



# CONCORD MUNICIPAL LIGHT PLANT

ELECTRIC | BROADBAND | ENERGY MANAGEMENT

**Date:** February 2, 2023  
**To:** Municipal Light Board: Brian Foulds (Chair), Wendy Rovelli, Alice Kaufman, Pamela Hill, Warren Leon  
**From:** David Wood, Director  
**Subject:** Agenda for Virtual Light Board Meeting **February 8, 2023, 7:30 A.M.** (Zoom link on page 2)

7:30 AM 1. **Call to Order**

7:30 AM 2. **Meetings and Minutes** 5 Minutes Chair

February 22, 2023, March 8, 2023, March 22, 2023, April 12, 2023, April 26, 2023, May 10, 2023, May 24, 2023, June 14, 2023, June 28, 2023, July 12, 2023, August 9, 2023, September 13, 2023, October 11, 2023, November 8, 2023 & December 13, 2023

February 28, 2023, 6:30PM– Public Forum-Middle School Solar & Storage- Public Hearing Room/Zoom hybrid.

7:35 AM 3. **Directors Update** 10 Minutes Director Information

7:45 AM 4. **Broadband Update** 10 Minutes Chief Tech. Officer Information

7:55 AM 5. **Energy New England Outside Director** 10 Minutes Director Vote

Background: The ENE Board is comprised of 6 Directors from the equity owning Municipal Light Departments and 3 outside directors. In December one of the three outside directors retired after serving the company for over 24 years.

Purpose: To approve the appointment of a new outside director.

8:10AM 6. **September Financials** 15 minutes Director Information

Background: To provide a financial snapshot to the Light Board on a quarterly basis.

Purpose: To present and review the 2022 financial report through September 30<sup>th</sup>

8:25AM 7. **Broadband Completions Task Force Update** 15 minutes Chief Tech. Officer Discussion

Background: An affirmative vote on Article 41 at the 2021 Annual Town Meeting led to the creation of the Fiber Broadband Completion Task Force with the goal of understanding the availability of Concord Broadband service and make recommendations about how to expand access to all in Town. The Task Force ultimately presented their final report in 2022 after a year of weekly meetings.

Purpose: To provide an update on Concord Broadband’s progress meeting the goals contained in the final report and discuss operational and policy goals going forward.

8:40AM 7. **Concord Middle School Solar/Storage** 30 minutes Director Discussion

- Public Meeting format (10 minutes)
- Financial Analysis (20 minutes)

Background: A public meeting has been scheduled for February 28, 2023 at 6:30PM to present the proposed solar & storage at the Concord Middle School and to gather input from the community on the.

Purpose: To 1) establish the meeting format for the evening public meeting and 2) to review the financial analysis for this project.

9:10AM 8. **Liaison & Public Comments** 5 Minutes Chair

9:15AM 9. **Adjourn**



# CONCORD MUNICIPAL LIGHT PLANT

ELECTRIC | BROADBAND | ENERGY MANAGEMENT

Distribution: Select Board (1 copy)

Kerry Lafleur  
Jan Aceti  
Jason Bulger

Carole Hilton  
Laura Scott  
Mary Hartman

Joe Repoff  
Chris Carmody

Matt Cummings

Join by Zoom

<https://us02web.zoom.us/j/8945107455?pwd=MXQwSIZEbGRQeHUvZ3hHZ3VwQXUzQT09>

Meeting ID: 894 510 7455

Passcode: 4160

One tap mobile

+13126266799,,8945107455#,,,,\*4160# US (Chicago)

+16468769923,,8945107455#,,,,\*4160# US (New York)

Dial by your location

+1 312 626 6799 US (Chicago)

+1 646 876 9923 US (New York)

+1 646 931 3860 US

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+1 309 205 3325 US

+1 669 900 6833 US (San Jose)

+1 689 278 1000 US

+1 719 359 4580 US

+1 253 205 0468 US

+1 253 215 8782 US (Tacoma)

+1 346 248 7799 US (Houston)

+1 360 209 5623 US

+1 386 347 5053 US

+1 408 638 0968 US (San Jose)

+1 507 473 4847 US

+1 564 217 2000 US

+1 669 444 9171 US

Meeting ID: 894 510 7455

Passcode: 4160

Find your local number: <https://us02web.zoom.us/u/kbp7GGHZIa>

As available, meeting materials to be posted to: <https://concordma.gov/1106/Municipal-Light-Board>

Link to view recordings of previous Light Board Meetings: [Click Here](#)



Date: February 3, 2023  
To: Light Board  
From: David Wood, Light Plant Director  
Subject: Director's Update February 2023

**Pole Attachment Agreement:** The State has requested to attach fiber on our poles from the Prison Farm down route 2A to the MCI Concord. CMLP's standard pole attachment agreement and attachment fees were last update in 2010. As a result, we had our existing pole attachment agreement reviewed and updated by legal. Legal made several necessary changes. In addition, we reviewed the associated fees \$10.47/month per pole for an attachment to a joint owned pole and \$20.95 for an attachment to a sole owned pole. The results of the analysis yielded an increase to the fees to \$12.41/month and \$24.83/month per pole. We are now in the process of updating all third-party attachments with the new fees.

**Vehicle Replacements:**

1. A purchase order was issued for the replacement of the 1992 material handler bucket truck in 2021. The current truck is 31 years old, and the replacement truck will be our first hybrid bucket truck. The truck was originally scheduled to be received this year, but the manufacture has informed us that supply chain has caused problems in getting materials and the truck will not be completed and shipped until 2024.
2. The process of replacing the 1997 digger derrick truck is in the early stages. The truck manufacture has informed us that lead times on digger derricks is 2-3 years. We also learned that the costs have increased significantly. It is expected that this truck will cost between five to six hundred thousand dollars. It is expected that we will issue a purchase order in the first or second quarter of this year.

**CMLP's 125<sup>th</sup> Anniversary:** This year the Light Department will celebrate 125 years of serving the community. To celebrate this milestone CMLP will host an open house on October 7<sup>th</sup> which is during public power week. The event is in the planning stages and there will be updates as we get further along in the process.

**Energy Management:** With the exception of solar installations, which were affected by the termination of the MLP Solar Program rebates, CMLP saw substantial increases in uptake of residential weatherization and electrification measures from 2021 to 2022:

	2021	2022	% Change
Heat Pump Installations [1]	71	178	151%
Heat Pump Water Heater Rebates	10	17	70%
Weatherization Rebates	20	31	55%
Solar Arrays Installed [2]	43	36	-16%
Electric Lawn Mower Rebates [3]	n/a	12	
EV Purchase Rebates [4]	6	27	350%
Home EV charging system rebates	40	57	43%
EV Off Peak Charging Incentive Program Enrollments [5]	213	290	36%

[1] Not all installations in 2021 and 2022 received rebates. Some installations in 2022 received Mass Save rebates, not CMLP rebates.

[2] The termination of the MLP Solar Program rebates likely contributed to the decline in the number of arrays installed in 2022.

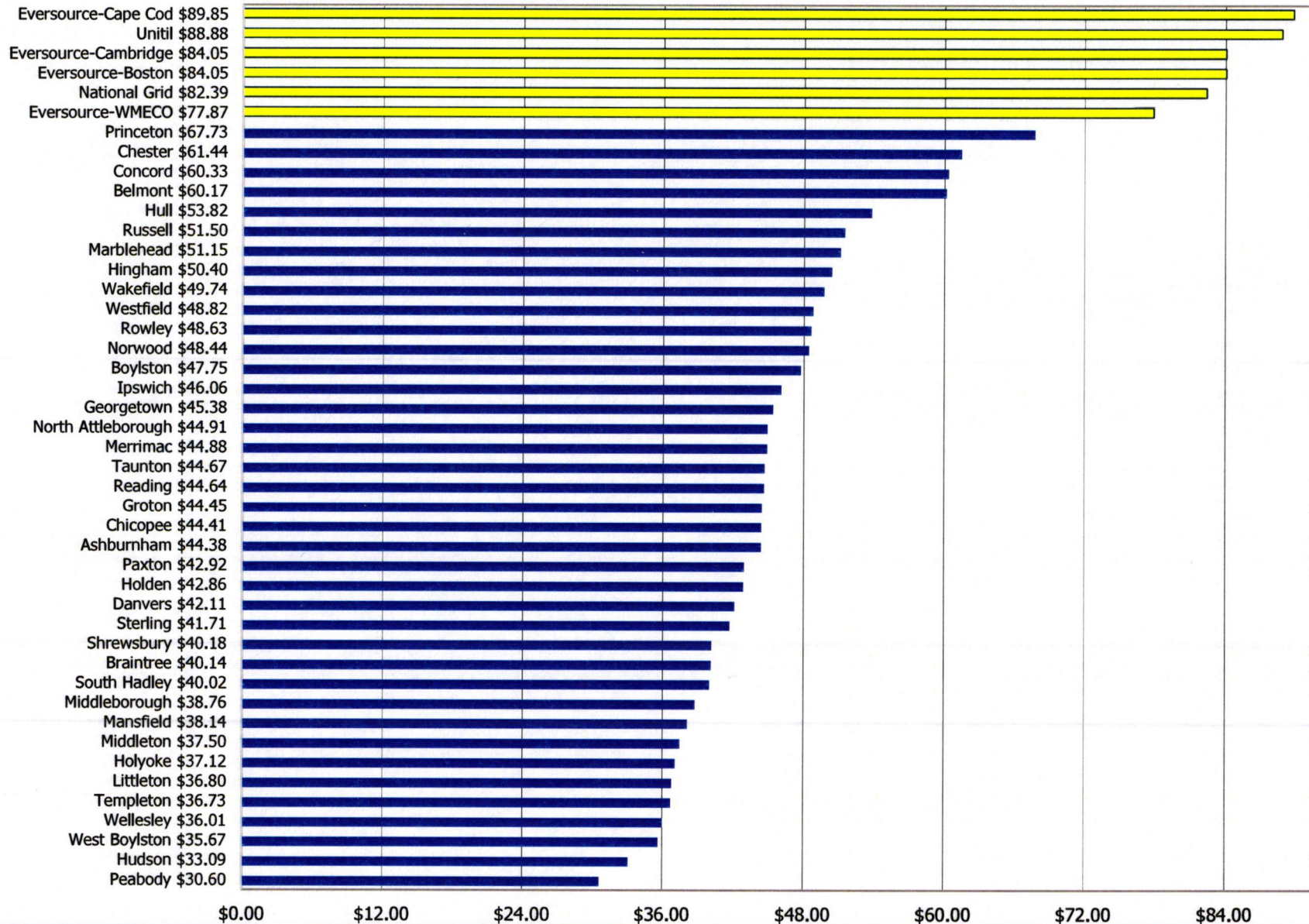
[3] The electric lawn mower rebate program was launched in June 2022.

[4] The EV purchase rebates were first made available in September 2021, so uptake in 2021 does not represent a full year.

