($1,660).

Q. How do these results compare between natural gas and delivered fuel customers?

A. If Rate 6's Bock 2 rates were set equal to marginal costs, customers transitioning from delivered fuels would benefit more than those transitioning from natural gas: for delivered fuel customers, the average customer captures 92% of the fair-rate savings. For natural gas-heated customers, modified Rate 6 closes only 45% of the percent-who-save gap, and more than half of natural gas customers would still see higher energy bills after switching to a heat pump.

The reason, as we'll see in Section VIII, is related to the block structure itself.

VIII. RATE 6'S BLOCK STRUCTURE IS REGRESSIVE

Q. Besides Rate 6's discount being too low, what problems does the rate's block structure create?

A. Targeting lower rates directly to incremental heat pump load is a laudable goal, and a block rate structure would appear to be a natural way to do it. But the design rests on an implicit assumption: that every customer's pre-heat-pump electricity use is approximately 700 kWh per month, so that kWh above the threshold can serve as a proxy for incremental heat pump load. If that assumption held, the design would work — the threshold would neatly separate base load from heat pump load for everyone.

But in reality, the Company's fossil fuel-heated customers vary far too widely in their pre-heat-pump electricity use for a single cutoff to work. When a customer's base load deviates from the threshold, the discount is misallocated in one of two ways:

1. **Discount leakage**: when a customer's base load is *below* the threshold, some of their incremental heat pump electricity lands in Block 1 at the full rate, and they receive less discount than intended.
2. **Windfall discount**: when a customer's base load is *above* the threshold, some of their pre-existing consumption — unrelated to the heat pump — gets the Block 2 discount as an unintended windfall.

These **misallocations** are not specific to the 700 kWh threshold — they are inherent to any block design with a fixed cutoff applied to a heterogeneous population.

And as I will show, these misallocations produce two concrete **harms**: 1. the block design is regressive, because lower-income customers have lower base loads; and 2. it is systematically biased against natural gas customers, who also have lower base loads. (The seasonal rate I propose in Section X avoids these two harms entirely, and ultimately does a better job of delivering a discount that is proportional to each customer's incremental heat pump load.)

I will address each of these harms in turn, after providing examples of the misallocations.

Q. Can you provide examples to illustrate discount leakage and windfall discount, the two types of discount misallocations introduced above?

A. Consider two delivered fuel homes, both of which switch to a heat pump and add the same 500 kWh per month of incremental winter electricity.

Discount leakage. Home A uses 400 kWh per month before the heat pump — well below the threshold. After the retrofit, it uses 900 kWh. Under Rate 6, the first 700 kWh is billed at the Block 1 rate (13.6 ¢/kWh) and only the last 200 kWh gets the Block 2 rate (11.7 ¢/kWh). Of the home's 500 kWh of heat pump load, only 200 kWh — 40% — lands in Block 2. The

other 300 kWh is billed at the full Block 1 rate. The discount *leaks* — it fails to reach most of the incremental heat pump load it was designed for.

Windfall discount. Home B uses 900 kWh before the heat pump — well above the threshold. After the retrofit, it uses 1,400 kWh. Under Rate 6, the first 700 kWh is again Block 1, and the remaining 700 kWh gets Block 2. All 500 kWh of heat pump load lands in Block 2, but Home B also gets the Block 2 discount on 200 kWh of its pre-existing base load. That is a *windfall* — a discount on electricity that has nothing to do with the heat pump.

The threshold treats both homes the same, but the economic outcomes are very different: Home A receives 1.9 ¢/kWh of discount on only 40% of its heat pump load, while Home B receives that discount on 100% of its heat pump load *plus* an additional windfall on existing consumption.

Q. How well does the 700 kWh assumption hold for delivered fuel customers?

A. Poorly. I examined the distribution of average monthly pre-heat-pump electricity use during winter across the full ResStock sample of delivered fuel-heated customers. Figure 29 ranks every delivered fuel customer from lowest to highest base load, and plots this base load against Rate 6's 700 kWh threshold.

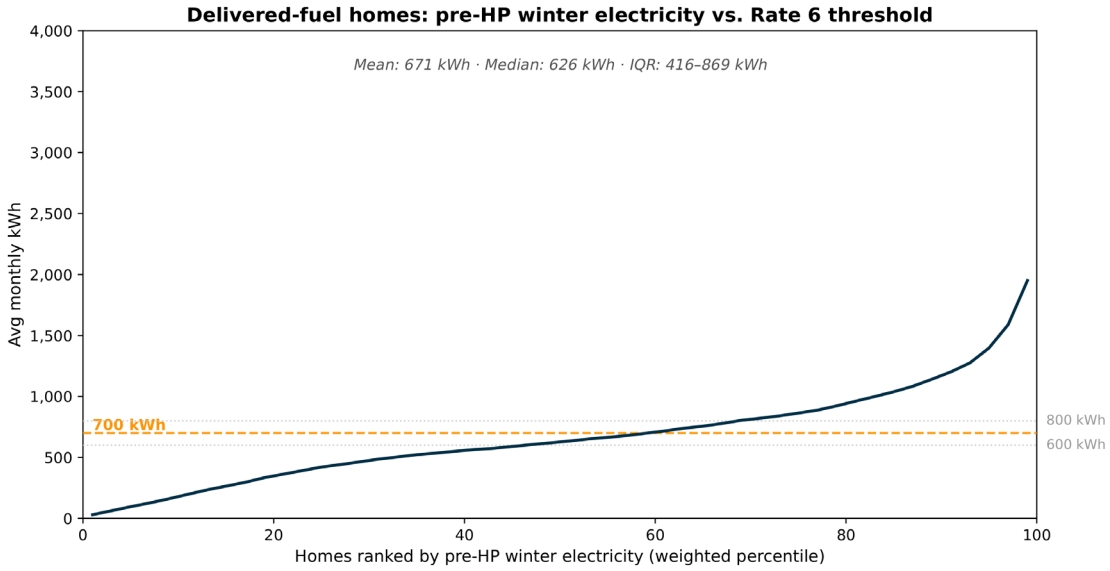

Figure 29: Pre-heat-pump winter electricity use for delivered fuel homes, ranked by consumption. Dashed line at 700 kWh marks Rate 6's block threshold.

The *average* monthly winter base load for these customers is 671 kWh per month, which matches the 700 kWh threshold well.

For the threshold to work well, however, most customers' base load would need to cluster near 700 kWh. They do not. (The lines in the chart would need to be largely parallel.) Only 22% of delivered fuel homes have a base load between 600 and 800 kWh. (The gray line in Figure 29.) The middle 80% of homes range from 179 to 1,173 kWh — a sixfold spread. With so much variation in customer base load, no single threshold can accurately separate base load from heat pump load for most people.

Q. Given this wide variation in base load among delivered fuel-heated customers, how much discount leakage and windfall actually occurs under the 700 kWh threshold?

A. Figure 30 adds post-heat-pump consumption to the previous chart. The chart visualizes which homes experience discount misallocations: blue is incremental load correctly in Block 2, orange

is incremental load trapped in Block 1 (discount leakage), and yellow is base load spilling into Block 2 (windfall).

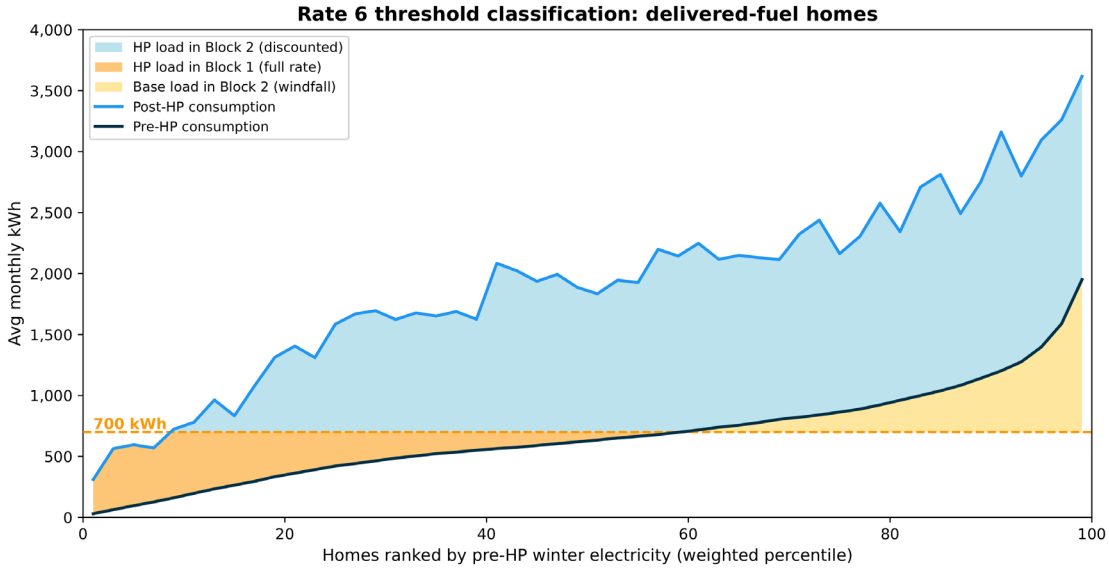

Figure 30: How Rate 6's 700 kWh threshold classifies each delivered fuel home's load. Blue: HP load correctly in Block 2. Orange: HP load trapped in Block 1. Yellow: base load getting Block 2 windfall.

Both misallocation problems are prevalent.

