Dover Energy Commission Report

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Energy Commission Mission Statement

The Dover Energy Commission shall advise the City through its boards and committees on ways to reduce energy use, develop alternative energy sources and increase economic security and energy independence. The goal of the Energy Commission is to promote and encourage energy conservation measures for Dover residents, businesses and municipal operations. The Commission will work with the City Council to review current energy efficiency practices and possible future actions. The Commission's work will be available to the Planning Board as a resource with respect to energy consideration in the next Master Plan Update.

Dover Energy Commission

In This Report

Introduction and Acknowledgements:

Dover Energy Activities of Note for 2024 (and a bit of 2025)

The past year has been eventful in many ways. We are pleased to report the initiation of several impactful projects and multiple engagements by the Commission. In part, this was facilitated by a trial model of utilizing small working groups to research topics between formal meetings.

None of the accomplishments reported here would have been possible if it wasn't for the meaningful engagement of the Commission members, the substantial assistance from the Planning Office staff and management, and, most importantly, a City Council that gave thoughtful consideration to our recommendations and took actions to convert recommendations to projects.

Special thanks are due to two working groups. Arcadia Lee with Susan Smith working with Jackson Kaspari were able, remarkably, to produce a report detailing Dover's carbon footprint. We hope this research will be a starting place to help guide the city in identifying areas where actions can most effectively take place. Vice Chair Vincent Lyon and his working group team of Walter King and John Turner led the exploration of new energy resources for the City with a major focus on utilizing the Wastewater Treatment property as the most attractive option for a large-scale solar installation.

We are pleased to report that the Commission is now up to full membership with the addition over the past months of alternate members Lucas Veitch, Steve Paulson, Madelyn Bradley, and Eric Ryherd.

And we are especially pleased to recognize two new contributors. April Richer is our City Council representative who jumped into the deep end of the energy space with enthusiasm and has become an able conveyor of all things energy to the Council. Also joining the Commission is Alexandra Merchant, the city's new Resilience Coordinator, who quickly demonstrated her ability to contribute by conceiving and executing the city's first no idling policy within days of starting her new position.

Unfortunately, we had two significant departures this past year. Ten year member, and former chair, Walter King, who helped shape today's Commission and lead the way on many innovative projects, has stepped down. And Jackson Kaspari, our former Resilience Manager and fountain of new ideas and executor of many, was recruited away. Both are missed and we wish them well in their new endeavors.

Dover’s Carbon Footprint - An Initial Assessment

Introduction

Achieving the goals set forth in the Paris Agreement requires halving global greenhouse gas (GHG) emissions by 2030 and reaching net-zero emissions by mid-century. In alignment with this global imperative, the Dover City Council adopted a resolution on April 27, 2022, committing to "incremental targets to reach City-owned property operating on 100% renewable energy by 2035, or sooner." This ambitious target incorporates input from Boards, Committees, and Commissions, with initial recommendations delivered by June 2023.

The net zero working group was formed within the Energy Commission to assist the City in achieving its decarbonization goals. The group initially focused on community-wide data collection and GHG emissions analysis to understand energy consumption patterns. However, the Group has since refined its approach, prioritizing efforts to measure and monitor the GHG footprint of municipal operations. This foundational work will guide the development of annual renewable energy targets and emissions reduction strategies for City-owned properties. Moving forward, the group will continue to explore actionable solutions for reducing municipal emissions while engaging and educating the community to support broader energy efficiency and sustainability practices.