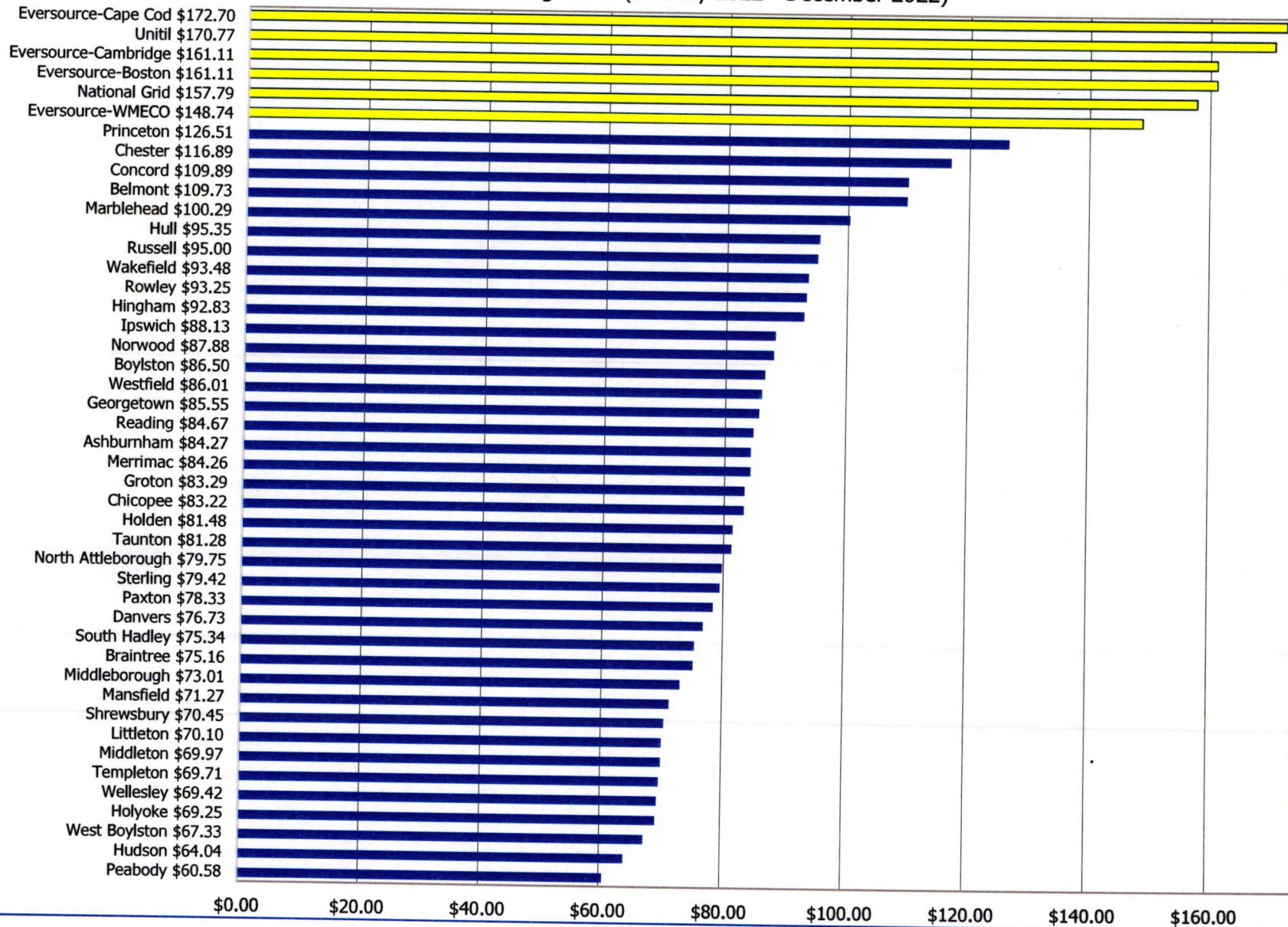
[5] These figures are cumulative enrollments since 2108, unlike the other entries, which are annual additions.

**Residential Rate Comparisons:** Included with this report are the most recent MMWEC residential rate comparisons. This is comprised of October, November, December, and the twelve-month average. It should be noted, the 2022 power cost adjustment is included in these comparisons.

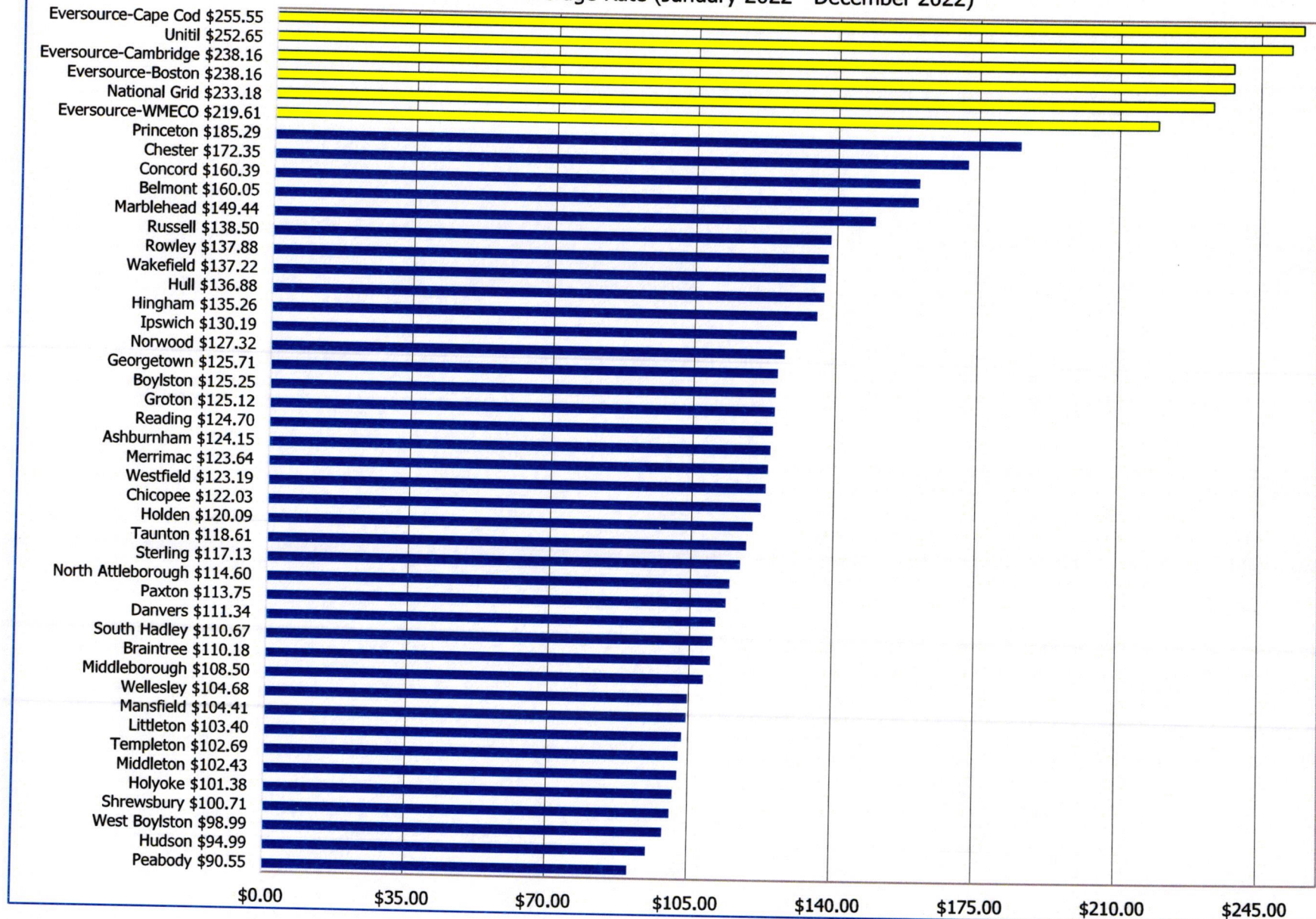
### Residential Rate Comparisons 250 kWh 12 Month Average Rate (January 2022 - December 2022)



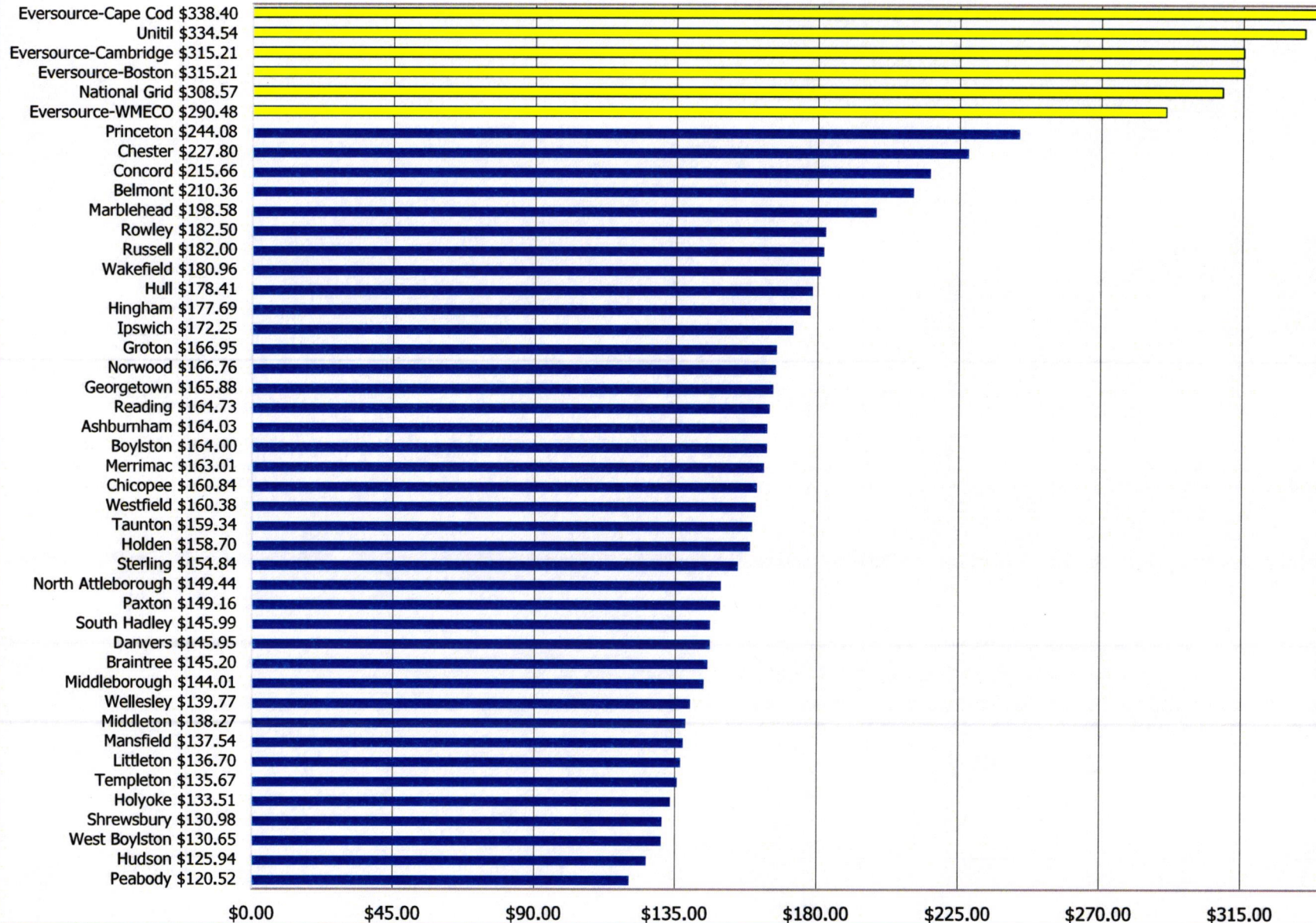
### Residential Rate Comparisons 500 kWh 12 Month Average Rate (January 2022 - December 2022)