Discount leakage (orange) affects 67% of delivered fuel homes — their base load is below 700 kWh, so some of their incremental heat pump load is trapped in Block 1 at the full rate. Among those homes, the median amount of leaked HP load is 169 kWh per month.

Windfall discount (yellow) affects 49% — their base load is above 700 kWh, so some of their pre-existing consumption gets the Block 2 discount. Among those homes, the median windfall is 167 kWh per month.

Q. Is discount misclassification correlated with income?

A. Yes. Among delivered fuel homes, base load and income are positively correlated (weighted Pearson $r = 0.44$). Higher-income homes tend to be larger, have more appliances, and generally

consume more electricity before installing a heat pump. And this has direct consequences for the discount misallocation. Figure 31 shows the same chart for each income tercile of delivered fuel homes.

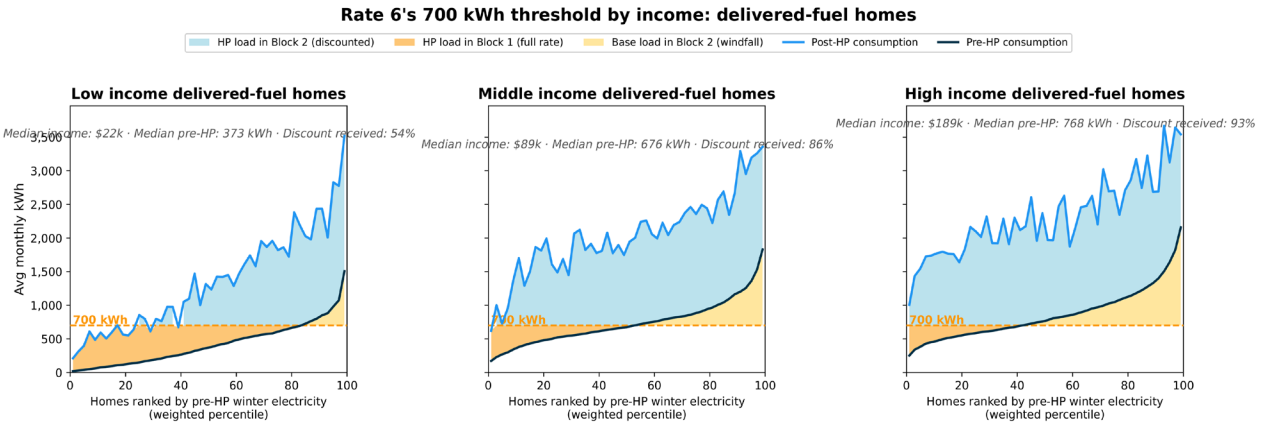

Figure 31: Rate 6 threshold classification for delivered fuel homes, by income tercile. Low-income homes (left) bear more orange (trapped HP load); high-income homes (right) receive more yellow (windfall discount).

Among low-income delivered fuel homes, 88% experience discount leakage — their base load is below 700 kWh, so much of their HP load is trapped in Block 1 at the full rate. Only 23% receive a windfall. Among high-income homes, the picture reverses: only 50% experience discount leakage (and the leakage is smaller, as a share of their incremental load) while 68% receive a windfall on pre-existing base load.

Rate 6's Block 2 discount is designed to reduce every customer's incremental heat pump bill by **14.1%**, because it lowers the price charged for each of those kWh by 14.1% — from 13.570 ¢/kWh to 11.656 ¢/kWh. Because of discount leakage, low-income delivered fuel homes see their incremental HP bills reduced by only **8.0%** on average (even after including the 23% of low-income homes that receive a windfall.) High-income homes see a **15.9%** reduction in their

incremental HP bills, on average — more than intended, because most get the full discount on their heat pump load, plus an additional windfall on pre-existing base load.

Q. Does Rate 6's block design have a regressive impact?

A. Yes. A rate design feature is regressive when it delivers a larger benefit to higher-income customers than to lower-income customers. In this case, the benefit is a **proportional bill discount**: Rate 6 aims to give all delivered fuel customers a 14.1% discount on their heat pump bill, because it lowers the all-in Block 2 rate by 14.1%. But Rate 6 does not deliver proportional bill discounts to all customers. Instead, the percent reduction in incremental heat pump bills increases with income — 8.0% for the lowest-income third of delivered fuel homes, 13.8% for the middle third, and 15.9% for the highest-income third — against a design target of 14.1% for all.

Ultimately, the reason Rate 6's block design is regressive is straightforward: higher-income homes have higher base loads, which places them above the 700 kWh threshold; lower-income homes have lower base loads, which keeps them below it. The threshold converts the correlation between income and base load into a correlation between income and savings.

Q. Could Rate 6's regressive impact be avoided by choosing a different threshold?

A. No. Regressivity is an inherent problem of *any* block rate with a one-size-fits-all threshold, not just 700 kWh.

Moving the threshold lower would reduce leakage but increase windfall; moving it higher would do the reverse. In fact, 700 kWh is close to the threshold that minimizes total misallocation.[68]

[68] This is because 700 kWh is near the mean base load of delivered fuel homes, and at that point leakage and windfall are roughly equal.

But even when misallocations are minimized, they are far from eliminated, because base loads vary so widely across homes. And the fact that this variation in base load is correlated with income ensures that lower-income people will tend to get discount leaks, and higher-income people will tend to get windfalls — even if the "best" threshold is chosen.

Q. In Section VII, you showed that Rate 6's discount is far smaller than it could be. If the discount were set at the marginal cost floor (as in modified Rate 6), would the regressive impact of the block design go away — since all customers would be getting a much larger benefit?

A. No — it gets worse. As I showed above, the threshold systematically gives low-income homes only 57% of their intended savings, while high-income homes get 112%.[69] These *percentages* arise from the threshold, and do not change with the discount size. However, a bigger discount applied through the same percentages produces a bigger gap in what customers actually receive.[70]

Under Rate 6 as proposed, the Block 2 discount is 1.9 ¢/kWh, or 14% of the Block 1 rate. As I showed above, low-income homes see an effective bill reduction of only 8%, while high-income homes see 16% — a 8 percentage-point gap, driven entirely by the threshold's inability to consistently separate base load from heat pump load.

[69] A customer's "intended savings" is what they would receive if the threshold perfectly separated their base load from their heat pump load — that is, if every kWh of incremental HP consumption landed in Block 2 and none of their base load did. The ratio shown (e.g. 57% for low-income homes) is each customers' actual savings divided by their intended savings, averaged across the customers in an income group. A home with mostly leakage might capture only 20%; a home with a large windfall might capture 150%. The group average tells you whether the threshold delivers the right amount of savings to that population on balance — and for low-income homes, even after including homes that receive windfalls, the answer is barely more than half.

[70] The arithmetic: low-income homes capture 57% of their intended savings, so their effective bill reduction is 57% × 72% = 41%. High-income homes capture 112%, so theirs is 112% × 72% = 81%. The same ratios that produced an 8 percentage-point gap under a 14% discount produce a 40 percentage-point gap under a 72% discount.

Under the modified Rate 6 I presented in Section VII — with Block 2 rates for upstream distribution, local distribution, and transmission all set at marginal cost — the discount grows to 13.4 ¢/kWh, or 72% of the Block 1 rate. If the threshold worked perfectly, every customer's incremental heat pump bill would fall by 72%. But the same threshold imprecision applies: low-income homes would see only a 41% reduction, while high-income homes would see 81% — a 40 percentage-point gap.[71]

In other words, fixing Problem 1 (the discount being too small) without fixing Problem 2 (the block structure misallocating the discount) actually makes the regressivity *five times worse* in absolute terms.

IX. RATE 6'S BLOCK STRUCTURE DISADVANTAGES NATURAL GAS CUSTOMERS

Q. If Rate 6 were applied to natural gas customers, how would its 700 kWh threshold impact them?

A. The 700 kWh threshold systematically disadvantages natural gas-heated customers who install heat pumps. This is a distinct problem from regressivity: the threshold is set at a level that largely excludes natural gas homes from the discount.

Q. Why does the threshold disadvantage natural gas customers?

A. Because natural gas-heated homes use much less electricity before installing a heat pump than delivered fuel-heated homes. The average pre-HP winter base load for natural gas homes is 441 kWh per month — nearly 230 kWh below the 700 kWh threshold. By contrast, delivered fuel homes average 671 kWh, close to the threshold itself.

[71] The arithmetic: low-income homes capture 57% of their intended savings, so their effective bill reduction is 57% × 72% = 41%. High-income homes capture 112%, so theirs is 112% × 72% = 81%. The same ratios that produced an 8 percentage-point gap under a 14% discount produce a 40 percentage-point gap under a 72% discount.

This is likely by design, as the Company intends Rate 6 to only be available to delivered fuel customers. As explained in Section VI, their justification for not reducing the overpayments experienced by natural gas-heated customers who install heat pumps — their total energy bills might go up — ignores the fact that the main reason bills go up *is* that these customers are being overcharged.

I advocate for the Company's heat pump rate to be available to all customers installing heat pumps, including those who currently heat with natural gas. So let's examine how the current 700 kWh threshold would affect these customers, and whether it can be improved. Figure 32 compares how Rate 6's 700 kWh threshold classifies load for the two fuel groups side by side.