The City of Dover’s Carbon Footprint

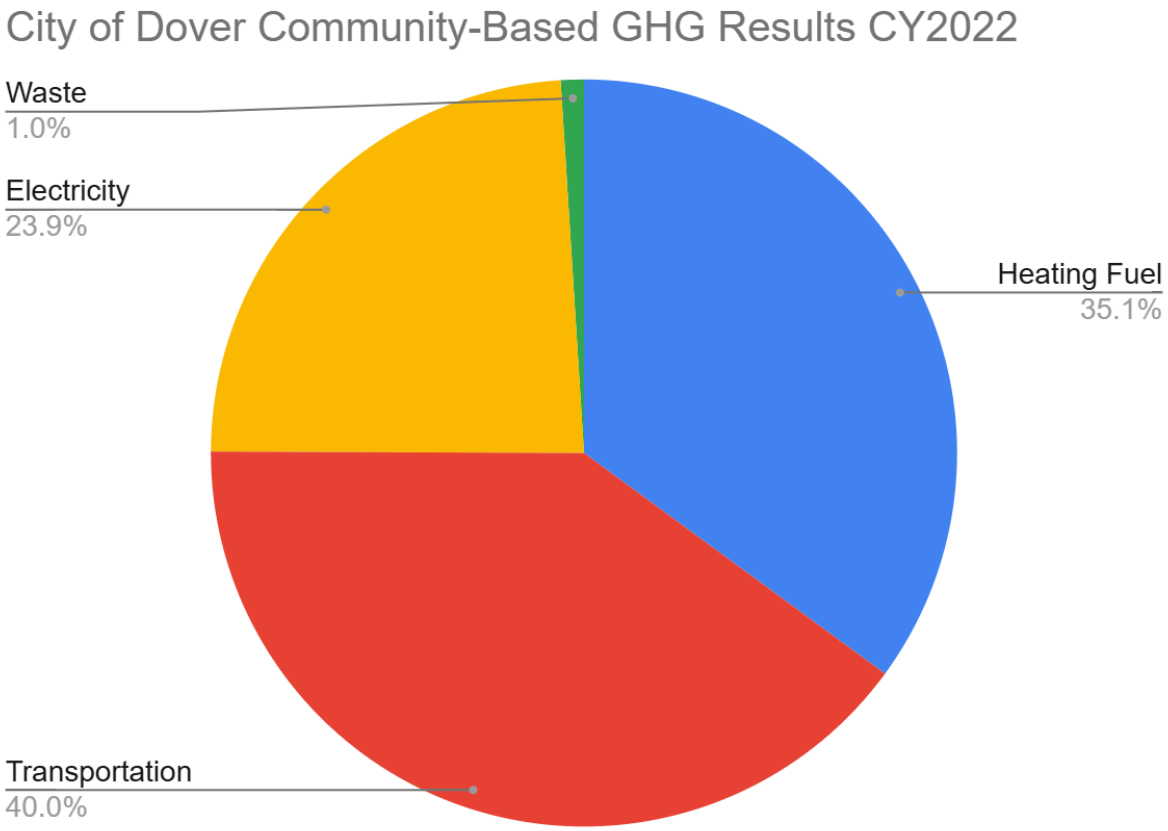
In 2023, the Dover Energy Commission completed its inaugural community-wide greenhouse gas inventory, following the guidelines of the GHG Protocol for Cities. This analysis revealed that the City of Dover emitted approximately **235,330 metric tons of carbon dioxide equivalent (MTCO2e) in 2022**, with emissions attributed to transportation, waste, electricity consumption, and heating fuel use from January 1 to December 31, 2022.

Key findings include:

- **Transportation**: 40% of total emissions (94,133 MTCO2e)
- **Heating fuel**: 35% of total emissions (82,507 MTCO2e)
- **Electricity consumption**: 24% of total emissions (56,332 MTCO2e)
- **Waste**: Less than 5% of total emissions

These results highlight the critical need for increased electrification programs, expanded renewable energy investments, and targeted efforts to reduce transportation and heating fuel emissions. Although waste contributes a smaller share of emissions, ongoing reduction initiatives ensure it remains a focus area.

This community-wide analysis provided valuable insights, but it also revealed the need to better align measurement efforts with Dover's net-zero target. Moving forward, the Energy Commission will refocus its efforts on measuring, monitoring, and reporting GHG emissions from sources operated and controlled by the City of Dover. This refined focus will ensure that future efforts directly support the City's progress toward its 2035 net-zero goal.



Methodology footnotes:

- ***Heating Fuel****: Heating fuel includes natural gas, propane and fuel oil. Unitil, a utility company, provided raw data (therms) for natural gas usage in the City. Due to lack of primary data, American Community Survey (ACSDP5Y2021) data was applied to proxy data from the EIA Residential Energy Consumption Survey (RECS) Household site fuel consumption in U.S. homes by state, 2020 to estimate fuel usage for propane and fuel oil. Emission factors from the Climate Registry 2021 Default Emission Factors and Emissions Factors for Greenhouse Gas Inventories, U.S EPA April 2022 were then applied to estimate emissions.*
- ***Transportation****: Data was collected and evaluated by Google Environmental Insights Explorer (EIE) which is compliant with GHG Protocol best practice.*
- ***Electricity****: Primary electricity usage data was collected from Eversource Energy and EPA eGRID2020 NEWE subregion factors were applied to arrive at emission estimates.*
- ***Waste****: Weight tonnage data was collected from Dover monthly waste reports and emissions were estimated by applying factors from EPA eHub v2023: Table 9 Scope 3 Category 5: Waste Generated in Operations and Category.*