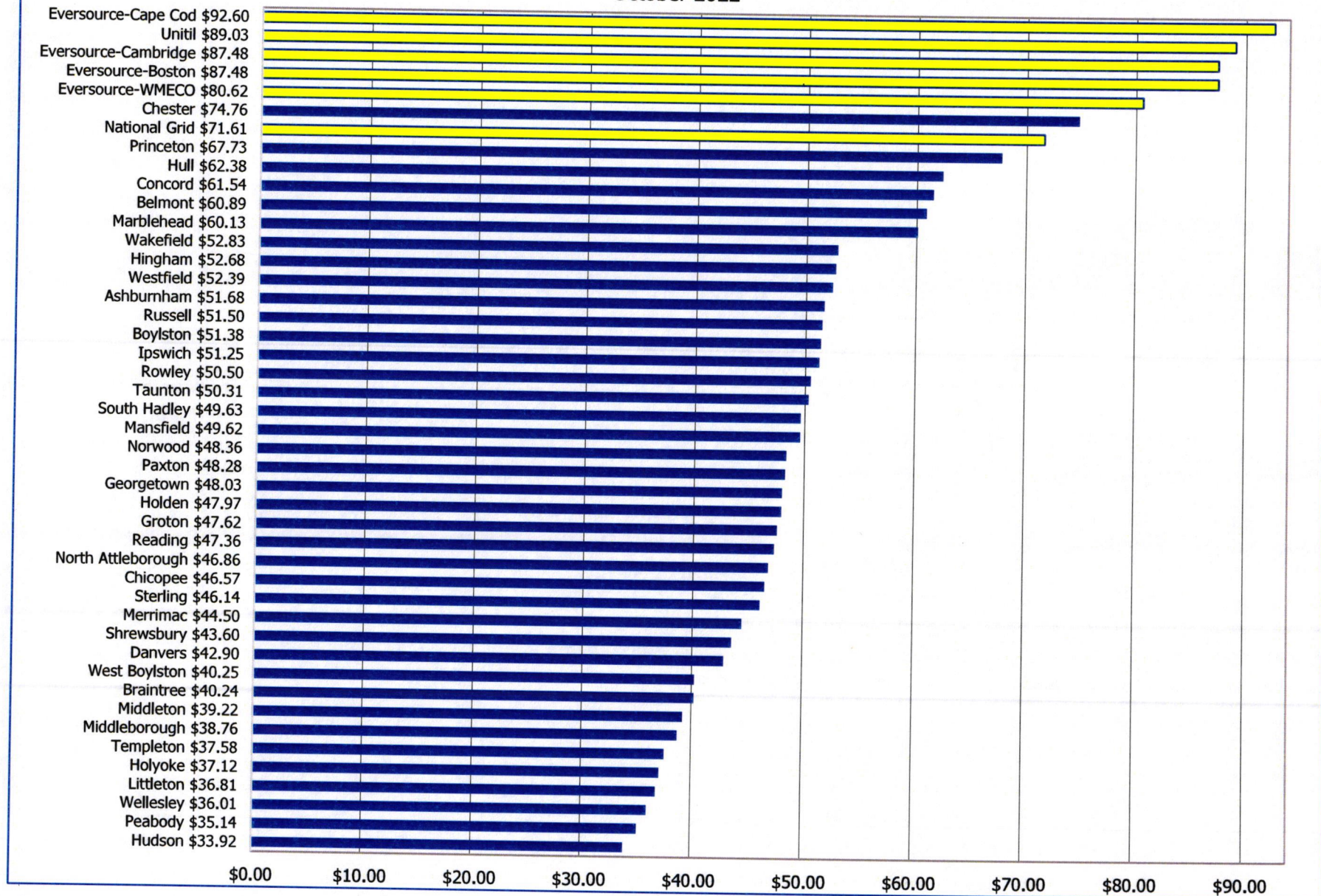
### Residential Rate Comparisons 750 kWh 12 Month Average Rate (January 2022 - December 2022)