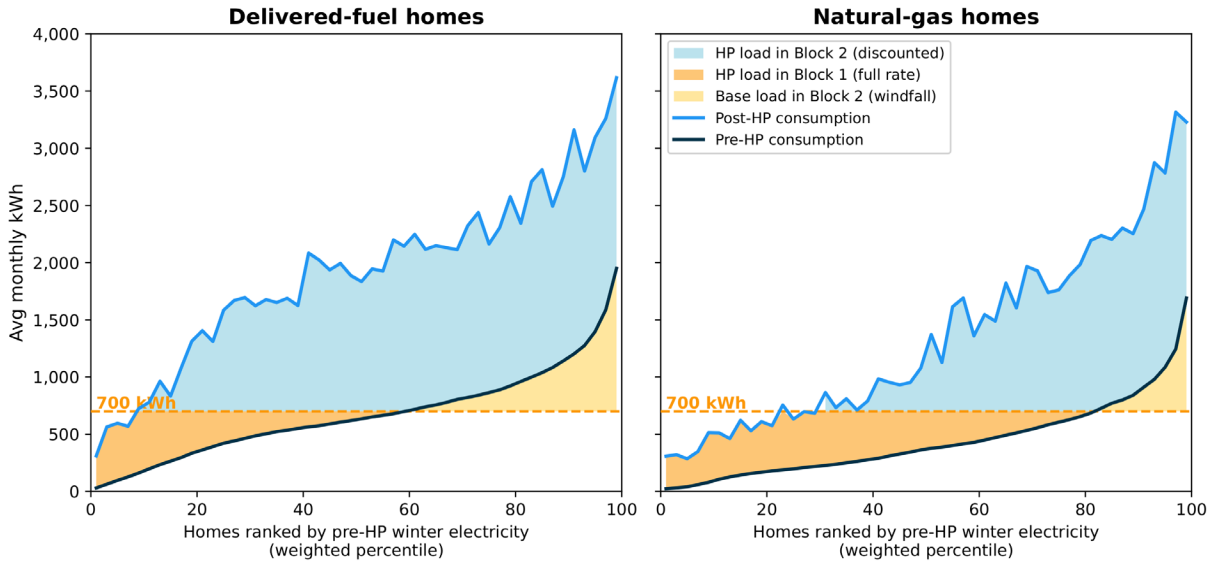

Figure 32: How Rate 6's 700 kWh threshold classifies load for delivered fuel homes (left) vs. natural gas homes (right). Blue: HP load in Block 2 (discounted). Orange: HP load trapped in Block 1 (full rate). Yellow: base load getting Block 2 windfall.

The key question is: of a home's incremental heat pump load, what share actually lands in Block 2 and receives the discount? If the threshold worked perfectly, the answer would be

100% for every home — all incremental load would be blue. For the median delivered fuel home, it is 94%. In other words, the threshold largely works for over half of these customers. (It does not work for everyone: roughly a third of delivered fuel homes lose a fifth or more of their intended discount, and as the income analysis above established, these are disproportionately lower-income homes.)

For the median natural gas home, however, only 55% of incremental HP load receives the discount — the threshold fails. And 23% of natural gas homes — nearly 1 in 4 — would receive essentially no discount at all, because their post-HP consumption never reaches 700 kWh. Among delivered fuel homes, only 7% fare that poorly.

Q. What does this mean in practice for a natural gas customer who installs a heat pump under Rate 6?

A. Rate 6's Block 2 discount is designed to reduce every customer's incremental heat pump bill by 14.1%. For customers that used to heat with natural gas, the 700 kWh threshold traps so much heat pump load in Block 1, that these customers would see their incremental heat pump bill reduced by only **7.7%**, on average — roughly half of the intended discount. The typical delivered fuel home, by contrast, would see a **13.3%** reduction, on average, much closer to the intended 14.1% bill reduction.

This is the underlying reason why Rate 6 doesn't significantly move the needle for post-heat pump bill outcomes. Even with Block 2 rates set at the marginal cost floor, natural gas customers receive roughly half the intended discount — and that is why more than half of them would still face higher total energy bills after switching to a heat pump.

Q. Could the Company lower the threshold so it works better for natural gas customers?

A. Lowering the threshold helps natural gas homes, but it sends windfall discount to delivered fuel homes. Figure 33 illustrates the trade-off. The top row shows the current 700 kWh threshold; the bottom row lowers it to 441 kWh — the natural gas mean base load.

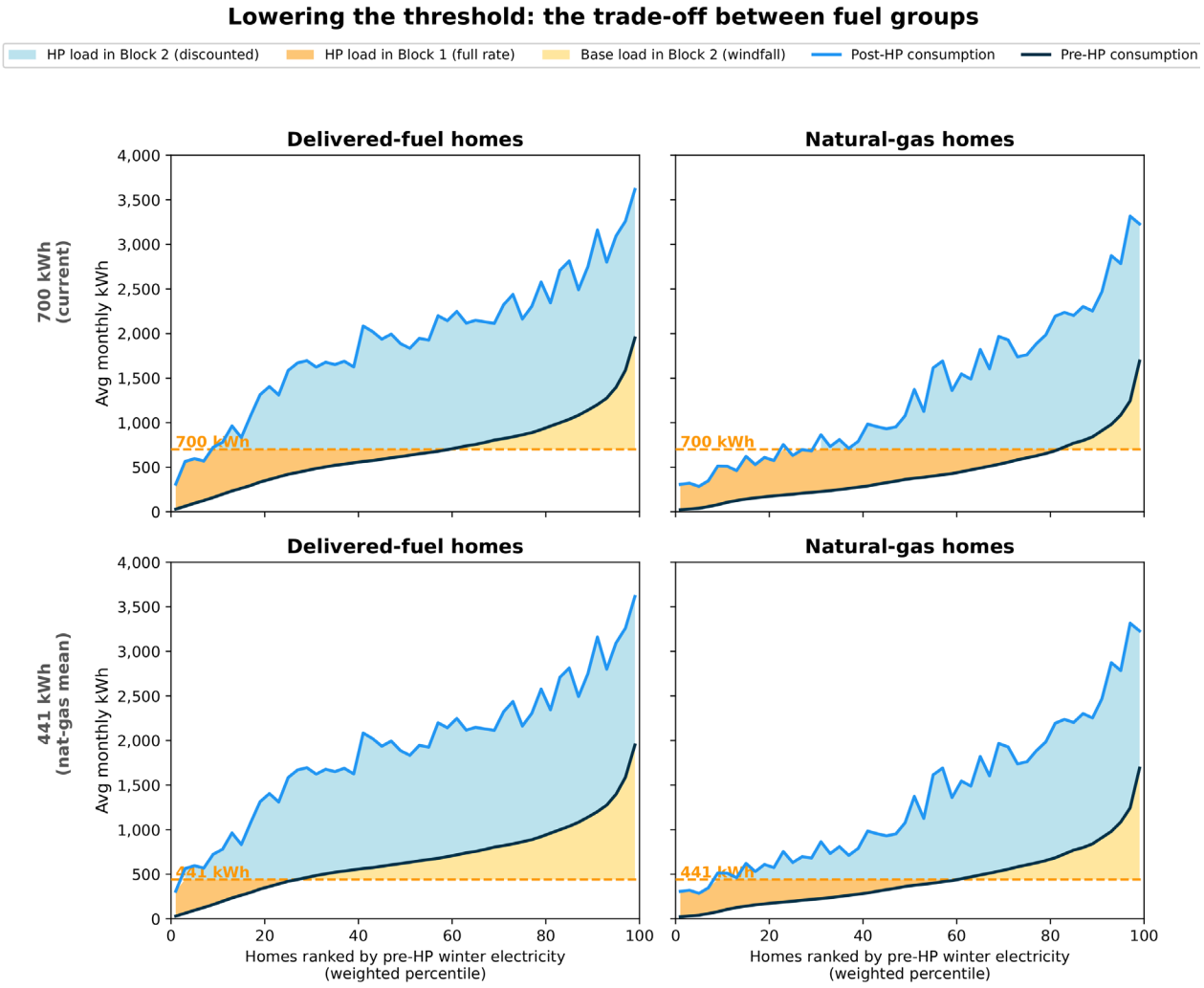

Figure 33: Current 700 kWh threshold (top) vs. a threshold set at the natural gas mean (bottom). Lowering the threshold helps natural gas homes (more blue, right column) but sends windfall discount to delivered fuel homes (more yellow, left column).

The bottom-right panel shows the improvement for natural gas homes: much more blue, meaning their heat pump load now reaches Block 2. Their capture rate rises from 59% to 86%. But the bottom-left panel shows the cost: 73% of delivered fuel homes now receive a windfall

(yellow), and their capture rate balloons to 113% — meaning the delivered fuel population as a whole receives far more discount than intended, despite the fact that this population needs *less* help than that switching from natural gas, from a bill savings standpoint.

Q. Are block rates with one-size-fits-all thresholds inherently biased against natural gas-heated and lower-income customers switching to heat pumps?

A. Yes. For any given threshold that is chosen, block rates will deliver smaller-than-intended savings to the customer groups that need them most — lower income and natural gas-heating customers — and larger-than-intended savings to the customer groups that need them least — higher income and delivered fuel-heating customers.

This trade-off is inescapable: the only way to increase the savings received by lower income and natural gas-heated customers is to lower the threshold, which in turn delivers even larger savings to higher income and delivered fuel customers.

Q. Is it possible to design a block rate that avoids these biases?

A. Yes, by moving to per-customer thresholds, rather than a single residential class-wide number. There are at least three ways to implement per-customer thresholds.