Energy Savings Performance Contract

This year the Energy Commission worked on alternative ways to fund improvements to municipal buildings to minimize energy waste. Energy Savings Performance Contracting (ESPC) is a way to make facility improvements with no up-front cost to the City. Instead of paying up-front, the City partners with an energy service company (ESO) and the cost of the upgrades is paid back over a period of time using the savings from the project. The savings from the improved energy efficiency are guaranteed. This type of contracting is beneficial because it allows the city to make needed upgrades and improve efficiency in a budget neutral way. The process is laid out in more detail below.

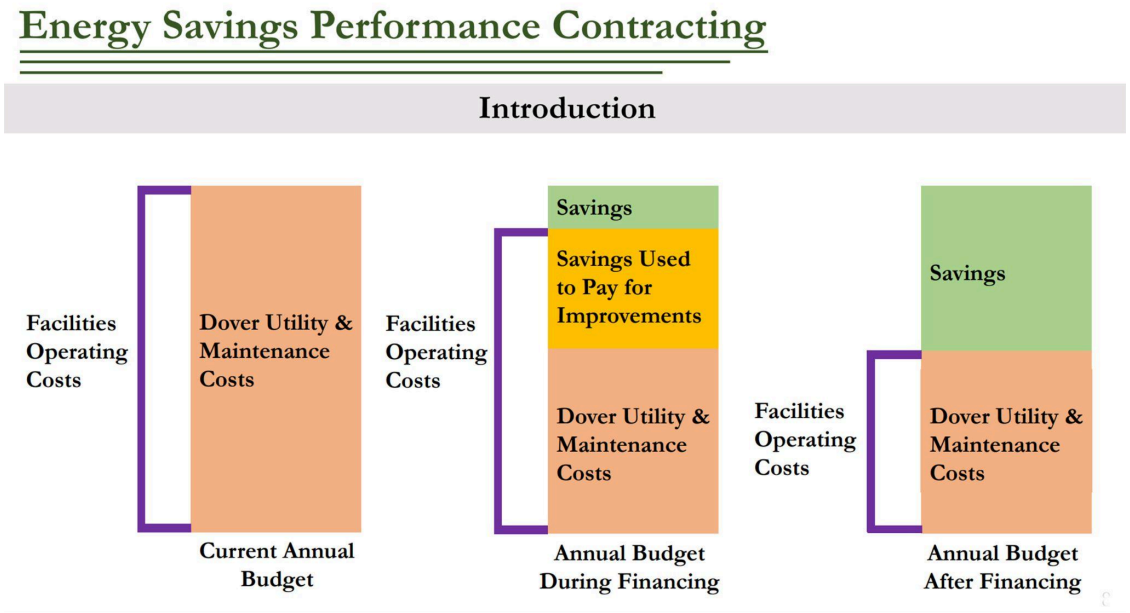
Step 1: A Request for Proposals (RFP) is posted by the city to draw bids from qualified Energy Service Company (ESCO) to conduct an energy audit potentially leading into an ESPC.

Step 2: The municipality receives a comprehensive energy audit which identifies areas for improvement.

Step 3: Then the ESCO constructs a project and guarantees that these upgrades will have energy cost savings which will pay for the project over time. The company makes the upgrades and the municipality begins paying the company back.

Step 4: Once the company is paid back and the contract ends, the savings from these upgrades goes to the municipality.

The city is in the process of approving a RFP to draw bids from ESCOs to begin the process with a comprehensive energy audit of all municipal buildings. This would build on the energy audits done of the Wastewater Treatment Facility and the City water system.



Wastewater Treatment Facility Solar Project

After researching options, interviews with potential vendors, and with the guidance of Resilience Coordinator Kaspari, the Commission recommended and the Council approved moving forward with the evaluation of installing a 2MW AC PV solar array at the city's wastewater treatment facility. It is estimated that, implemented at that size, the array would offset 173% of the power consumed onsite.

A LOI was awarded to ReVision Energy to prepare an initial project evaluation and make the interconnection application to Eversource which is required to validate the capacity of the grid to accept the proposed array. There was some urgency to make the application as the evaluation time by Eversource is currently taking about two years and continuing to lengthen with the introduction of other municipal proposals.