### Residential Rate Comparisons 1000 kWh 12 Month Average Rate (January 2022 - December 2022)

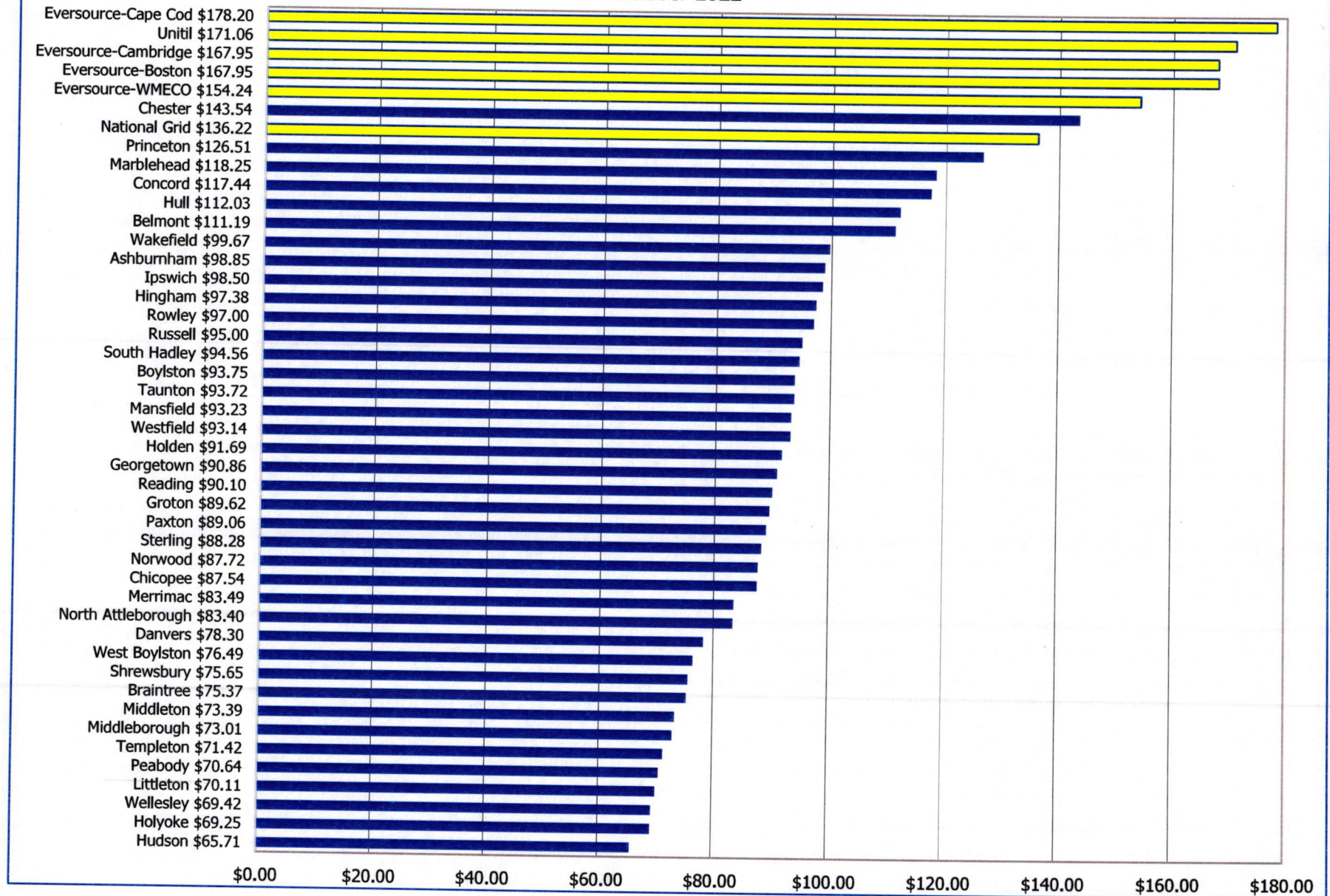


### Residential Rate Comparisons 250 kWh October 2022

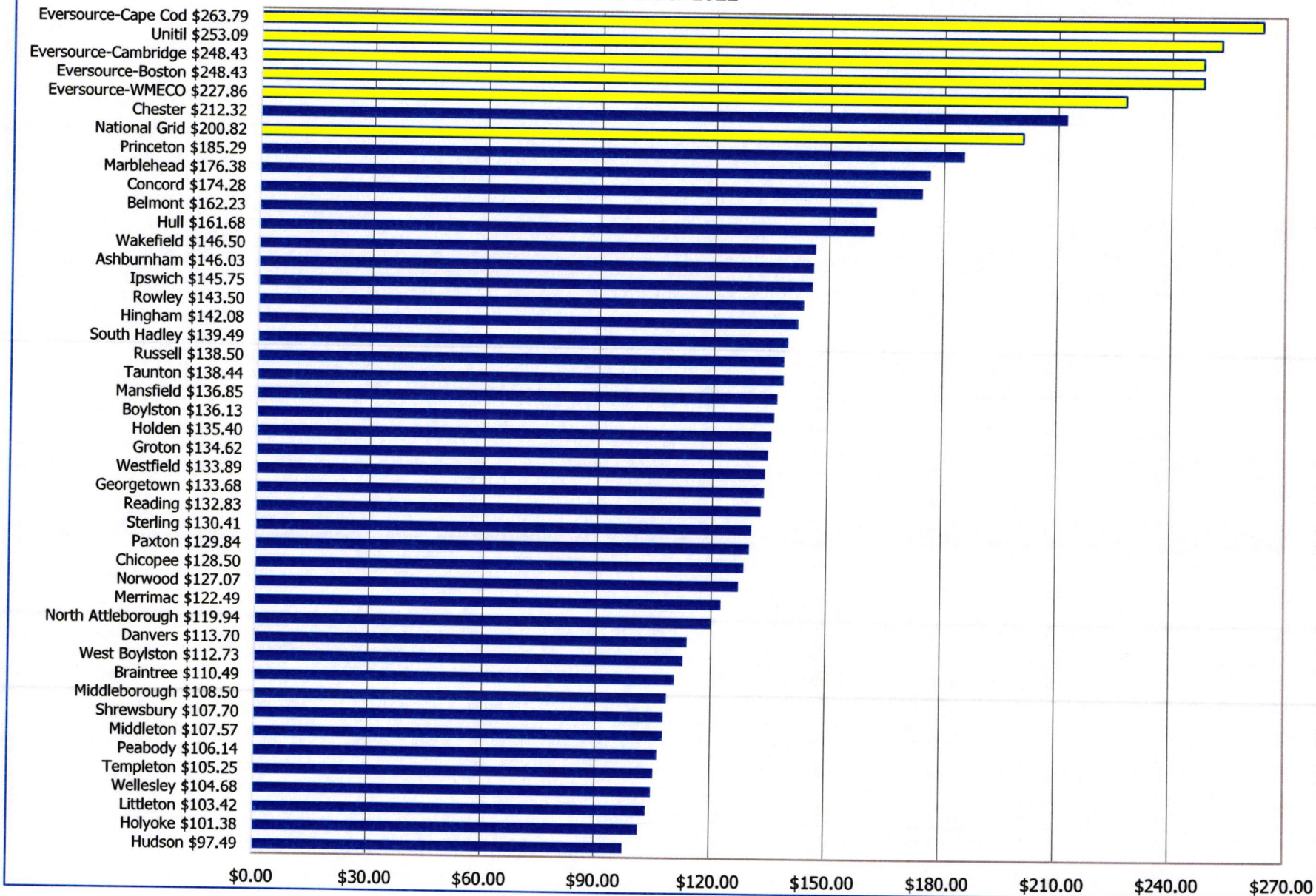




### Residential Rate Comparisons 500 kWh October 2022

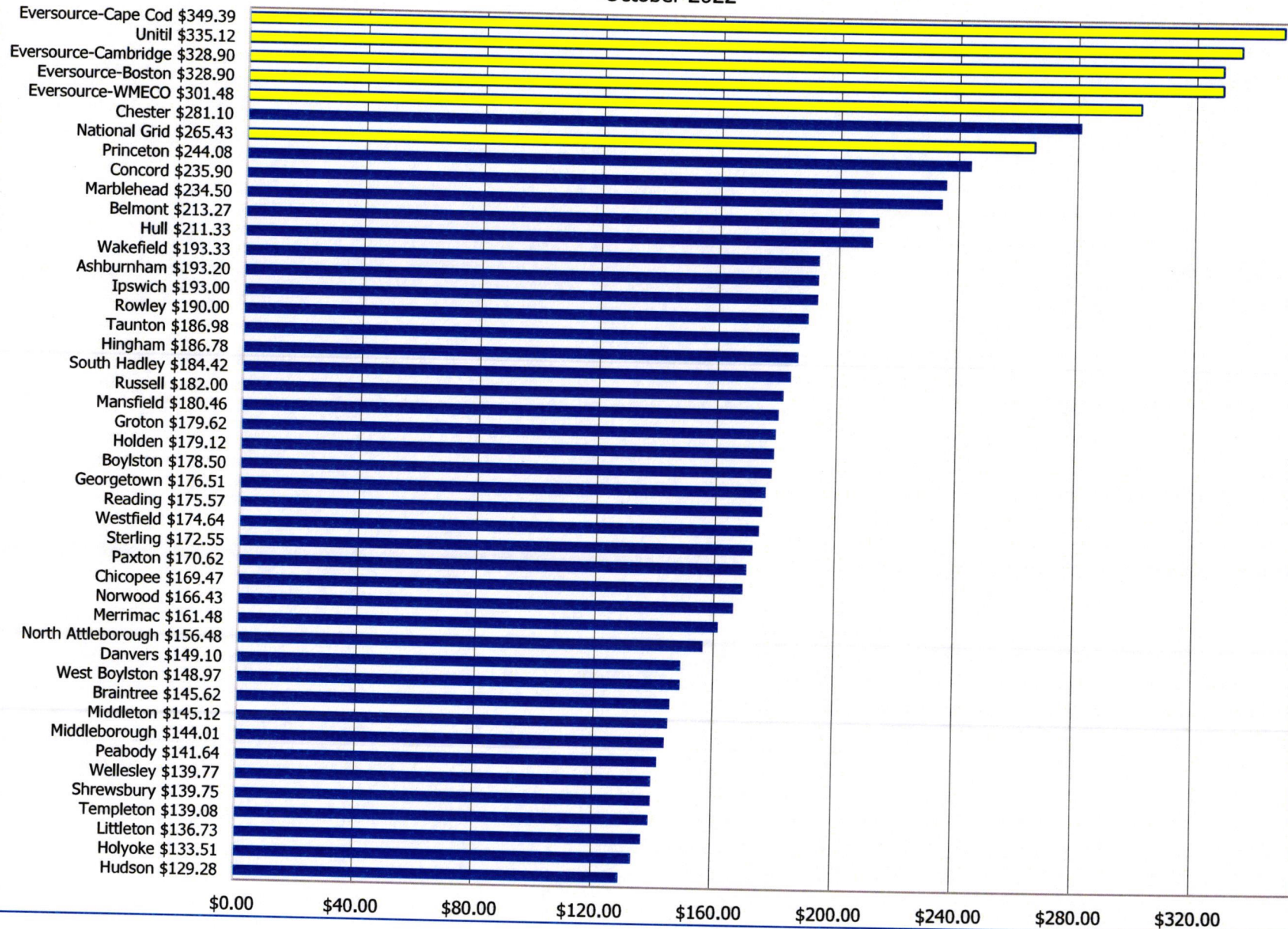


### Residential Rate Comparisons 750 kWh October 2022



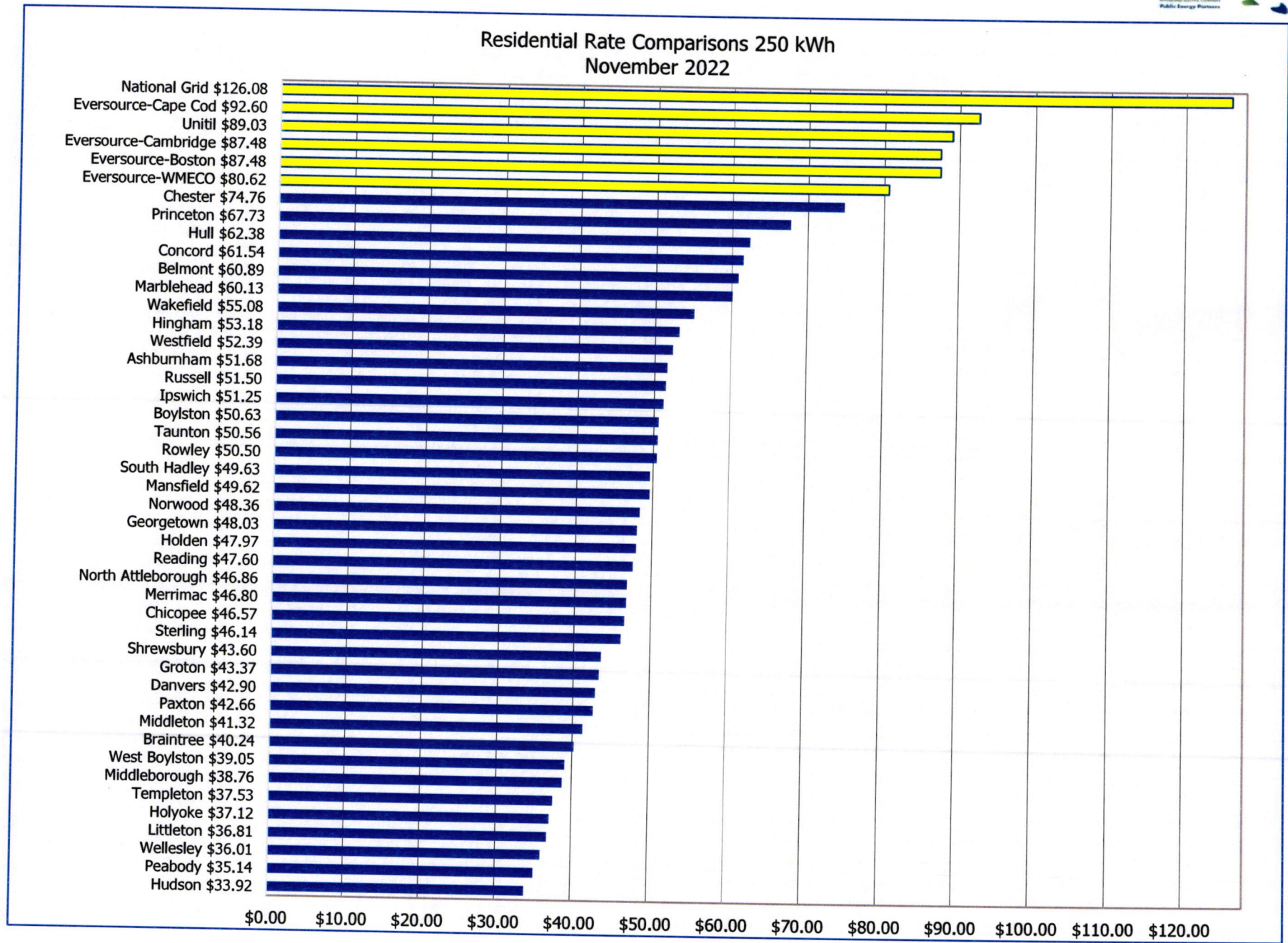


### Residential Rate Comparisons 1000 kWh October 2022

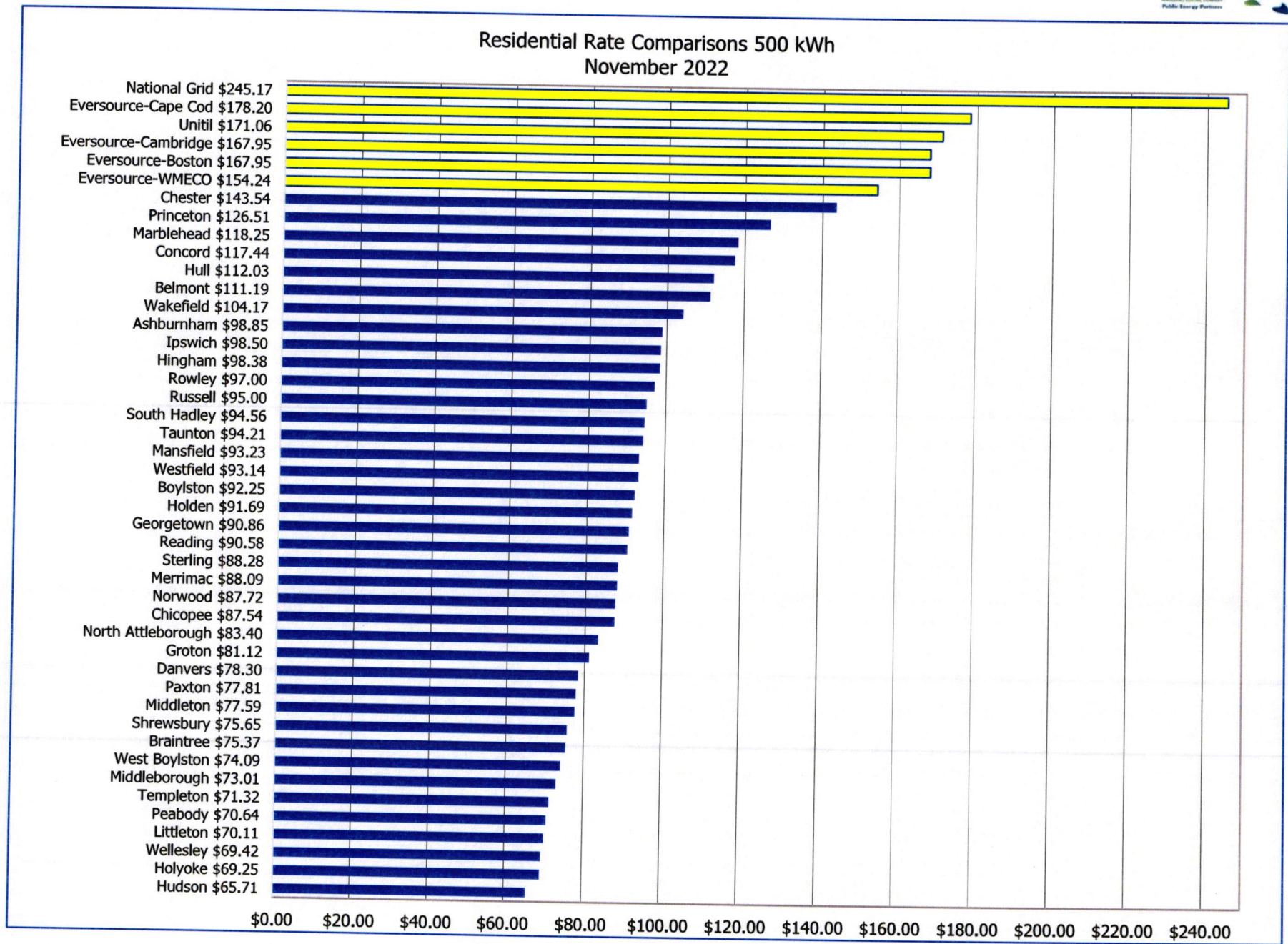


DISCLAIMER: The information contained in this report has been obtained from various sources. MMWEC does not guarantee the accuracy of this report.

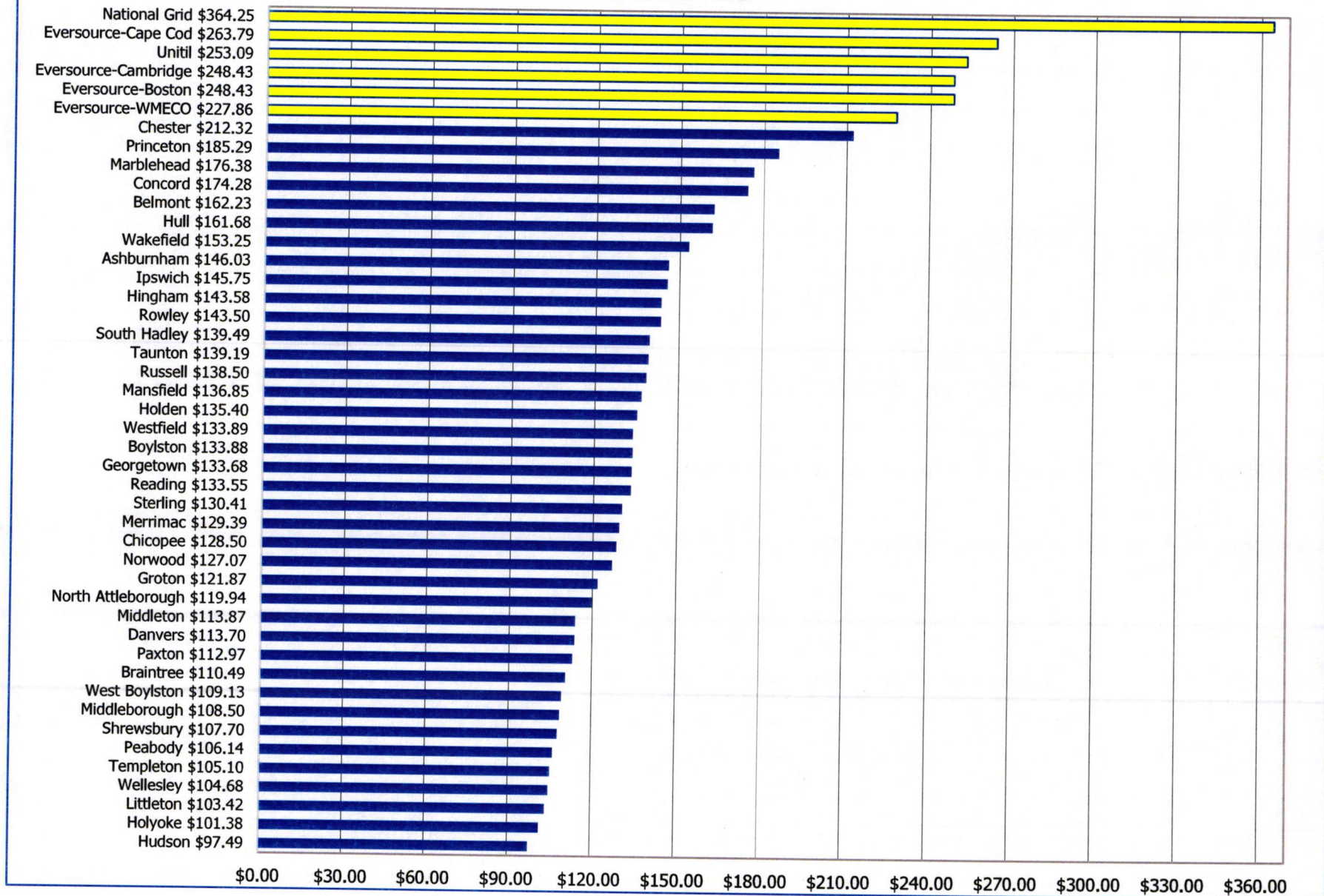
### Residential Rate Comparisons 250 kWh November 2022