The most accurate would be **separately metering** the heat pump. In addition to the cost, this approach would add significant friction to customer enrollment, and rule out auto-enrollment entirely, of both existing and new heat pump customers. (As I will discuss in Section XII, auto-enrollment is essential to the success of the rate.)

Another option would be **circuit-level energy monitors** such as Sense or Emporia Vue (often called non-invasive submeters, in regulatory contexts). These would be lower cost, and may be compatible with auto-enrollment of new heat pump customers: contractors installing heat pumps under EnergizeCT already interact with each home, and opt-out energy monitor

installation and Rate 6 enrollment could become part of the installation process. Auto-enrollment of the Company's *existing* heat pump customers would remain impractical, however. And while these monitors could accurately measure incremental heat pump load, they likely would not integrate into the Company's billing software. Savings would need to be delivered as credits administered by a third party, rather than lower rates on the customer's bill.[72]

The cheapest and most frictionless option would be a **software-based solution**. The Company could estimate per-customer thresholds from their meter data: for instance, by averaging each calendar month's consumption over the past 3–5 years (the average of January 2024, January 2025, and January 2026 becomes the January threshold, and so on). The Company would then subtract the threshold from each month's post-installation consumption to estimate incremental heat pump load, apply the Block 2 rate to that load, and generate the bill. This could be done within the billing system itself — Rate 6 already uses a block threshold as a billing determinant, and making that determinant customer-specific rather than class-wide is standard functionality in utility billing platforms.[73] Alternatively, a third party could perform the baseline estimation and load separation, and deliver the resulting savings as a credit outside the bill.

All three approaches add complexity — whether in hardware, software, or administration. The first two make auto-enrollment difficult to impossible, which would lead to single-digit rate enrollment and leave the cross-subsidy largely in place.

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[72] This is essentially the model that utilities already use for EV managed charging. Con Edison's SmartCharge New York program (administered by ev.energy) pays EV drivers via Venmo or PayPal for off-peak charging. WeaveGrid administers similar programs for BGE, Pepco, Delmarva, Potomac Edison, and Orange & Rockland, delivering incentives via Venmo, gift cards, or bill credits. In all cases, the third party manages the device telemetry and delivers savings outside the utility's billing system.

[73] Utility billing platforms such as SAP IS-U and Oracle CC&B already support customer-specific billing determinants — demand ratchets, for example, are set per meter. A per-customer block threshold would be implemented the same way: stored as a customer attribute and referenced by the rate calculation engine each billing cycle.

In short: in order to achieve a block rate with per-customer thresholds that heat pump customers could be auto-enrolled into, the Company would either need to commit to a software-based solution, or to EnergizeCT contractors installing circuit-level energy monitors whenever they install heat pumps.

However, a simpler alternative to per-customer thresholds exists that achieves largely the same result: a seasonal rate design that lowers volumetric charges for heat pump customers in winter, without relying on a block threshold at all. I present exactly such a rate in the next section.

X. PROPOSED RATE DESIGN: RATE HP

Q. What do you propose to address the overcharging of heat pump customers?

A. I recommend that the Company create a new rate schedule, Rate HP, for residential customers with heat pumps. Rather than using a block design, Rate HP would lower the volumetric rates for distribution and transmission during the winter months (November through March), when the incremental heat pump load occurs. Rate 1's summer rates, generation rates, and the fixed customer charge would be **unchanged**. All customers with heat pumps would be eligible to enroll in Rate HP, regardless of whatever heating system they had before.

Q. How is Rate HP intended to affect revenue collection from heat pump customers?

A. The purpose of lowering winter rates is to bring the incremental revenue the Company collects from customers installing heat pumps in line with the incremental marginal costs those heat pumps actually cause (while preserving the revenue previously collected from their base load). As I showed in Section III, heat pump customers are overcharged because volumetric rates charge far more per incremental kWh than the incremental marginal T&D cost those kWh cause. Rate HP corrects this by reducing volumetric delivery rates in winter, the season when

incremental heat pump load is concentrated, in order to achieve bills consistent with cost-causation: that is, bills that get as close possible to each customer's pre-heat pump T&D bill, plus their incremental marginal T&D cost caused by the heat pump.

Q. What is the ultimate objective of Rate HP?

A. By removing the overcharge for heat pump customers (on average), the ultimate objective of Rate HP is to fix the intra-class equity and building electrification policy problems that Rate 1 creates (as documented in Section III and IV), and which Rate 6 fails to satisfactorily address (as documented in Sections V through IX).

Q. What would the Company's volumetric rates be under the proposed Rate HP?

A. Rate HP would reduce distribution and transmission rates during the winter months only. Summer rates remain at proposed Rate 1 levels. The following table compares the Company's proposed Rate 1 rates with my proposed Rate HP rates.

Table 4: Rate HP winter rates compared to Rate 1

	Proposed Rate 1 (¢/kWh)	Rate HP Summer (¢/kWh)	Rate HP Winter (¢/kWh)	Change
Distribution — Energy Charge (¢/kWh)	12.196	12.196	3.533	-71%
Transmission — Transmission Service Rate (¢/kWh)	5.050	5.050	1.258	-75%
Total delivery volumetric (distribution + transmission + riders, ¢/kWh)	16.335	16.335	3.880	-76%
Generation — Generation Service Charge (¢/kWh)	10.539	10.539	10.539	—

Generation rates, the monthly customer charge, and all distribution riders remain the same as under Rate 1, as would summer distribution and transmission rates in the summer.[74]

Q. Rate HP proposes a lower Transmission Service Rate in the winter. Can the Authority set a different transmission rate for a specific rate schedule?

A. Yes. The Transmission Service Rate on residential bills is a retail rate set by the Authority through the Company's Transmission Adjustment Clause ("TAC"). The Company's own tariff states: "Transmission rate adjusts per the Company's Transmission Adjustment Clause." The TAC is a state-regulated retail mechanism, not a FERC-jurisdictional wholesale rate.[75] Setting a different Transmission Service Rate for Rate HP in the winter months is mechanically identical to how the Authority already administers the TAC across rate schedules today.

Q. Does the Company already vary the Transmission Service Rate across residential rate schedules?

A. Yes. Rate 5 (Residential Electric Heating Service) has a Transmission Service Rate of 4.901 ¢/kWh, while Rate 1 and Rate 6 both have a Transmission Service Rate of 5.050 ¢/kWh. The Company chose not to adjust the Transmission Service Rate for Rate 6, but that was a design choice — not a hard constraint. The Authority has the same power to set a seasonal Transmission

[74] Beyond the distribution energy charge and transmission, Rate 1's volumetric delivery rate carries several pass-through riders: the Competitive Transition Assessment (CTA) and the Public Benefits charges — Systems Benefits Charge (SBC), Conservation Adjustment Mechanism (CAM), Renewable Energy, and the non-bypassable FMCC Delivery Charge. Each adjusts through its own reconciliation clause rather than this rate case; at their filed values (Exhibit CLP-RATES-3, Docket No. 26-05-10) (Eversource 2026f) they total -0.911 ¢/kWh, and I hold them unchanged under Rate HP. The total delivery rate shown in the table includes these riders. Generation reflects Eversource's standard-service supply rates over the rate case's test year (calendar year 2025). Because those rates vary seasonally, the single figure shown is the kWh-weighted average across the average post-heat-pump load profile, and it is identical under Rate 1 and Rate HP.

[75] The Transmission Service Rate recovers the Company's wholesale transmission costs from retail customers on a volumetric basis through the TAC. The Authority controls how those costs are allocated across rate schedules and billing periods. Redesigning the retail transmission charge for a specific schedule — e.g., lowering it in winter and raising it in summer to remain revenue-neutral — does not alter the Company's wholesale transmission obligations or any FERC-jurisdictional rate.

Service Rate for Rate HP that it used to set a different year-round Transmission Service Rate for Rate 5.

Q. Has any other state commission directed utilities to include transmission rate reductions in heat pump rates?

A. Yes. On June 1, 2026, the Massachusetts Department of Public Utilities ("DPU") issued an order in Docket D.P.U. 25-08-A directing National Grid and Unitil — two of the three electric distribution companies in Massachusetts — to file proposals to incorporate winter transmission charges into their respective heat pump rates for the 2026–2027 heating season (DPU 2026). NSTAR Electric, Eversource's Massachusetts subsidiary, was already offering a heat pump rate with a winter transmission reduction, which the DPU had approved in Docket D.P.U. 25-55 in 2025.[76] The DPU's June 2026 order extended the same approach to National Grid and Unitil for statewide consistency.

Q. Why are the rate reductions concentrated in winter?

A. Because the incremental electricity consumption from heat pumps is concentrated in winter. Heat pumps replace fossil fuel furnaces and boilers, which run primarily during the heating season. In summer, heat pumps provide air conditioning — a service most homes already have to some extent — so summer electricity consumption changes little after installation.

By concentrating the rate reduction in the months when incremental HP load occurs, Rate HP avoids giving a discount to base load. This is more precisely targeted than a year-round flat reduction, but it means the total annual revenue reduction needed to eliminate the overcharge is achieved with a deeper winter rate reduction rather than a shallow year-round rate reduction.

[76] The DPU directed National Grid and Unitil to calculate winter transmission charges "using the same method used to derive their winter base distribution charges, including the use of the same forecasted summer and winter annual usage and seasonal adjustment factors applied to calculate the winter base distribution rates, and apply these factors to transmission charges to recover the winter transmission revenue requirement over the adjusted winter sales" (DPU 2026).