At a meeting with Manager Joyal, Eversource proposed and later confirmed a willingness to make available to the city the parcel of land situated between the segments of land that comprise the WWTF property.

The city is working with Eversource and the NH Department of Environmental Services to determine if the parcel, a capped former coal ash dump, would be a suitable site for solar. Should this parcel be made available, it offers the possibility of doubling the size of the original proposal. The interconnection application is underway and was made at the potential expanded capacity because, if the Eversource property should not prove a good fit, there would be no process delay downsizing to the original 2Mw array.

No Idling Policy

To combat air pollution and reduce fuel waste, the Energy Commission supported the implementation of a No Idling Administrative Regulation for City employees in City vehicles. Idling is defined as the continuous operation of a vehicle's engine when the transmission is not engaged or the vehicle is in park. Idling produces harmful emissions that impact human health and the environment. It also wastes fuel and money. The U.S. Department of Energy estimates that idling wastes 6 billion gallons of fuel annually. The goal of this administrative regulation is to reduce that number within the City of Dover.

The administrative regulation prohibits idling events lasting longer than 5 minutes with exceptions. These exceptions are for when idling is necessary to:

1. To provide safety of vehicle occupants, such as in cases of extreme cold or heat.
2. To operate power take-off equipment or auxiliary equipment that is necessary to perform work.
3. Idling due to traffic congestion.
4. Idling vehicles for maintenance or diagnostic reasons.
5. Vehicles or equipment that have an extended manufacturer’s recommended warm-up and cool-down time.
6. When specific traffic, safety, or emergency situations arise.
7. In emergency situations as determined by the department head.

In any of the listed exemptions, if equipment can be run from the batteries, drivers should do so unless there is significant concern of draining the battery. The administrative regulation went into effect on January 30th.

Transportation

On the Commission’s recommendation, the City purchased, using a federally funded grant, a Ford Lighting electric pickup for use by Community Services. The balance of the grant funds will be put toward the purchase of a second EV. The initial feedback on user experience has been very positive.

The Commission did not host an electric vehicle show this year, but rather decided to host the sustainability fair.

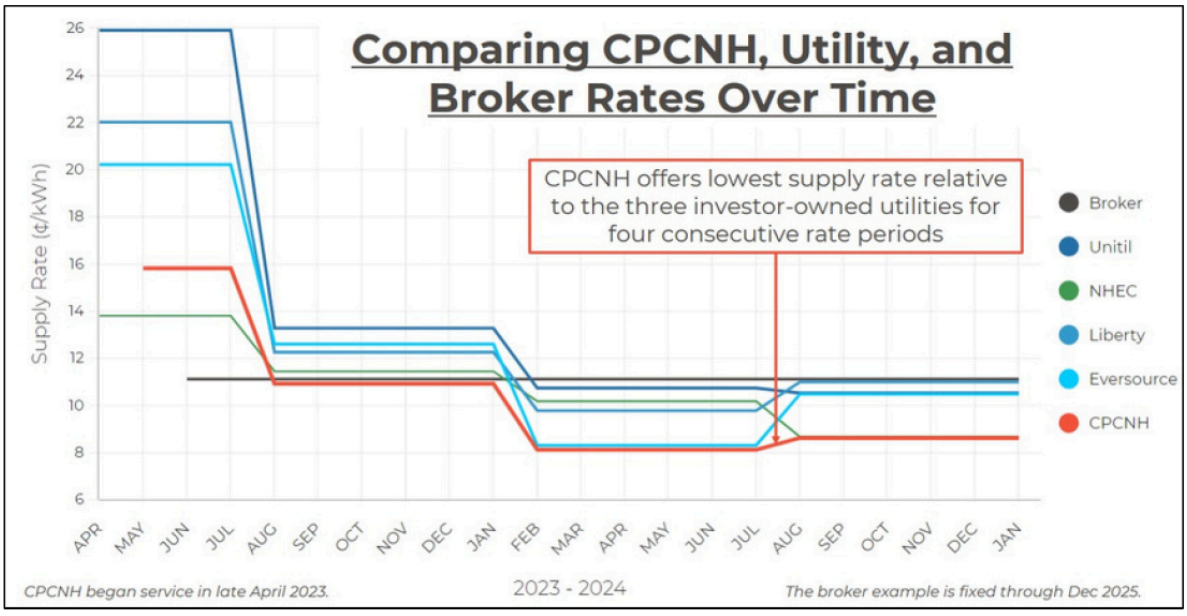
Community Power Coalition of NH - Winter 2025 Update