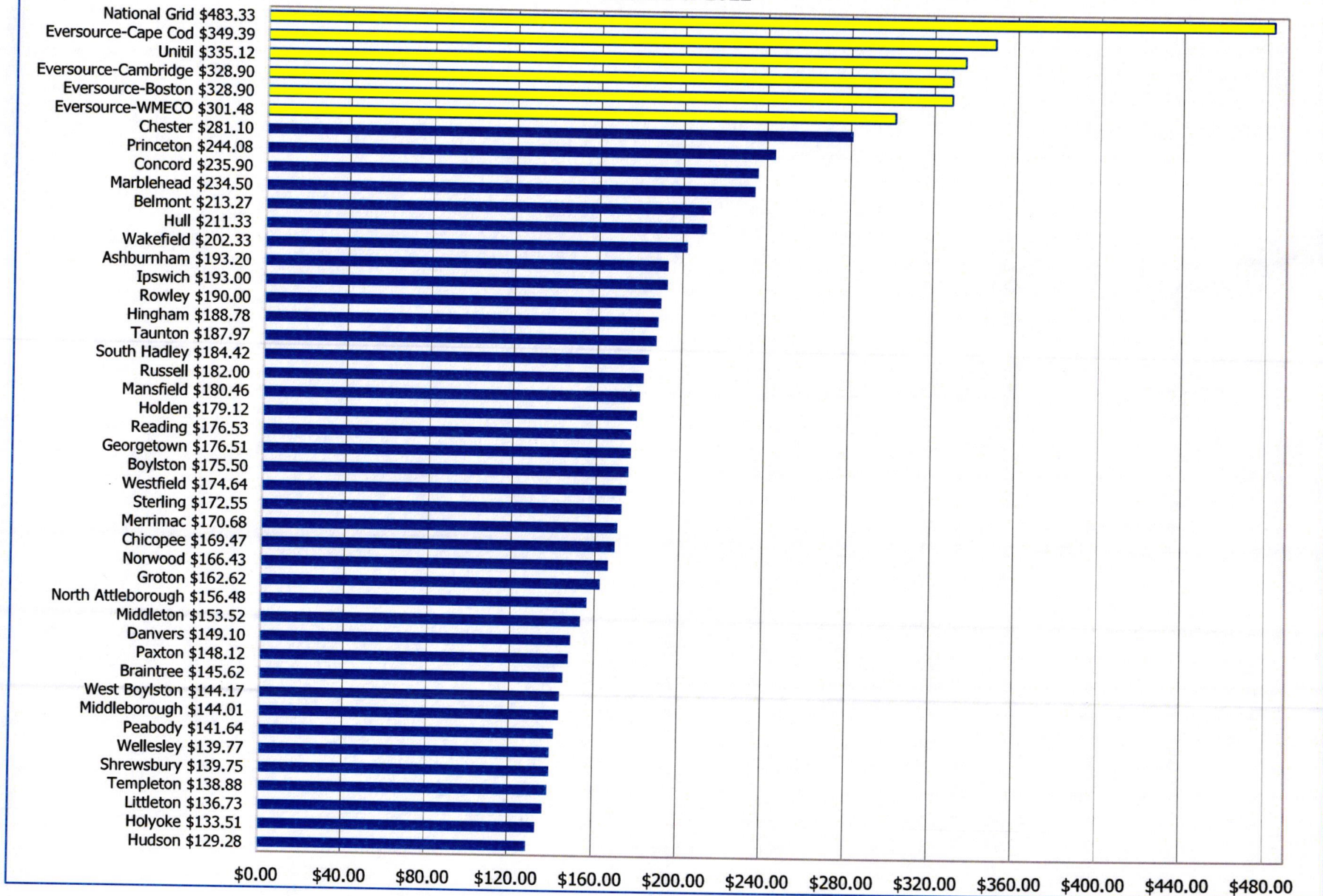
### Residential Rate Comparisons 500 kWh November 2022



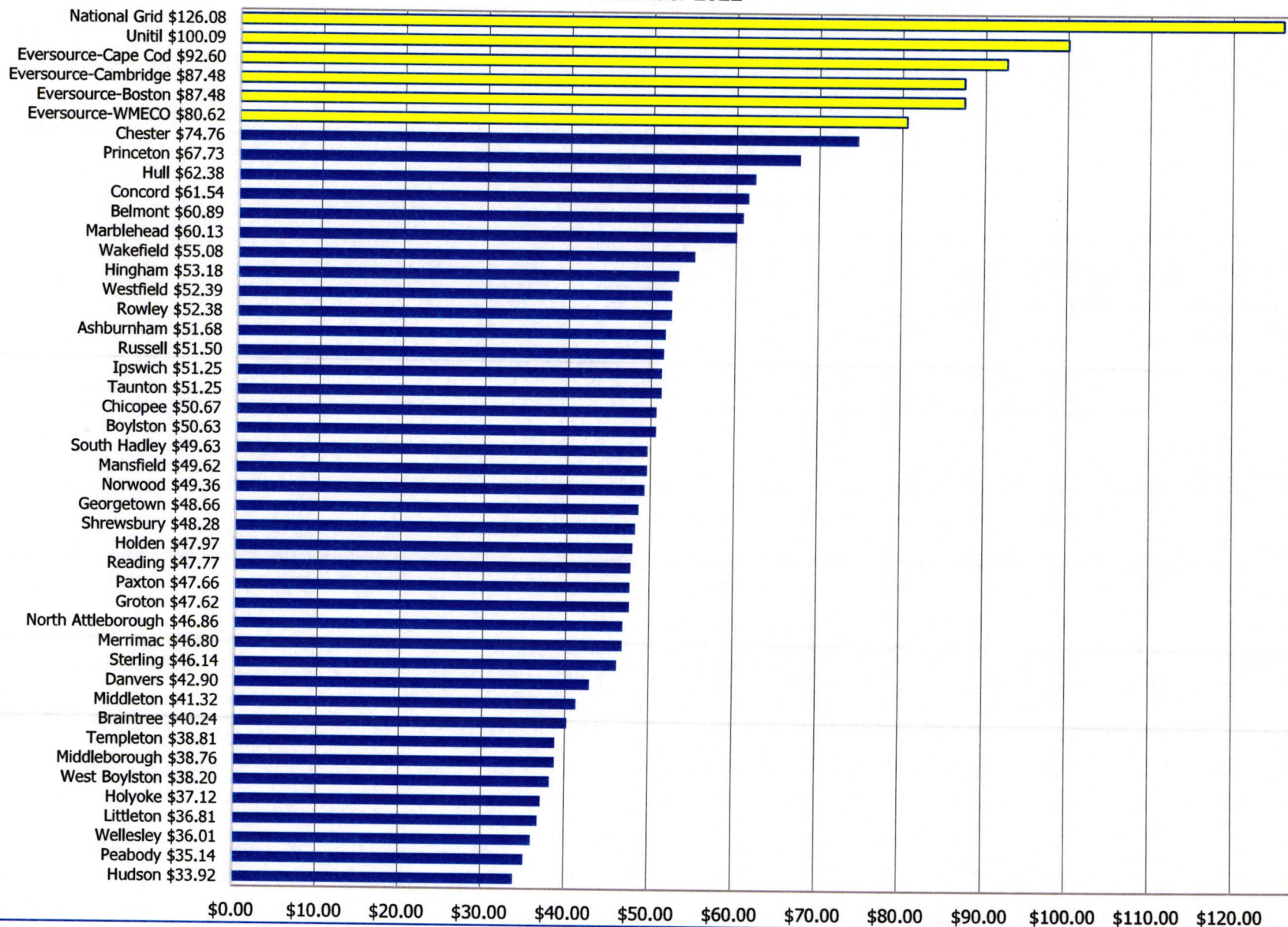
### Residential Rate Comparisons 750 kWh November 2022



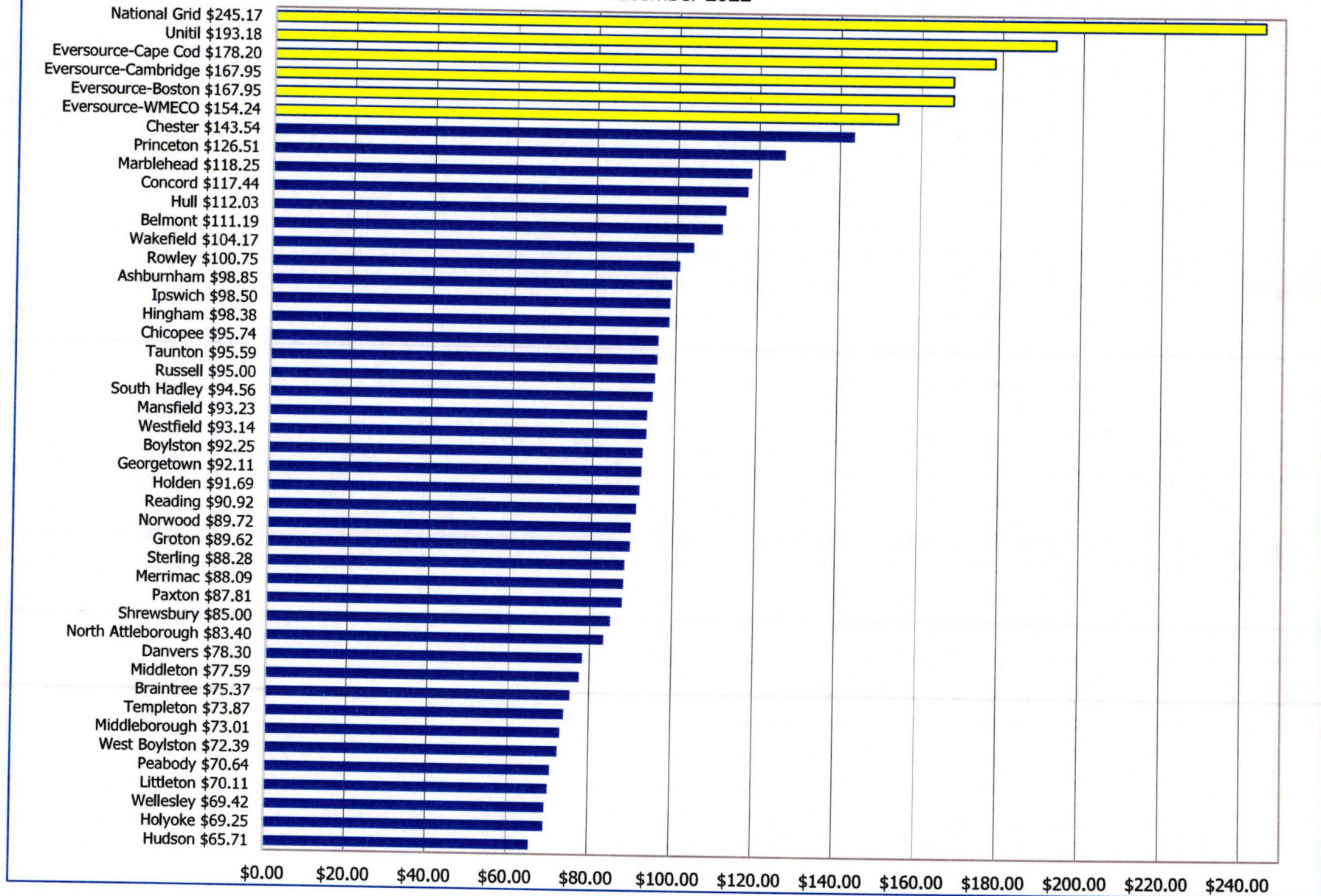
### Residential Rate Comparisons 1000 kWh November 2022