Q. How did you determine the winter rate reductions for each component?

A. For each component — distribution and transmission — I asked: what reduction in the winter volumetric rate would make the annual overpayment of the *average* fossil fuel-heated customer who installs a heat pump equal to zero? In other words, I found the single winter ¢/kWh rate that, applied to a sample of post-heat-pump load profiles, produces a population-average T&D bill equal to the customer's pre-heat-pump T&D bill plus the incremental marginal T&D cost of serving the new electrified heating load.

Because this is a single rate applied to all customers, it zeroes out overpayment *on average* — individual customers with different load shapes will still have residual over- or underpayments. I address this issue below.

Q. A 71% winter reduction seems large. Why does the winter rate have to fall so steeply in order to eliminate the overpayment?

A. When one of the Company's fossil-heated customers installs a heat pump, they cause only $10 in incremental marginal T&D cost per year,[77] on average, even though their winter consumption roughly quadruples, which causes their winter T&D bill to roughly quadruple as well. To satisfy cost-causation, the customer's post-heat-pump winter T&D bill should approximately equal their pre-heat-pump-winter T&D bill, plus $10. To achieve this, the winter rate has to drop by roughly the same factor that winter load goes up. Four times the kWh at a only slightly higher total bill means roughly one-quarter the rate per kWh — a ~75% reduction.

Q. You said Rate HP makes the *average* overpayment zero, but does not guarantee that every individual customer's overpayment is zero. How close does it get?

A. As close as possible without per-customer block rates.

[77] A shown in Section III, Figure 10.

Under a perfectly fair rate, each customer's post-installation delivery bill would equal their base-load bill plus only the incremental marginal T&D costs their heat pump actually causes — eliminating every individual overpayment entirely. That would require implementing per-customer thresholds, and charging incremental loads at marginal cost.

Rate HP uses a single winter rate for all customers, which is simple, practical, and performs better than the Company's one-size-fits-all block rate — though it does mean some customers will still overpay, and others will underpay, even if the two wash out on average. Figure 34 shows the overpayment distribution across four scenarios. Under Rate 1 (top panel), virtually every heat pump customer overpays. Under Rate 6 as proposed (second panel), the distribution remains wide, shifts modestly leftward, but the average overpayment remains $787 per year. Under the modified Rate 6 with Block 2 rates set at marginal cost (third panel), the shift is larger — mean overpayment falls to $195, but delivered fuel and higher-income customers end up underpaying. Under Rate HP (bottom panel), the distribution is centered on zero: the mean overpayment is $-1.

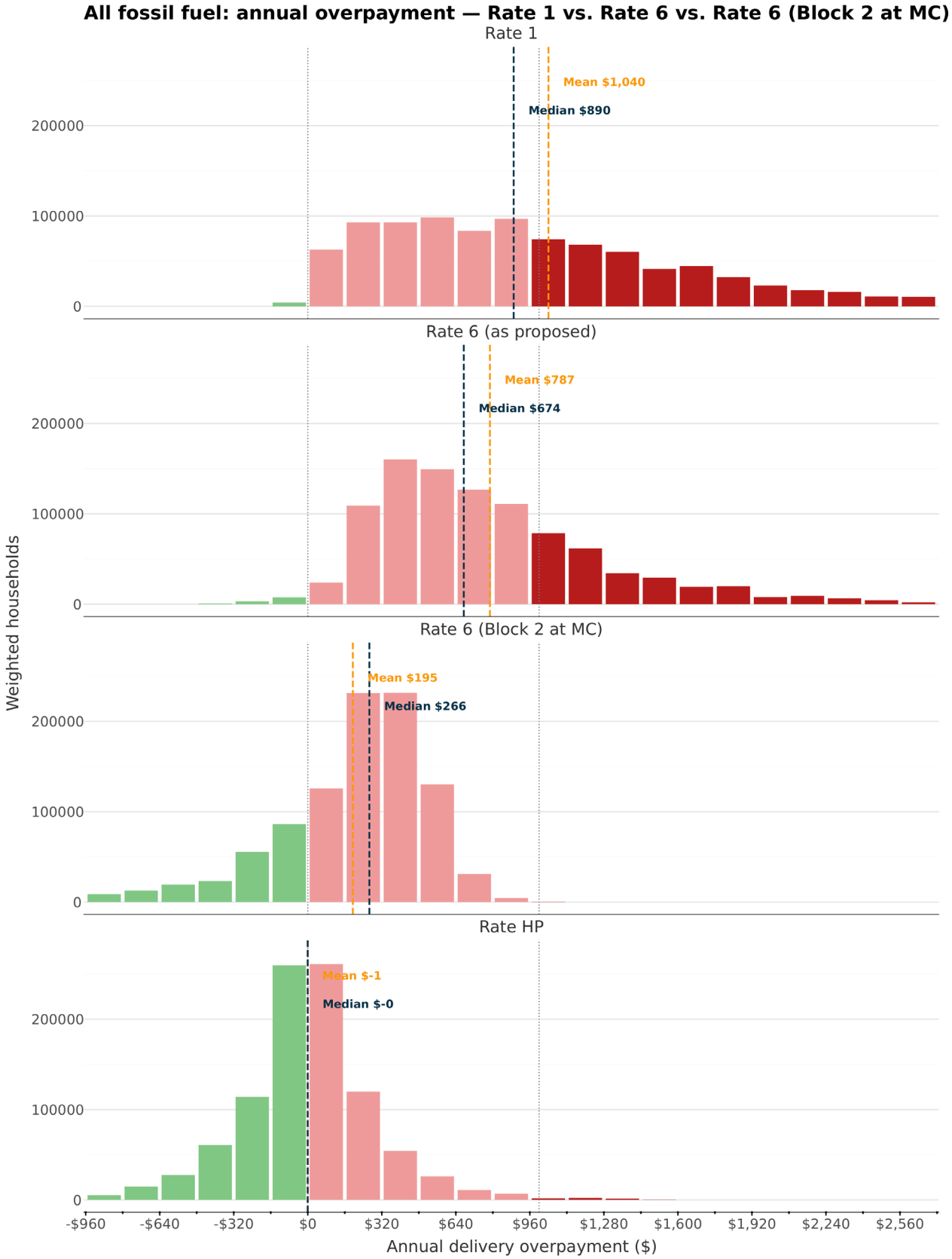
All fossil fuel: annual overpayment — Rate 1 vs. Rate 6 vs. Rate 6 (Block 2 at MC)
Rate 1
Mean $1,040
Median $890
Rate 6 (as proposed)
Mean $787
Median $674
Rate 6 (Block 2 at MC)
Mean $195
Median $266
Rate HP
Mean $-1
Median $-0
Weighted households
200000
100000
0
-$960
-$640
-$320
$0
$320
$640
$960
$1,280
$1,600
$1,920
$2,240
$2,560
Annual delivery overpayment ($)

Figure 34: Annual delivery overpayment for all fossil fuel-heated CT Eversource homes switching to heat pumps: Rate 1 vs. Rate 6 vs. Rate 6 (Block 2 at MC) vs. Rate HP.

Individual customers still have residual over- or underpayments — an inherent limitation of any single-rate schedule. However, 61% of fossil fuel customers are within $200 of zero. And unlike either Rate 6, nearly all of the systematic bias is removed: natural gas customers are almost as likely to be underpaying as overpaying (53% overpay, vs. 47% of oil/propane customers), and LMI customers see a similar balance (52% overpay, vs. 49% of non-LMI customers).

In short, Rate HP does what a practical rate design can do: unlike even the version of Rate 6 with discounts set to marginal cost, Rate HP eliminates the overcharge that Rate 1 imposes on heat pump customers *on average*, while leaving a over/underpayment spread that is modest and that doesn't systematically disadvantage natural gas-heated and low income customers.

XI. IMPACT OF RATE HP ON HEAT PUMP OPERATING COSTS

Q. Under the proposed Rate HP, what would happen to the average natural gas-heated household's total annual energy bills when they switch to a heat pump, compared with Rate 1?

A. After getting heat pumps, the average natural gas-heated household's total annual energy bill under Rate HP would be $865 (23%) less than if they switched to a heat pump under Rate 1.[78]

[78] Electric and natural gas consumption from NREL ResStock 2024.2 simulation (CL&P-territory natural gas-heated buildings), bills calculated using CAIRO model with proposed Rate 1 rates (bars 1–2) and proposed Rate HP rates (bar 3; see Exhibit JPV-2, Section 5). See Exhibit JPV-2, Section 1.