The State of the Coalition in 2025

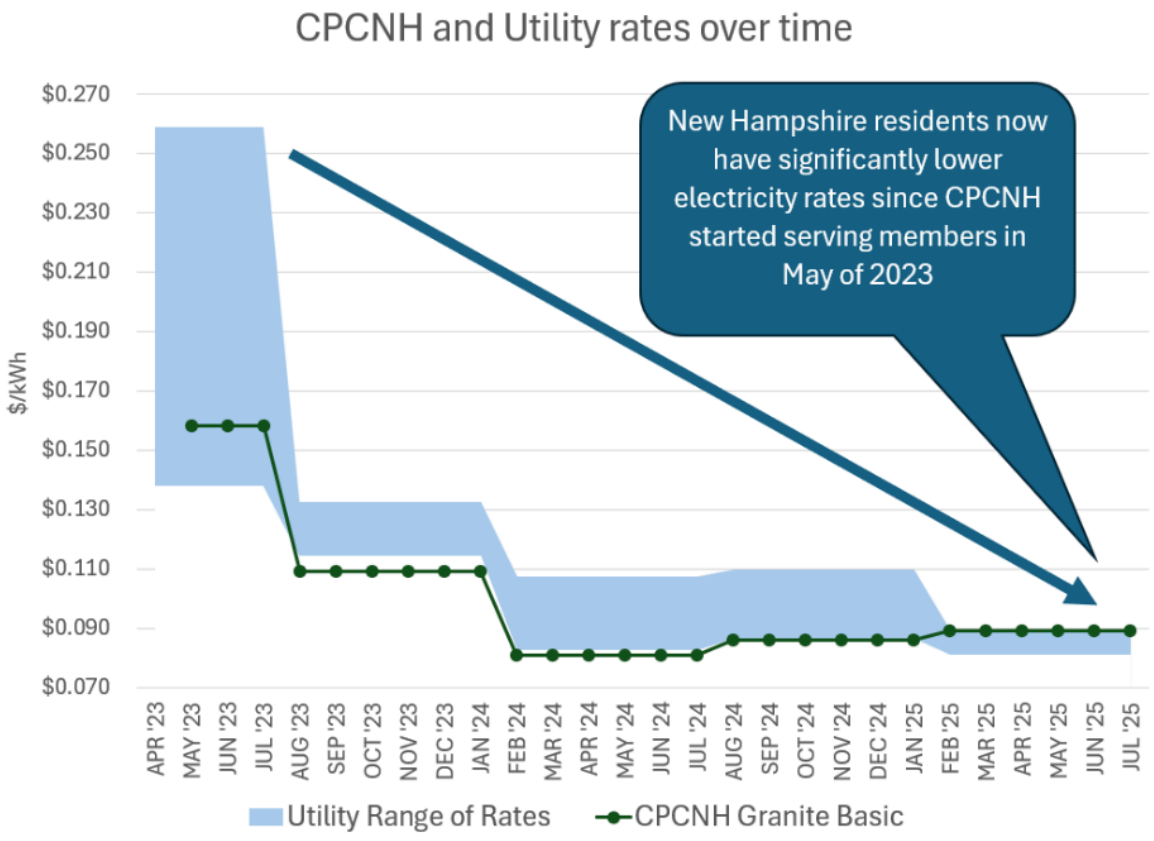
- CPCNH community members have grown to 70 (1/14/2025.)
- CPCNH is no longer a volunteer managed entity. There is now a current staff of eight highly experienced staff aided by substantial outside contractor assistance for legal, legislative, rate analysis, and power purchase services.