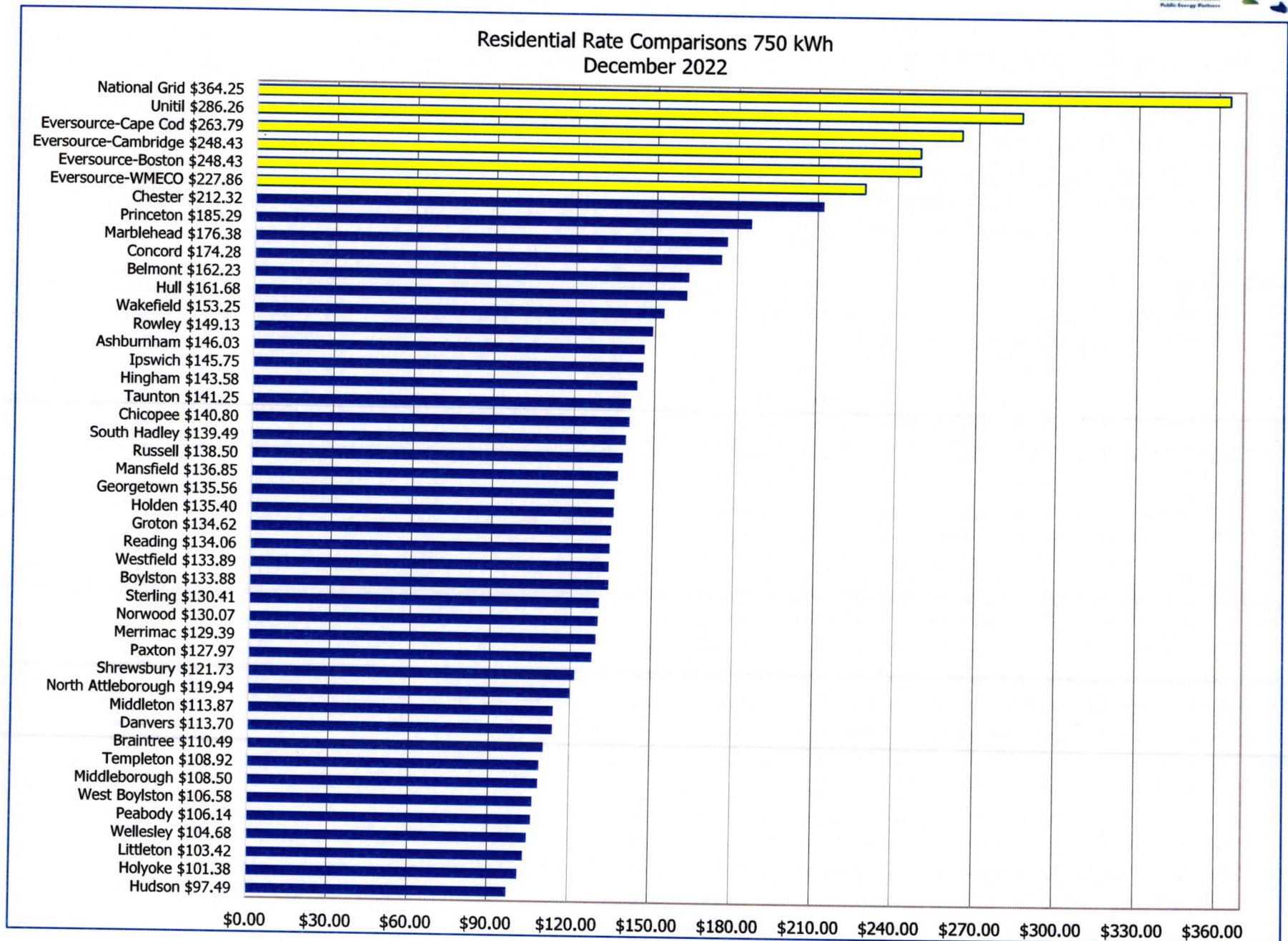
### Residential Rate Comparisons 250 kWh December 2022



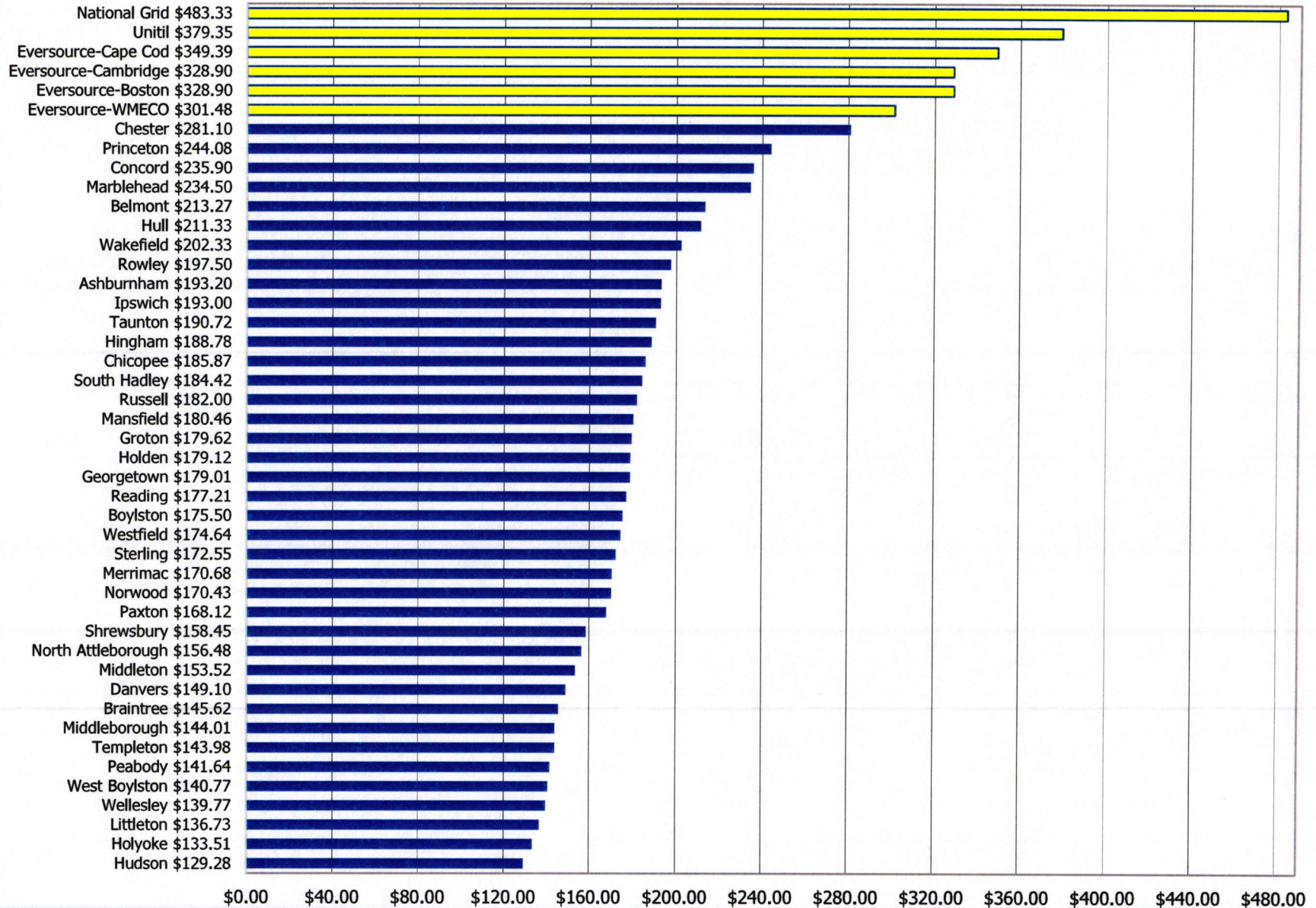
### Residential Rate Comparisons 500 kWh December 2022



### Residential Rate Comparisons 750 kWh December 2022



### Residential Rate Comparisons 1000 kWh December 2022





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## January 2023 – Broadband Updates

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Concord Broadband is pleased to share the following updates and information from the past month. Please do not hesitate to contact us at [broadband@concordma.gov](mailto:broadband@concordma.gov) should you have any questions, concerns, or feedback.

### Operations

January was a busy month at Concord Broadband. Here are a few of the projects we've been working on:

- Facilitating a discussion to install dark fiber with a pole attachment agreement for MCI
- Enhancing new customer tracking to ensure onboarding is smooth and installations are timely
- Improving billing system for more accurate pro-rated first bills and preventing billing for customers who do not end up signing up for service
- Conducting interviews for two vacant positions
- Reviewing gateway sites for the Advanced Metering System project for compatibility with the fiber network
- Taking steps to improve the inventory process
- Beginning to implement a new cloud-based file sharing system

Concord Broadband also completed a long-standing project to restore a fiber path to the high school, which had been damaged over a year ago. This took many hours of planning and execution for both staff and third-party contractors.

### ONT Batteries

The ONT (Optical Network Terminal) is the piece of hardware Internet Service Providers use to turn an optical signal that travels on fiber optic cable into something that can be used by customers' devices. Historically, these ONTs included a battery that would keep the ONT running in the event of a power outage because some customers received phone service as well as internet service. At that time, cell phones were not ubiquitous, so it was deemed essential to keep the service running during emergencies.

In the last decade, manufacturers of ONTs have stopped adding these batteries, and Internet Service Providers have stopped including them for customers. The primary drivers of this change were the availability of cell phones and the waste created by lead-acid batteries that rarely went used and needed to be replaced every three years.

Should a Concord Broadband customer ever hear a beeping noise coming from their ONT, it is likely an indication that

### Maintenance

On January 21, 2023 at 1am, Concord Broadband staff worked with Calix, our hardware vendor, to perform maintenance at our primary data center. Earlier in the month we had attempted to replace a piece of hardware, but during the maintenance window, our vendor could not meet all prerequisites for the operation to continue, so it was rescheduled.

While we try to avoid two maintenance windows in one month, this was an important piece of preventative maintenance.

We thank the staff who prepared for this work and were on-site from 1-3am. Fortunately the impact to customers was minimal.

the battery is no longer providing enough power to keep the device running during a power outage. Should this happen, please call our helpdesk (978-318-3199), and we will walk you through a fix and visit the premise as soon as we can to remove the battery and dispose of it properly.

Should some customers wish to purchase and maintain a battery backup solution for their ONTs, they can check with any electronics retailer for an uninterruptible power supply (UPS).