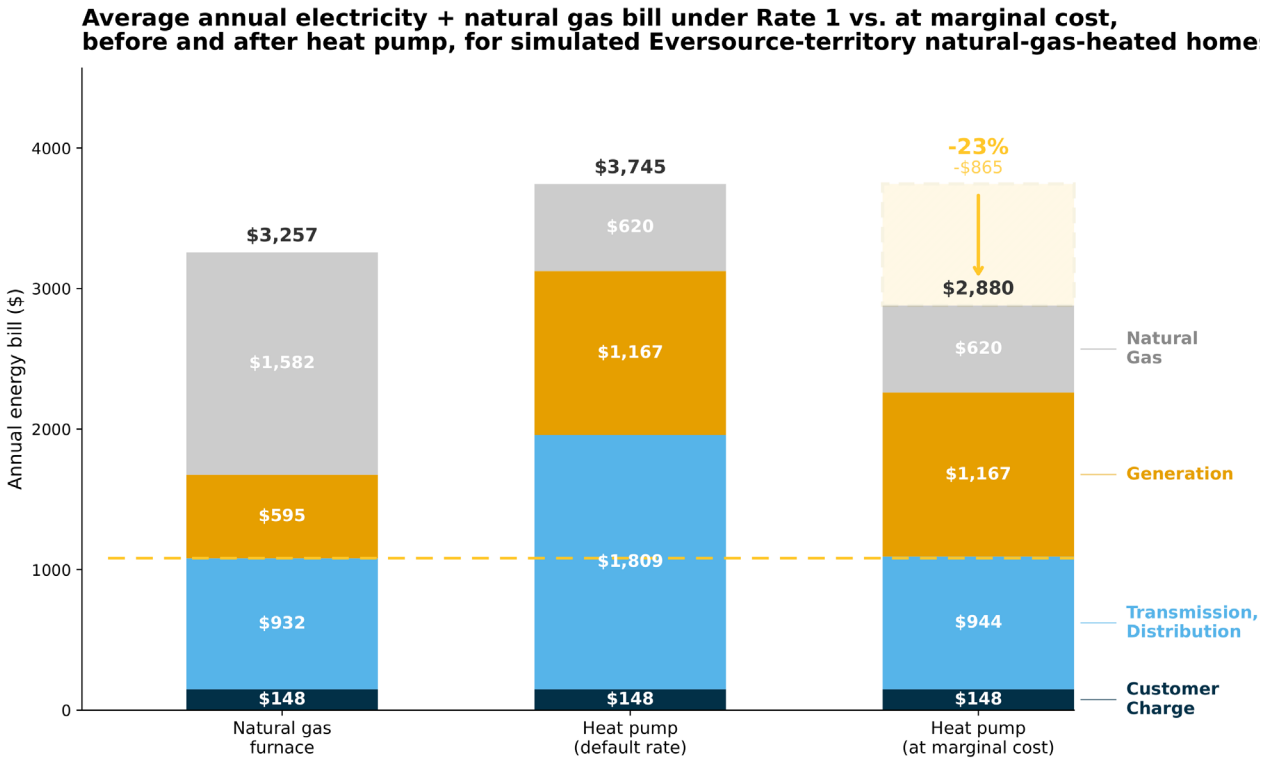

Figure 35: Average annual energy bills for simulated Eversource-territory natural gas-heated homes: before heat pumps, after heat pumps under Rate 1, and after heat pumps with incremental load charged at marginal cost.

As Figure 35 shows, under Rate HP, the winter distribution and transmission components of the post-heat-pump electricity bill would shrink compared to Rate 1, reflecting the lower, cost-causation-based winter T&D rates described above.

And this T&D bill reduction makes a decisive difference in terms of fuel switching economics: with access to fair rates, the average natural gas-heated household in the Company's territory could save $377 (12%) per year by switching their gas heating system to a heat pump, instead of losing $488 per year as they do today.

Q. Under the proposed Rate HP, what would happen to the average delivered fuel-heated household's total annual energy bills when they switch to a heat pump, compared with Rate 1?

A. Delivered fuel-heated households who switch to a heat pump would see greater post-heat-pump savings. Figure 36 shows that the average oil- or propane-heated home's total annual energy bill after switching to a heat pump under Rate HP would be $1,169 (25%) less than if they switched to a heat pump under Rate 1.[79]

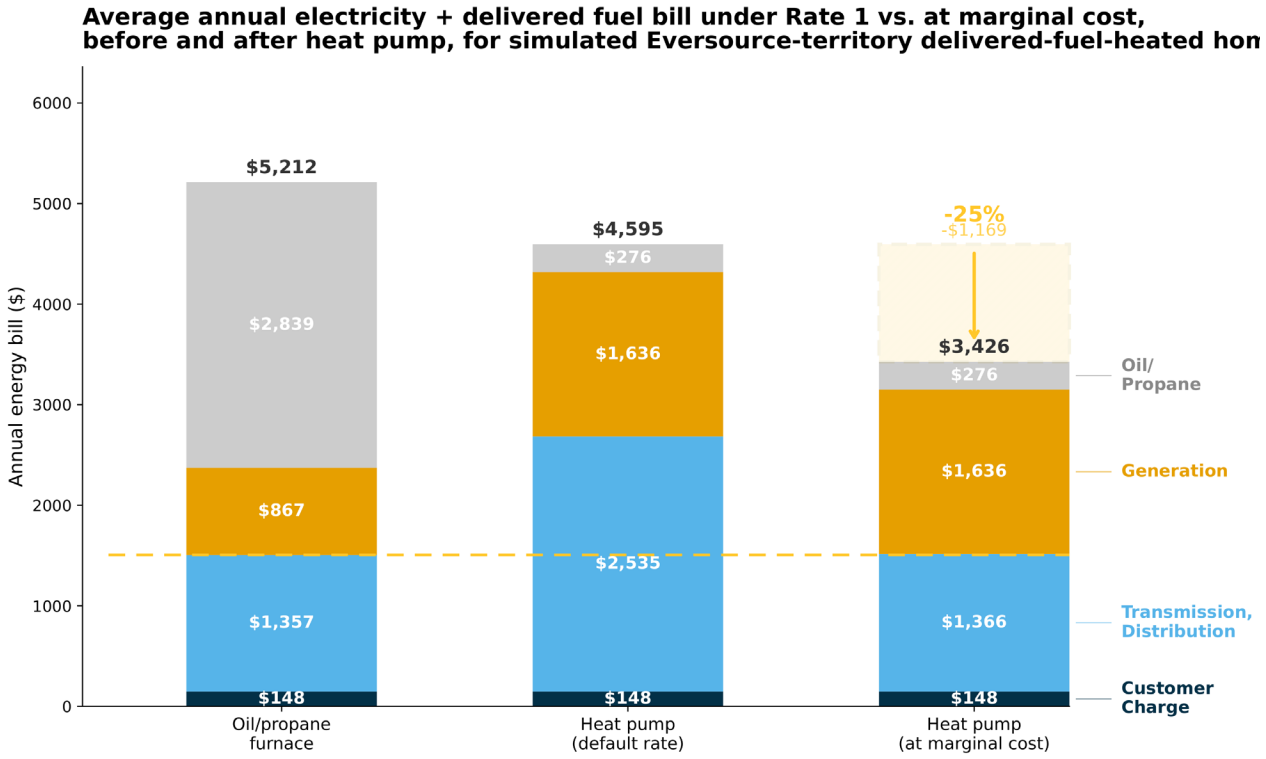

Figure 36: Average annual energy bills for simulated Eversource-territory delivered fuel-heated homes: before heat pumps, after heat pumps under Rate 1, and after heat pumps with incremental load charged at marginal cost.

Once they stop being overcharged, the average delivered fuel-heated customer could save $1,786 (34%) per year by switching from an oil or propane heating system to a heat pump.

[79] Same methodology as Figure 35; delivered fuel consumption from NREL ResStock, bills calculated using CAIRO model with EIA oil/propane prices.

Q. Under the proposed Rate HP, how would post-heat-pump bill impacts vary across the full population of the Company's residential customers that currently heat with natural gas?

A. Figure 37 compares the bill outcomes for natural gas-heated homes switching to a heat pump under Rate 1 versus Rate HP.[80]

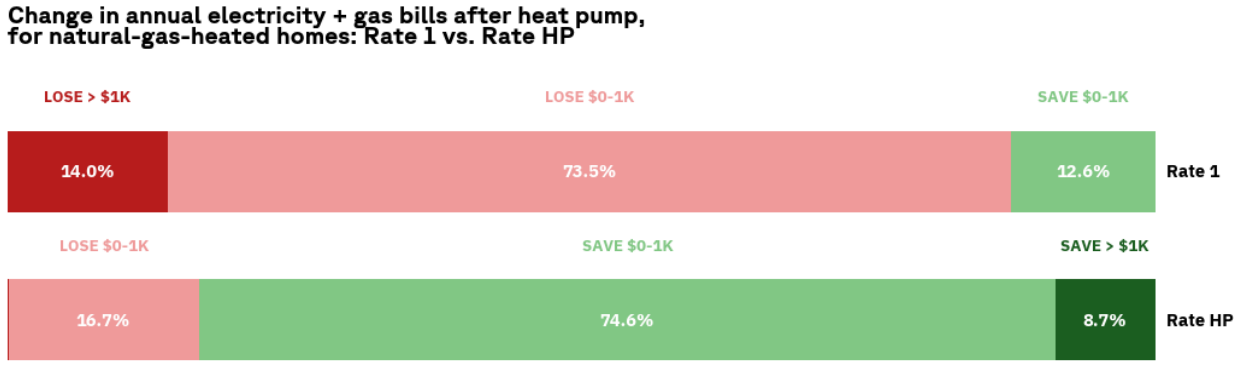

Figure 37: Change in total annual energy bill for natural gas-heated CT Eversource homes switching to a heat pump, under Rate 1 vs. Rate HP.

Under current Rate 1, only 13% of natural gas-heated households could lower their total annual energy bills by switching to a heat pump.

Under Rate HP, 83% would save by switching, and those that still see a bill increase would lose only $144 on average.