CPCNH Granite Basic Rates for 2024 and 2025

- February, 2024 - 8.1 cents per kilowatt-hour (¢/kWh), which is 9% lower than Eversource's default rate of 8.9 ¢/kWh
- August, 2024 - 8.6 cents per kilowatt-hour (¢/kWh), which is 18% lower than Eversource's default rate of 10.458 ¢/kWh
- February 2025 - 8.9 cents per kilowatt-hour (¢/kWh), which is >1% lower than Eversource's default rate of 8.929 ¢/kWh
- March, 2025 - 9.7 cents per kilowatt-hour (¢/kWh), which is 8% higher than Eversource's default rate of 8.929 ¢/kWh (due to contract collapse with in-state generator)



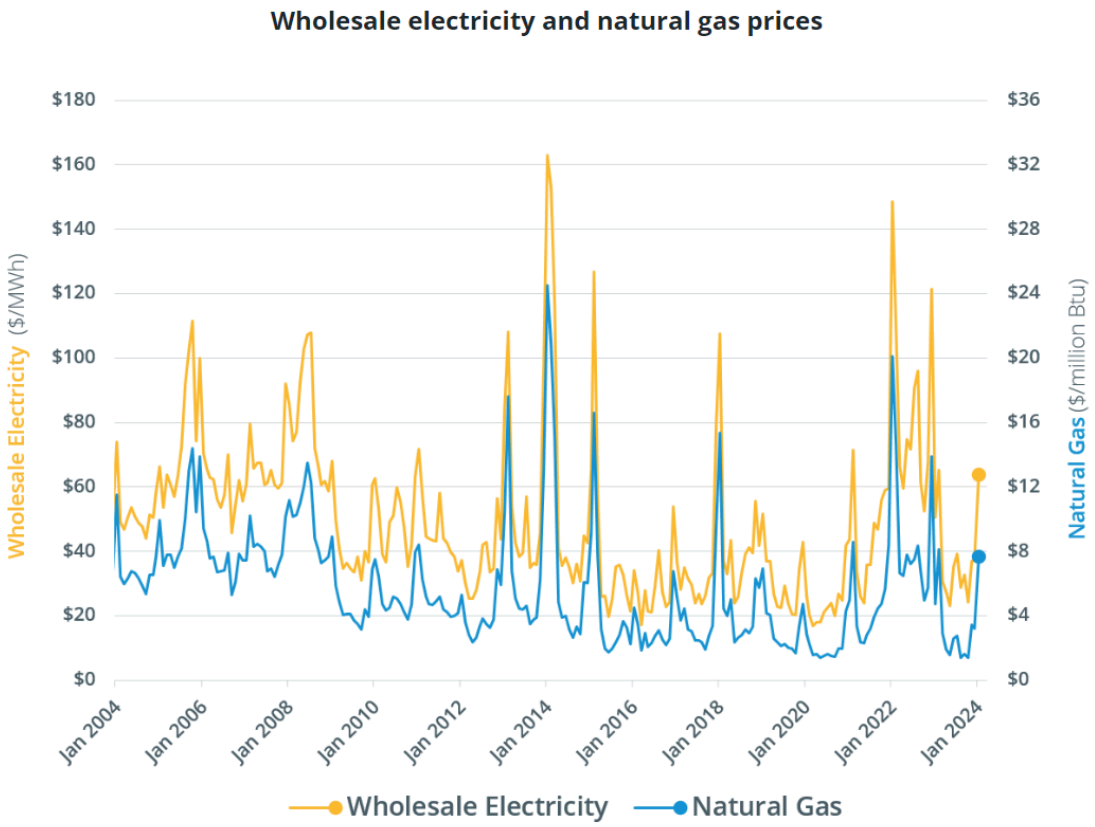
For the first time CPCNH will not be the lowest default provider for every utility, but will beat the Eversouce rate ever so slightly. The primary reason for this is a change in power purchasing practices recently required of the regulated utilities by the NH Public Utilities Commission. Utilities are now required to purchase a significant portion of their default power (30% for Eversource) in spot markets rather than hedging. This exposes ratepayers to very volatile market forces especially during the winter months. If the rates set are optimistic, which seems to have been the case for especially Liberty and Unitil, a substantial cost will be shifted to ratepayers at a later date. It has not yet been decided, but the PUC is considering passing on any under collection that could occur under this rate setting approach to ALL power suppliers including CPCNH even though they make no contribution to any under collection made by Eversource's default service. CPCNH, and many others, are taking actions to reverse this PUC ruling at both the regulatory and legislative level.



This regulatory change is the principal driver in CPCNH's latest rates coming in higher than Liberty and Unitil. The difference being CPCNH is guaranteeing a six month rate

and the utilities now have a significant percentage of their rates subject to the spot market.

The following chart shows historically how dynamic New England winter pricing is and, by implication, the risk to ratepayers from spot prices.



Data from ISO New England

See Appendix for additional details.