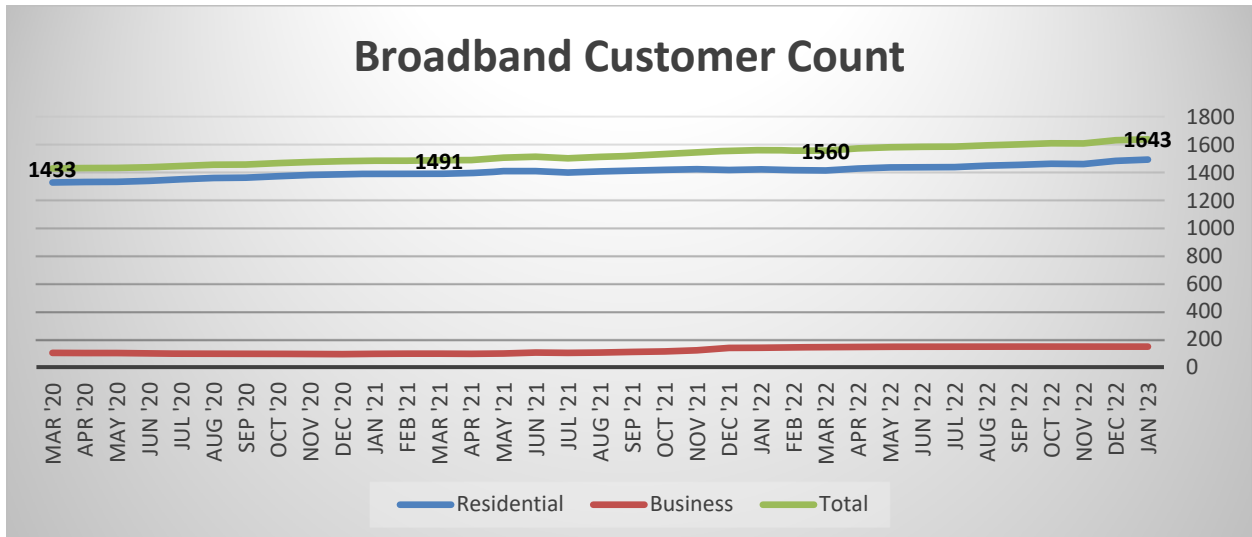
### Upcoming Rate Subsidies

Concord Broadband is pleased to announce that we have begun the process of applying for the Affordable Connectivity Program (ACP). This program provides a discount of up to \$30 per month toward internet service for eligible households.

There is a regulatory hurdle that our organization must jump through before we can file a formal application: because of how the program was set up, entities that wish to offer this subsidy to its customers must either be an Eligible Telecommunications Carrier (ETC) – which is a certain class of phone provider – or receive a waiver from the FCC. Because Concord Broadband is not a registered ETC, we are seeking a waiver and will submit the application to the ACP as soon as we receive it.

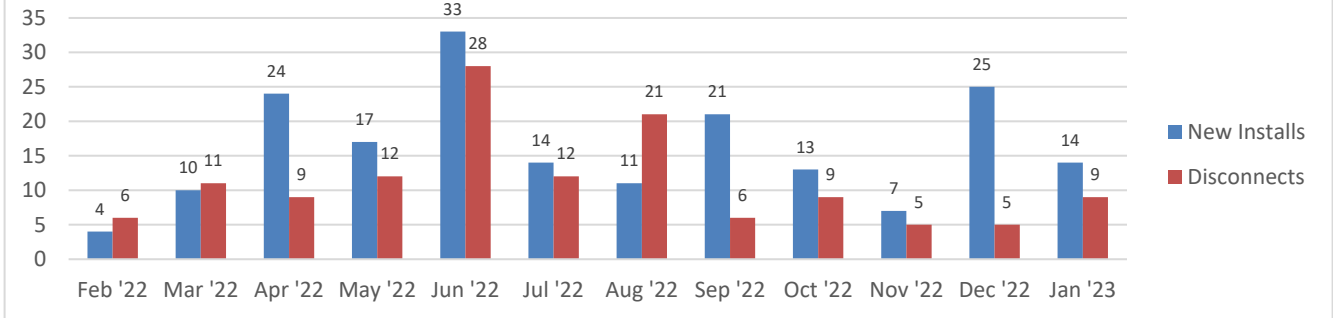
Those curious about the program and its eligibility requirements can review the website at <https://www.fcc.gov/acp>.

### Monthly Metrics and Business Data



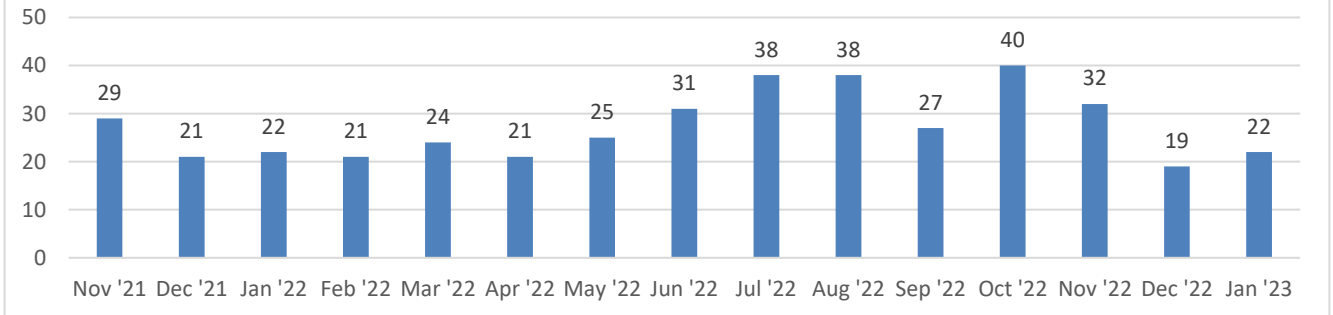
(Customer count: March 2020 – January 2023)

### Monthly New Customer Installs and Disconnects



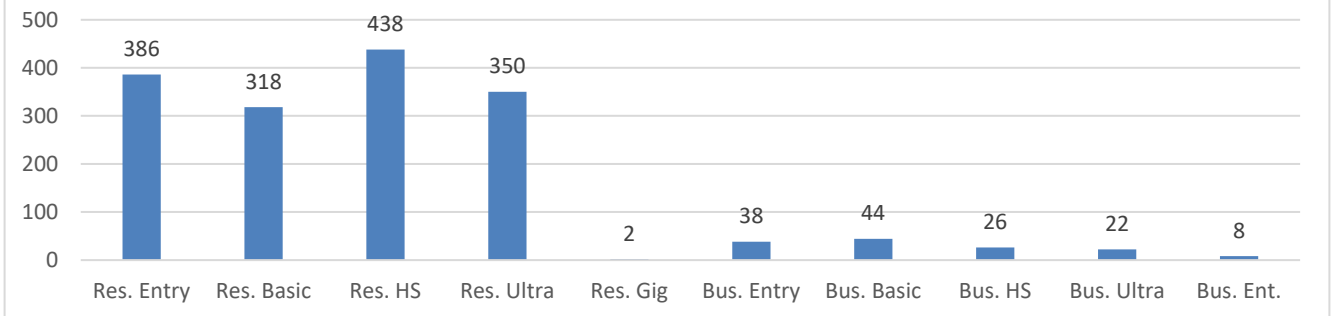
*(The number of new installations and disconnects completed each month. Please note that these numbers have been updated after finding that the number of disconnects were incorrectly counted in previous months (too high). Issues with billing are sometimes resolved by disconnecting service and reconnecting it immediately, which was artificially inflating these numbers by about 10 in total in the chart above.)*

### Interested Customers by Month



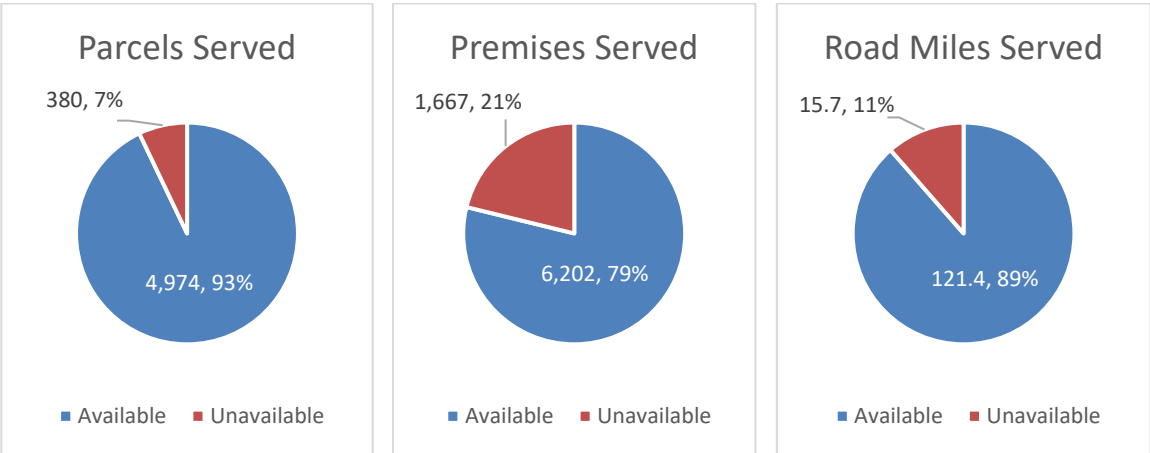
*(This is the number of individuals who complete the Concord Broadband interest form on the Concord website, whether they are in the current service area or not.)*

### Breakdown of Customers per Service Plan



*(This is the number of each customer on our different service plans as of 1/31/2023.)*

### Quarterly Metrics



*(As of 9/30/2022; updated numbers will come in a future update)*

## Appendix

### Fiber Broadband Completion Task Force's Draft Report Goals

Goal	Type	Priority	Responsible Party	Additional Info.
<b>Policies (p.39)</b>				
• Universal Access	Policy	Highest	Select Board/Town Meeting	
• Expansion outside current territory	Policy	Low	Select Board/Town Meeting	
• Support Economic Vitality, Sustainability, Equity & Inclusion	Policy	High	Select Board/Light Board/TM Economic Development	Rate subsidies in progress; update expected soon
• Affordable Housing	Policy	Medium	Select Board/Housing Groups	Rate subsidies in progress; update expected soon
• Public Safety	Policy	Medium	Select Board/Town Manager	
• Education	Policy	Medium	Select Board/School Dept.	
• Government Access (PEG)	Policy	Medium	Select Board/PAAC	
<b>Recommended metrics for tracking (p.41)</b>				
• Parcels served	Metric	Medium	Town Staff/Light Board	Complete; will report quarterly
• Premises served	Metric	Medium	Town Staff/Light Board	Complete; will report quarterly
• Road miles served	Metric	Medium	Town Staff/Light Board	Complete; will report quarterly
• Subscribers	Metric	High	Town Staff/Light Board	Complete; will report monthly
• Take rate	Metric	Medium	Town Staff/Light Board	Working on this; update expected soon
• Churn	Metric	High	Town Staff/Light Board	Working on this; update expected soon
• Installations	Metric	Highest	Town Staff/Light Board	Complete; will report monthly
<b>Governance (p.39)</b>				
• Track progress against completion	Metric	Highest	Light Board/Town Staff	Working on this; update expected soon
• Rate of return policy	Policy	High	Light Board/Town Staff	
• Financial goals with regular reporting	Policy	High	Light Board/FinCom	
• Retained earnings and reserve policy	Policy	High	Light Board/FinCom	

Goal	Type	Priority	Responsible Party	Additional Info.
<b>Strategic Planning Goals (p.43)</b>				
• Marketing and growth	Metric	High	Light Board/Town Staff	
• Business return	Policy	High	Light Board/Town Staff	
<b>Budgeting Process for Fiber Expansion (p.41)</b>				
• Expand to fill existing opportunities	Planning	High	Light Board/Town Staff	
• External funding sources	Research	Medium	Light Board/Town Staff	Working on this
• ARPA Relief Funds Allocation, incl. Lost Revenue	Finance	Highest	Select Board/Town Manager	Working on this
• Review/Confirm Internal Loan Findings	Finance	Highest	Financial Audit Comm/Staff	Complete
• Review and Rescind PILOF to MMN	Finance	High	Select Board/Town Manager	Working on this
<b>Capital Planning Process (p.42)</b>				
• Review/Revise Debt financing schedule	Policy	Highest	Light Board/Town Staff	Working on this; update expected soon
• Quantifying cost of expansion	Planning	Medium	Town Staff	Working on this
• How to fund expansion	Planning	Medium	Light Board/Town Staff	
• Revise/refine methods for computing ROI	Planning	Medium	Light Board/Town Staff	
<b>Construction and Logistics (p.42)</b>				
• Vibratory plow – direct buried fiber cables	Operations	Medium	Town Staff	Working on this
• Revise/Refine Communication conduit construction standards and guidance	Policy	Medium	Town Staff	
• Integrate Fiber construction with the Roads Program – focus on Streets without fiber that already have underground electric	Planning	High	Town Staff	Working on this

Agenda Topic #5



**ENERGY NEW ENGLAND**

Proposed Vote

ENE-23-01

VOTE:

At a duly convened meeting of the Concord Municipal Light Plant held on \_\_\_\_\_, 2023 it was upon a motion duly made and seconded,

VOTED: That Paul Hibbard be and hereby is elected as Director of the Energy New England Board to service in that capacity for a term as defined in Section 3.2 of the Energy New England Operating Agreement.