In other words, allowing heat pump customers to stop overpaying would transform the economics of electrification for the 34% of the Company's customers that heat with natural gas. Under Rate 1, installing a heat pump is a losing proposition: most natural gas-heated households

[80] NREL ResStock 2024.2 and CAIRO rate simulation, using the Company's proposed Rate 1 and proposed Rate HP rates. Gas tariffs: the filed residential gas rates of the gas utility serving each home (CT Natural Gas, Southern CT Gas, Yankee Gas, or Norwich Public Utilities). See Exhibit JPV-2, Section 5 for rate derivation.

would pay more. Under Rate HP, 83% would save — and the median saver would cut $275 per year from their energy bills.

Q. Under the proposed Rate HP, how would post-heat-pump bill impacts vary across the full population of the Company's residential customers that currently heat with delivered fuels?

A. Figure 38 shows the same comparison for delivered fuel-heated homes.[81]

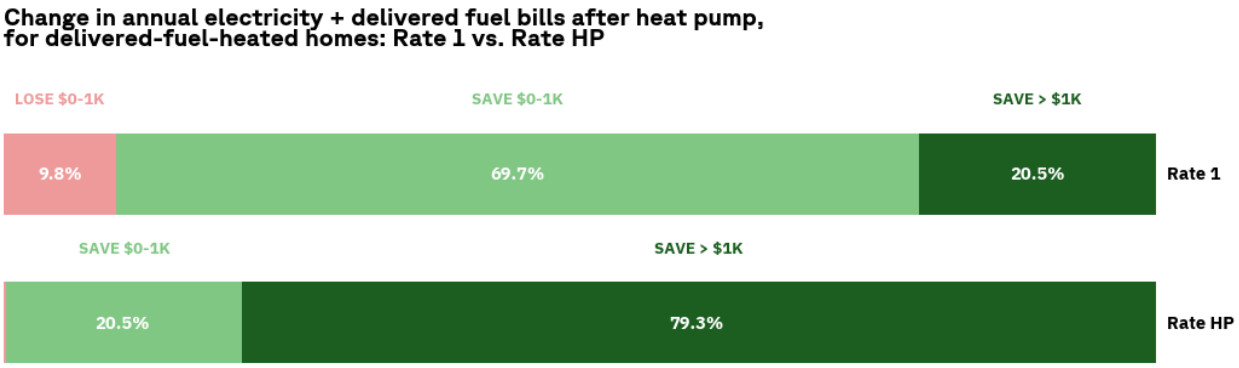

Figure 38: Change in total annual energy bill for delivered fuel-heated CT Eversource homes switching to a heat pump, under Rate 1 vs. Rate HP.

Delivered fuel households already benefit significantly from switching even under current rates: 90% would save, with median annual savings of $512. Under Rate HP, 99% would save — and their average savings grow by an additional $1,169 per year. For households heating with oil or propane, a heat pump under Rate HP is not just a climate measure; it is the single largest thing they could do to cut their energy bills.

XII. ENROLLMENT: HOW CUSTOMERS GET ON TO RATE HP

Q. How would customers be enrolled in the proposed Rate HP?

A. I recommend two enrollment channels, both automatic.

[81] Same methodology as Figure 37; delivered fuel bills use EIA residential heating oil and propane prices.

Every new customer that installs a heat pump should be auto-enrolled in Rate HP at the time of installation. To achieve this, every customer receiving a heat pump incentive through Energize CT or the New England Heat Pump Accelerator should be placed on Rate HP automatically. For installations that happen outside of Energize CT — for example, self-funded purchases — the Company should provide an attestation and certification pathway: a simple form the installer or customer submits to confirm a qualifying heat pump was installed.

For existing heat pump customers, the Company should auto-enroll all known electric customers who have previously installed heat pumps. These customers are being overcharged right now. Since the day they installed their heat pump, they have been paying far more than the T&D costs caused by their new load. And a portion of these customers are readily identifiable by the Company, those that previously received a heat pump incentive through EnergizeCT or any other relevant state or utility program. There is no reason to delay correcting this.

After a customer is auto-enrolled, Rate HP would be opt-out: the customer could return to Rate 1 (or any other optional rate) if they choose.

Q. Why do you recommend automatic enrollment rather than an opt-in rate?

A. Because opt-in rates fail. They require customers to know the rate exists, understand that it would save them money, and take affirmative action to enroll. Most customers never do.

This is not a theoretical concern. Maine's Central Maine Power offered a seasonal heat pump rate on an opt-in basis. Enrollment never exceeded 2% of eligible customers.[82]

York's experience is even more striking. Con Edison has facilitated more than 43,000 heat pump installations through its Clean Heat program, yet as of December 2025, only about

[82] Shah, Wagner & Teener, "Designing Better Rates for Heat Pump Customers," RMI (June 17, 2026) (Shah, Wagner, and Teener 2026). CMP's seasonal heat pump rate launched January 2023 with a 5,000 customer enrollment cap. Maine had approximately 143,000 heat pumps installed statewide by the end of 2024. Even with active marketing, only about 2,100 enrolled.

500 households — barely 1% — had enrolled in the utility's opt-in Steady Use Rate, which is designed to save a typical heat pump customer roughly $500 per year.[83] That is $131 million in cumulative bill savings left on the table over the rate period, simply because customers did not know the rate existed or found the enrollment process confusing.

The goal of offering heat pump rates by creating Rate HP is to eliminate the existing cross-subsidy between heat pump customers and fossil-heating customers, and to prevent customers newly installing heat pumps from overpaying in the first place. **But creating a new rate schedule does not automatically solve the problem — the rate needs to be adopted at scale. And if a heat pump rate isn't paired with auto-enrollment, it won't be.**

Massachusetts avoided the opt-in trap entirely by building auto-enrollment into its heat pump rate from the start. In DPU 25-08, the Massachusetts Department of Public Utilities approved a lower heat pump rate for the state's three investor-owned electric utilities — Eversource, Unitil, and National Grid.[84] Customers who install heat pumps through Mass Save — the state's ratepayer-funded efficiency program — are automatically enrolled at the time of installation. For customers who installed heat pumps before the program existed, Massachusetts uses an attestation process.

We know that opt-in rates get low enrollment; the Company can and must design a better enrollment mechanism: automatic enrollment through Energize CT and the New England Heat Pump Accelerator. Every heat pump customer who is *not* enrolled continues to be overcharged by the full amount every year.

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[83] Environmental Defense Fund, Rewiring America & Alliance for a Green Economy, "Con Edison Heat Pump Customers Missing Out on $131 Million in Bill Savings" (July 9, 2025) (Environmental Defense Fund, Rewiring America, and Alliance for a Green Economy 2025). Enrollment figure of ~500 as of December 2025 reported in Mona Zhang, "How NY heat pump users got stuck with higher bills," E&E News (March 3, 2026) (Zhang 2026).

[84] The Massachusetts DPU maintains an overview of the seasonal heat pump rates and enrollment procedures for all three IOUs at DPU (2025).

Q. Could automatic enrollment cause some heat pump customers to see higher bills?

A. No, because Rate HP is specifically designed so that *every heat pump customer pays less than they would under Rate 1*. By lowering Rate 1's existing winter rates, no heat pump customer would be made worse off by being placed on Rate HP.

This is the key link between rate design and enrollment. A rate that only *lowers* charges can be safely applied to all heat pump customers without risk of adverse bill impacts. If the rate raised some charges and lowered others — for example, a higher fixed charge paired with a lower volumetric rate — some customers could see higher bills in certain months. The seasonal winter reduction avoids this entirely: summer rates are unchanged, and winter rates are only lower. There are no structural losers.

A rate design that only lowers charges unlocks auto-enrollment, but it necessarily constrains eligibility: it must be a tech-specific rate, rather than one available to all residential customers. A lower rate is justified for heat pump customers. As covered in section III, they are structural "high-usage" customers who would otherwise overpay. A lower rate available to all customers would simply lower the bills of anyone who enrolled, which would create a revenue shortfall under heavy enrollment.

I believe this is the right trade-off. A rate that can be safely auto-enrolled to every eligible customer, even if restricted to a defined population, will reach far more people and thus have a fundamentally bigger impact than an optional rate with a revenue-neutral design (like a high fixed charge) that is available to all customers but which will achieve negligible enrollment, because it requires customers to discover it, evaluate it, and opt in.

Q. Why is it important to auto-enroll existing heat pump customers, not just new ones?

A. Because enrolling only new customers stops the cross-subsidy from getting bigger, but it does not fix it for the customers who are already bearing it.

If the Authority only enrolls new heat pump customers going forward, every customer who has *already* installed a heat pump continues to be overcharged by the full amount, indefinitely — unless they opt in on their own, which as I have discussed, many of them will not. The per-household stakes are substantial: $1,040 per year in combined T&D overcharges. These are real dollars being transferred from heat pump customers to fossil-heating customers every year, and they have been accumulating since the day each customer installed their heat pump.

The Company and Energize CT have records of past heat pump incentive recipients. For customers who installed heat pumps outside of incentive programs, an attestation process — as Massachusetts uses — can identify them. Auto-enrollment of existing heat pump customers is what makes this proposal a genuine fix rather than a half-measure.

XIII. DISCUSSION OF ALTERNATIVE RATE DESIGNS

Q. The heat pump rate you propose in Rate HP is a seasonal design, lowering winter transmission and distribution rates. Are there other rate designs that can eliminate the cross-subsidy?

A. Yes, and I considered several before arriving at this recommendation. But any viable solution must solve two problems simultaneously: the **overpayment problem** — by stopping the overcollection of transmission and distribution revenue from heat pump customers — and the **enrollment problem** — ensure that the customers who are actually being overcharged are actually on the rate that fixes it. These two constraints significantly narrow the design space.