Energy Commission Annual Outreach

Over the last four years the Energy Commission has conducted an annual community outreach engagement. The last three years this was done in collaboration with the Greater Dover Chamber of Commerce on Apple Harvest Day and with the assistance of the Dover Planning Office. The first three events were designed to introduce the community to electric vehicles. This past year we held a sustainability fair we called “Dover Saves! - Save Money, Energy, and the Environment.”

Fourteen organizations participated:

- Clean Energy NH
- Community Power Coalition of NH
- Don't Trash Dover & Dover Doers
- Dover Community Services
- Dover Energy Commission
- Dover Library
- Dover Plastic Reduction Group
- Dover Solid Waste Advisory Committee
- NH Dept. Environmental Services
- NH Saves via TRC
- Seacoast Climate Action Now
- Southeast Land Trust
- The Gundalow Company
- U.S. Senator Jeanne Shaheen Office

Dover Saves!
Save Money, Energy, & the Environment

Additional Energy Commission Engagements

Local Energy Solutions Conference

On October 1, 2024, Energy Commission members Susan Smith, Bill Baber, and City Councilor April Richer attended the annual Local Energy Solution Conference in Manchester, NH. The conference sponsors included Clean Energy NH, Calpine Community Energy, the Community Power Coalition of NH, as well as several electric utility companies. The all-day event consisted of guest speakers, multiple workshop offerings, and networking opportunities with representatives from other cities/towns, energy industry vendors, and academia. Councilor Richer noted that several attendees were very interested in speaking with her about the progressive policies of the City of Dover, and in fact she was told that the City has become a benchmark for other cities and towns.

Opening remarks were made by Revision Energy, focusing on reasons for the relatively low solar generation rate in New Hampshire. Ari Peskoe, Director of the Harvard Electricity Law Initiative, provided the keynote address, in which he gave an in-depth the history of electricity in this country.

Multiple workshops were offered on various topics during the conference, including:

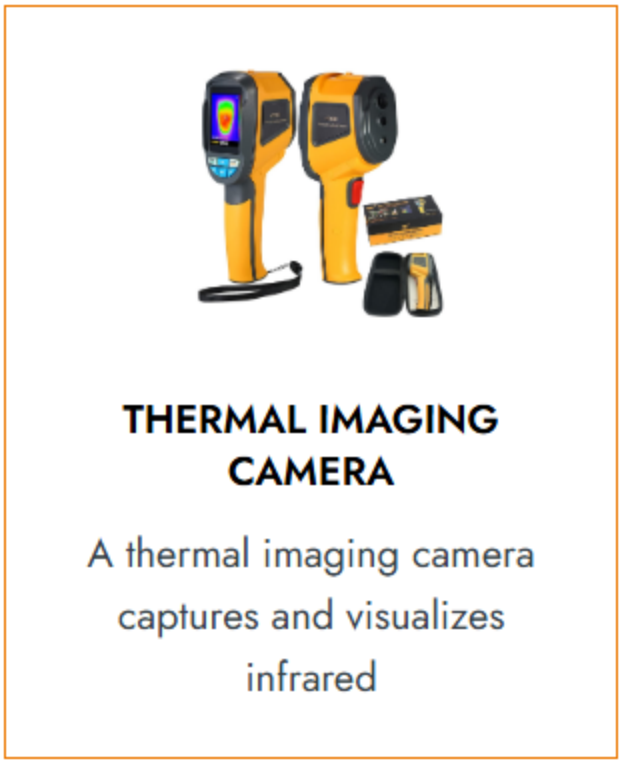
- Balancing Infrastructure, Interests, and Environmental Stewardship
- Shaping NH's Energy Policy Agenda
- Responding to Intensifying Storms
- How Energy Relates to Housing Issues
- Energy Financing
- Net-Energy Metering
- Distributed Energy Resources
- Community-Based Success Stories

These workshops highlighted some of the challenges facing municipalities as they try to attain more renewable energy, as well as the assistance programs in helping them to do so, and the many innovations in the renewable energy space.

The meeting wrapped up with a roundtable discussion with executives from Unitil, Liberty, the New England Electric Coop, and Eversource.

Thermal Imaging Camera Now Available to Public

The Commission recommended to the Library that adding a thermal imaging camera to their “Library of Things” would be of great value to patrons looking for ways to improve their resident’s energy efficiency by making it easy to spot where a building may be under insulated or track down energy leaks including those from water lines. The Library agreed and now offers a thermal camera available for loan.