There are two broad categories of solutions: **default rate redesign**, which changes Rate 1 for all residential customers, and **tech-specific rates**, which create a new schedule for heat pump

customers only. Each approach has different strengths and weaknesses on the overpayment and enrollment dimensions. I will discuss each in turn.

Q. Could the cross-subsidy be eliminated by redesigning Rate 1?

A. The main virtue of the default rate redesign approach is that it solves the enrollment problem directly: if you managed to eliminate the overpayment by redesigning Rate 1, the vast majority of residential customers are already on this rate, so you would fix the problem at scale without requiring anyone to change anything.

The difficulty is that the main lever for reducing the overpayment within Rate 1 is raising the fixed charge. Raising the customer charge shifts revenue recovery away from volumetric rates, which reduces the per-kWh overcollection on high-usage customers.

The problem is magnitude. To eliminate the heat pump overpayment by redesigning Rate 1, the monthly fixed charge would then have to rise from $12.36 to $121.49 — an increase of $109.13 per month.[85]

This is a massive change that would affect every residential customer, not just heat pump customers, and would be regressive to low-income households unless paired with an income-graduated structure.

To put that in perspective, the Company's own MCOS supports a marginal customer cost of $28.98 per month for Rate 1.[86] Yet for Rate 1, the Company proposes moving the customer charge from $9.62 to just $12.36 — a $2.74 step toward a $16.62 gap.[87] At that pace, the fixed

[85] The derivation of this figure — the revenue-neutral, cost-reflective redesign of Rate 1 — is described in Exhibit JPV-2, Section 6.

[86] Exhibit CLP-MCOS-1 (Eversource 2026c), Table 1: Rate 1 marginal customer cost = $28.98/month.

[87] Joint Direct Testimony of Edward Davis and Kimberly R. Parsons, Exhibit CLP-RATES-1 (Eversource 2026e), Section IV.B. Current Rate 1 customer charge of $9.62 proposed to increase to $12.36 per the MRCC calculation in Exhibit CLP-RATES-2.13.

charge would not approach the level needed to eliminate the heat pump cross-subsidy ($121.49) for many decades to come.

Q. What about the tech-specific approach? What design levers does it offer, and why?

A. Within the default rate, where revenue sufficiency must be maintained, the only way to reduce overcollection from heat pump customers is to raise the fixed charge on everyone, shifting revenue recovery away from per-kWh rates.

And the Company could choose to create a tech-specific rate exclusively for heat pump customers with a high fixed-charge design. Indeed, Rate 6 takes a step in this direction, by raising the fixed charge from $12.36 to $30.95.

But a tech-specific rate opens an additional lever for reducing overcollection that the default rate (or any rate that must be revenue neutral with respect to the residential class as a whole) does not have: keep the fixed charge the same, and simply lower volumetric charges. If the overcollection problem arises from the application of volumetric rates *designed for the average electric customer* to a subclass of residential customers with structurally *above-average* usage, then simply lowering the volumetric rates for that population reduces overcollection from that population. Put another way, instead of fundamentally changing the rate design for Rate 1, you can simply recalibrate it, by designing the volumetric rate component for the average heat pump customer, rather than the average residential customer.

Q. How do each of these two kinds of tech-specific rates — raising the fixed charge vs. just lowering the volumetric rates — affect the enrollment problem?

A. Unlike redesigning Rate 1, a tech-specific rate does not solve enrollment automatically — customers must enroll onto it. And as I showed in Section XII, auto-enrollment is the only realistic solution to reaching meaningful participation with an optional rate.

I am working under the assumption that the Authority is more likely to approve auto-enrollment if the rate design guarantees that no enrolled customer is made worse off.

A version of Rate HP with a very high fixed charge could cause a minority of heat pump customers — particularly lower-usage ones — to see higher bills in certain months. Lower volumetric rates guarantee the opposite: every enrolled customer either saves or pays the same in a given month, depending on the design, but no customer pays more in any month.

In other words, tech-specific heat pump rates with lower volumetric charges would allow the Authority to achieve the benefits of auto-enrollment without paying the cost of creating structural losers.

Q. Are there different ways to structure the lower volumetric charges under a tech-specific rate?

A. Yes. There are three main designs, each of which can eliminate the overpayment, if volumetric rates are lowered to the right level:

1. **Flat** — lower all non-generation volumetric rates by whatever percentage is needed to eliminate the annual overpayment. The rates would still be flat, so they would be the same for every hour of the year. This is the simplest option.
2. **Seasonal** — leave the summer rate unchanged and lower only the winter rate. **This is what I propose.** This is also how Massachusetts has designed their heat pump rates.
3. **Time-of-use** — create a heat-pump-specific version of a TOU rate that would have lower on-peak and off-peak rates compared with a TOU rate designed to be revenue-neutral for the residential class as a whole (such as Rate 7), layering TOU price signals onto the tech-specific reduction.

All three solve the overpayment problem as long as the resulting per-kWh rates are set low enough to stop overcollecting from the average heat pump customer.

I'll discuss the costs and benefits of each design in turn.

Q. Given these options, why do you not propose a flat tech-specific rate?

A. A tech-specific rate with a flat volumetric charge that is lower year-round, paired with auto-enrollment, solves both the overpayment and enrollment problems, and it does so with the simplest available design. It eliminates the overcharge, guarantees savings for every enrolled customer, and is simple enough that customers, the Authority, and the Company can all verify that it works. While this would remove the annual overpayment paid by heat pump customers on average, it would do so by reducing the T&D bills of heat pump customers by a uniform percentage in every month, including those in summer. I share the Company's objective of pricing incremental heat pump loads at (closer to) marginal cost, in order to satisfy cost-causation principles. Doing this would "right-size" post-heat-pump T&D bills during the heating season, since that is where 97% of incremental heat pump load occurs for the average customer switching from fossil fuels (October through April).

Q. Why do you advocate for a seasonal tech-specific rate?

A. In addition to the benefits of a flat tech-specific rate — solving the overpayment and enrollment problems — a seasonal rate has two main benefits:

1. Seasonal rates are targeted: as we saw in Section III, most of the overcollection occurs during winter. Lowering rates in winter reduces overcollection from the season where most of it occurs, rather than year-round.
2. Seasonal rates promote bill stability: winter is when new heat pump customers see their electric bills rise most sharply — the heat pump replaces a gas furnace, so electricity

consumption increases significantly during heating months. A seasonal rate concentrates the bill relief in exactly those months, smoothing out the seasonal bill shock that might otherwise discourage adoption or cause customers to question whether the heat pump was a good investment (even if they are saving money by switching overall).

Q. How could the Company design a seasonal tech-specific heat pump rate correctly?

A. Designing a seasonal heat pump rate correctly requires satisfying three conditions:

1. The seasonal rate must *lower* what heat pump customers pay annually. Some seasonal designs try to maintain revenue-neutrality for heat pump customers by lowering the winter rate but raising the summer rate, which merely shifts the overpayment between seasons, defeating the entire purpose of a heat pump rate.
2. The seasonal rate must lower what heat pump customers pay annually *by a sufficient amount to eliminate the overpayment*. Reducing the winter rate by 1 c/kWh, for example, would be a half-measure.
3. While rates in both seasons can be lowered — the reduced revenue collection doesn't all have to concentrate in winter — neither season's rates should be set higher than those in Rate 1, as that could produce structural losers, thus complicating auto-enrollment — even if the rate satisfies the first two conditions.

Q. Why do you not recommend the other approaches you discussed?

A. Each of the alternatives I have discussed in this section could eliminate the overpayment problem in theory. In practice, they either complicate auto-enrollment, or require significant disruption to all residential customers in order to make a difference. In other words: given the downsides of these alternatives, they would likely leave the cross-subsidy largely intact.

A **redesigned Rate 1** would require raising the fixed charge by an amount I do not believe the Authority is prepared to approve in this case, particularly without introducing income-graduation to avoid regressive impacts. If the Authority took this approach, the most likely outcome would be a marginal increase in the fixed charge that would look like progress but do essentially nothing to remove the overpayment and fix heat pump operating costs.

A **tech-specific rate with a high fixed charge** could strike customers as unfamiliar and would create structural losers among lower-usage heat pump customers, complicating auto-enrollment. And without auto-enrollment, creating an optional heat pump rate (that almost no customers opt into) risks allowing stakeholders to claim victory without having any meaningful impact on the problem.

A **tech-specific TOU rate** does not solve the overcollection problem on its own; it would need significantly lower volumetric rates than a TOU rate design for the residential class as a whole (such as Rate 7) to actually eliminate the overcharge. (The reason is simple: the overpayment problem arises from an overreliance on volumetric rates applied to structurally high-usage customers. Making a volumetric rate time-varying does not change this — it still has to be significantly lowered.) While a properly designed TOU rate for heat pump customers would create incentives for load shifting as well as removing the overpayment, it would also add complexity and may create structural losers, unlike a seasonal tech-specific rate. Unless the Authority is prepared to create a properly designed tech-specific TOU rate with rates low enough to eliminate the overcharge, auto-enroll all heat pump customers onto it, and do so in a timely fashion, this route risks allowing the perfect to become the enemy of the good.

XIV. CONCLUSION

Q. Does this conclude your direct testimony?

A. Yes, it does. And in light of outstanding discovery requests, I reserve the right to amend or supplement the testimony as may be needed.

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