Appendix - State by CPCNH on Investor-Owned Supply Procurement Methodology

COMMUNITY POWER COALITION OF NEW HAMPSHIRE
For communities, by communities.

December 17, 2024

Changes to Investor-Owned Utility (IOU) Supply Procurement Methodology

New Regulatory Method to Increase Rate Volatility

Eversource, Unitil, and Liberty Utilities, at the direction of the Public Utilities Commission (PUC), are adopting a new approach to power supply purchasing and rate setting for the period effective February 1 – July 31, 2025.

The new method reduces rate stability by shifting risk from power suppliers to retail customers, resulting in over- or under-collections that will impact future ratepayers. The PUC is also directing utilities to shift any costs from this change away from customers purchasing utility supply to everyone, including competitive supply and Community Power customers. The resulting cross-subsidization of utility supply customers by non-utility supply customers goes against the long-standing ratemaking principle of cost causation, in other words, not charging customers for costs they had nothing to do with.

How Did IOU's Procure Power Previously?

Up until now, investor-owned utilities (IOUs) have been required to provide default power supply as a "safety net" for customers by purchasing six months of fixed-price electricity from a supplier with the lowest bid, guaranteeing a rate for the term. Under this traditional model, the competitive supplier that wins the bid wears the risk of guaranteeing the power at a fixed price while operating in the dynamic and sometimes volatile electricity commodity market. As a result, utility default supply rates include some "risk premium" to cover the risk borne by the supplier as a tradeoff to protecting customers from daily, weekly, and monthly price swings. Six-month rate periods typically run from February through July and from August through January.

What is the New Method for IOU Procurement?

For the upcoming February through July period, Eversource and Unitil will only purchase 70% of the power for small residential and commercial customers at a fixed price while leaving the remaining 30% exposed to spot prices in the commodity market. Liberty Utilities will lock in 50% of its small customer purchases at a fixed rate while leaving the rest open to commodity market pricing.

Under this new regulatory framework, regulators and utilities estimate what pricing in the commodity market will be for Eversource and Unitil's 30% exposures and Liberty's 50% exposure during the upcoming six-month period. There are three potential outcomes:

1. Rates are set accurately: at the end of the six-month period, customer payments have covered the costs incurred to supply their power.

2. Rates are underpriced: at the end of the six-month period, market prices have resulted in higher costs than what was collected from customers. These higher costs are passed on to future ratepayers through increases in future rates.
3. Rates are overpriced: at the end of the six-month period, market prices resulted in lower costs than what was collected from customers. These lower costs are passed on to future ratepayers through reduced rates.

While all three scenarios are possible, CPCNH is concerned that increased volatility will be passed onto future customers for the costs of previous utility default supply service customers. CPCNH is especially concerned with the possibility that competitive supply and Community Power customers will have to pay for costs that are related to a product they were not using.

Non-Utility Customers to Subsidize Under-Collections of Utility Customers

The PUC has directed Eversource and Unitil to propose approaches for shifting higher costs away from the utility supply customers and moving those costs to all distribution customers. If this cost-shifting approach is implemented, customers in the competitive market (competitive supply customers, community power customers) will subsidize the cost of under-collections from Eversource and Unitil default supply through an increase in utility distribution rates.

Regulators are directing that higher supply costs be socialized to all customers through increases in distribution rates while lower costs from reductions to the cost of Renewable Portfolio Standard compliance be remitted as credits to utility supply customers only. This means that the utility default supply rate is being selectively lowered by the PUC by treating reconciliation of two types of costs differently. This is anti-competitive, and forces competitive market and community power customers to pay for utility supply costs in addition to their chosen supply option.

How Does this Compare to How CPCNH Buys Power and Sets Rates?

Community Power Coalition of New Hampshire (CPCNH) actively manages a portfolio of wholesale power contracts in accordance with our Energy Portfolio Risk Management Policy and Regulations. On an ongoing basis, CPCNH forecasts the expected electricity load of our customers based on historical usage patterns and purchases forward contracts for power at fixed prices. This strategy allows CPCNH to lock in prices for future supplies of power, mitigating the impact of price spikes in the commodity market. Our policies and regulations require that we fix certain percentages of our power portfolio as forward hedges, limiting the amount our customers may be exposed to market price swings.

CPCNH calculates our revenue requirement as the sum of our expected power supply costs, operating costs, and costs to accrue financial reserves according to our Retail Rates Policy.