That in accordance with the Energy New England Operating Agreement, Paul Hibbard be and is hereby designated as a Class A Director and as such will serve a term of three years having completed an initial one year term as defined in Section 3.2 of the Energy New England Operating Agreement.

A true copy

ATTEST: \_\_\_\_\_,  
\_\_\_\_\_, Secretary  
Concord Municipal Light Board  
Concord Municipal Light Plant

Action: approved \_\_\_\_\_

Date: \_\_\_\_\_

**PAUL J. HIBBARD**

Principal, Analysis Group

Mr. Hibbard is an expert on economics, strategy, regulation, and policy in the electric and natural gas industries. He has a comprehensive background merging business development, technical analysis, resource planning and development modeling, economics, and public policy in the energy and environmental fields. Mr. Hibbard has provided technical and strategic advice to government, industry, business, public interest groups, and trade organizations on energy market structure, electric and natural gas infrastructure planning and siting, utility resource solicitation and procurement, emission allocation and environmental policy, renewable resource program design and administration, transmission pricing, climate change policy, utility ratemaking practices, and the transfer of US federal and state emission control programs to other countries.

Prior to joining Analysis Group, Mr. Hibbard was chairman of the Massachusetts Department of Public Utilities. During his tenure, he carried out a forward-looking ratemaking and policy agenda to advance energy efficiency and renewable resources, coordinate regional efforts in the development of energy resources and associated infrastructure, and promote the administration of fair and efficient transmission pricing models in regional and national contexts. Mr. Hibbard also previously worked for almost a decade for both the DPU (on ratemaking, industry restructuring, and utility environmental compliance) and the MA Department of Environmental Protection (on Clean Air Act compliance, greenhouse gas regulations, and State Implementation Plans for criteria air pollutants). He also has provided extensive testimony as an expert witness in litigation and regulatory settings, and on resource planning, competitive electricity markets, greenhouse gas regulations, and transmission pricing in hearings before committees of the Massachusetts, New Hampshire, and California legislatures, the US House of Representatives, the Federal Energy Regulatory Commission (FERC), and state and regional planning councils.

Mr. Hibbard holds an M.S. in Energy and Resources from the University of California, Berkeley, and a B.S. in Physics from the University of Massachusetts, Amherst.

**PAUL J. HIBBARD**  
**Principal**

Direct: 617 425 8171  
Fax: 617 425 8001  
paul.hibbard@analysisgroup.com

111 Huntington Avenue  
14th Floor  
Boston, MA 02199

Mr. Hibbard is an expert on economics, strategy, regulation, and policy in the electric and natural gas industries. He has a comprehensive background merging business development, technical analysis, resource planning and development modeling, economics, and public policy in the energy and environmental fields. Mr. Hibbard has provided technical and strategic advice to government, industry, business, public interest groups, and trade organizations on energy market structure, electric and natural gas infrastructure planning and siting, utility resource solicitation and procurement, emission allocation and environmental policy, renewable resource program design and administration, transmission pricing, climate change policy, utility ratemaking practices, and the transfer of US federal and state emission control programs to other countries.

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**EDUCATION**

- M.S.           Energy and resources, University of California, Berkeley  
*Thesis: Safety and Environmental Hazards of Nuclear Reactor Designs*  
*(Ph.D. coursework in nuclear engineering)*
- B.S.           Physics, University of Massachusetts Amherst

**PROFESSIONAL EXPERIENCE**

- 2010–Present   **Analysis Group, Inc.**  
*Principal (2015–Present)*  
*Vice President (2010–2015)*
- 2007–2010    **Massachusetts Department of Public Utilities**  
*Chairman*  
*Member, Energy Facilities Siting Board*  
*Manager, New England States Committee on Electricity (NESCOE)*  
*Treasurer, Executive Committee, Eastern Interconnect States' Planning Council*

- 2007–2010     **Massachusetts Department of Public Utilities** (continued)  
*Representative, New England Governors' Conference (NEGC)*  
*Power Planning Committee*  
*Member, National Association of Regulatory Utility Commissioners (NARUC)*  
*Electricity Committee, Procurement Work Group*
- 2003–2007     **Analysis Group, Inc.**  
*Vice President (2005–2007)*  
*Manager (2003–2005)*
- 2000–2003     **Lexecon Inc.**  
*Senior Consultant (2002–2003)*  
*Consultant (2000–2002)*
- 1998–2000     **Massachusetts Department of Environmental Protection**  
*Environmental Analyst*
- 1991–1998     **Massachusetts Department of Public Utilities**  
*Senior Analyst, Electric Power Division*
- 1988–1991     **University of California, Berkeley**  
*Research Assistant, Safety/Environmental Factors in Nuclear Designs*

#### **SELECTED PUBLIC-SECTOR EXPERIENCE (MASSACHUSETTS)**

- ***Chairman, Department of Public Utilities***
  - Chaired the state's public utilities commission during a period of aggressive change in state policies affecting the electricity and natural gas industries, including initial implementation of several new state energy laws and initiatives restructuring the setting of utility rates, promoting the expansion of energy efficiency and demand response, facilitating the retail and wholesale market integration of renewable and low-carbon resources, and revising state policy on the siting of major generation and transmission infrastructure.
  - Oversaw the issuance of initial regulations and policy related to revenue decoupling, net metering, long-term contracting for renewables, and power system emergency planning and outage restoration.
  - Led Massachusetts's work with regulators across the Northeast to pursue large-scale renewable resource development through coordinated procurement strategies to develop coordinated positions related to national transmission development proposals and establish a regional presence on transmission-related provisions in federal legislation.
  - As chairman, served as the administrative and policy head of an agency of nearly 150 employees, and was responsible for agency management and growth, budgeting, legislative matters, press inquiries, and policy agenda-setting.
  - Oversaw the completion of all dockets jurisdictional to the department, including rate cases and associated tariff matters, forecast and supply planning for electric and natural gas industries, and state oversight of natural gas pipeline safety and public transit authorities.
  - Responsible for all interaction with the governor's office, legislature, and Executive Office of Energy and Environmental Affairs, as well as representing the state in regional deliberations related to electric and natural gas utility policy, electricity market design and oversight, and regional power system reliability issues.

- ***Member, Energy Facilities Siting Board***  
Sitting member of the state board responsible for reviewing all proposals for major generation and transmission infrastructure projects within the state, as well as state intervention in federal review of natural gas pipeline infrastructure. Review involved technical, environmental, and economic evaluation of jurisdictional power plants, transmission lines, and other energy infrastructure, as well as ruling on proposals for exemption from state and local zoning ordinances.
- ***Manager, NESCOE***  
State representative of the regional group chartered to develop New England regional policy positions on electricity market and transmission planning issues. Responsibilities included consideration of group development issues, input into regional determinations of the Installed Capacity Requirement, consideration of regional approaches to transmission planning and the consideration of non-transmission alternatives, and coordinated development of a regional RFP/RFI for the solicitation of renewable power under long-term contracts for the New England states.
- ***Treasurer, Executive Committee, Eastern Interconnection States' Planning Council***  
Elected treasurer of the steering committee for the state council formed under a US Department of Energy (DOE) grant to coordinate with power system operators on developing long-range plans for a transmission system spanning 41 states in the eastern US. Coordinated New England states' approach to policy issues stemming from council efforts.
- ***Representative, NEGC Power Planning Committee***  
Represented the governor's office in all discussions related to regional energy/environmental issues, including transmission cost allocation, regional energy policy coordination, and development of mechanisms for and approaches to procurement of renewable power through long-term contracts with sources in New England and eastern Canada. Engaged in collaborative discussions with counterparts representing the Eastern Canadian Premiers.

## SELECTED CONSULTING EXPERIENCE

### Government, Foundations, Commissions, and Cooperatives

- ***For the Natural Resources Defense Council (NRDC)*** – Coauthored a public report on the Clean Electricity Payment Program's (CEPP) positive impact on the US economy if adopted (2021).
- ***For Advanced Energy Economy (AEE)*** – Coauthored a public report on the potential economic impacts of applying stimulus funds to electrification of the US transportation sector using estimated spending levels from President Biden's American Jobs Plan (2021).
- ***For AEE*** – Coauthored a public report on the potential economic impacts of applying stimulus funds to develop advanced energy technologies, products, and services in the US using estimated spending levels from President Biden's American Jobs Plan (2021).
- ***For the Coalition for Green Capital*** – Coauthored a white paper examining the potential of the federally authorized Clean Energy and Sustainability Accelerator that could address economic and climate crises (2021).
- ***For AEE*** – Coauthored a series of public reports on the economic impacts in select states of potential stimulus spending on clean and advanced energy resources (2020).
- ***For a municipal association*** – Drafted a white paper related to the fuel mix and emission characteristics of the portfolio of generating assets and power contracts used by municipal electric light companies in Massachusetts (2020).
- ***For the Wellesley Municipal Light Plant (WMLP)*** – Coauthored two white papers on the greenhouse gas (GHG) impacts of the WMLP power portfolio, and considerations for the WMLP associated with achieving continued reductions in carbon emissions over the ensuing decades (2020).

- **For the Georgetown Climate Center** – Conducted a bill impact analysis related to Virginia’s proposed implementation of a carbon cap-and-trade program (2018).
- **For Energy New England** – Provided strategic assistance on energy market and public policy issues in New England (2017).
- **For the Environmental Defense Fund** – Coauthored a white paper related to historical power system emission trends (2015).
- **For the Massachusetts Attorney General** – Coauthored a report evaluating electric and natural gas infrastructure in New England from the perspectives of reliability, cost, and GHG emissions (2015).
- **For AEE** – Coauthored a report on the status of the electric industry in the State of Ohio, and developed recommendations on state energy policy in consideration of the state’s market and technological circumstances at the time.
- **For the Energy Foundation and industry groups** – Coauthored multiple white papers on the reliability, cost, and market efficiency impacts of the US Environmental Protection Agency’s (EPA’s) proposed regulations to control emissions of carbon dioxide from existing electric generating facilities. Presented results in numerous conference, stakeholder, and regulatory settings.
- **For a foundation** – Led a study of the economic impacts of a state clean energy policy (2013–2014).
- **For the Massachusetts Department of Energy Resources** – Provided testimony on the ratepayer and social benefits of reducing methane leaks from a local natural gas distribution company’s system (2013).
- **For AEE** – Facilitated a regional symposium for the New England Conference of Public Utility Commissioners and staff related to advanced energy technology development and commercialization, and the legal and regulatory structures needed to facilitate integration of emerging technologies (2013).
- **For the Regional Greenhouse Gas Initiative (RGGI)** – Conducted a bill impact analysis related to changes to retail customer electric bills in New England, New York, and RGGI Pennsylvania, New Jersey, and Maryland Interconnection (PJM) states associated with various changes considered by RGGI to program cap level and use of allowance revenues (2012).
- **For AEE** – Participated in a project advising AEE with respect to its national program to support public utility commission consideration of policies and regulations related to the development and integration of advanced energy technologies (2012–2013).
- **For the Merck Family Fund** – Developed an interactive tool to compare the impacts of energy, economic, environmental, legislative, and regulatory policies and programs across the US (2012).
- **For AEE** – Coauthored a report on the perspectives of CEOs at advanced energy companies doing business in California on California’s energy policies. Conducted over 30 interviews with energy business leaders to get perspectives and recommendations for policy changes (2012).
- **For the Barr Foundation** – Coauthored a report on the benefits and costs associated with reducing natural gas leaks on natural gas distribution systems through implementation of targeted infrastructure replacement ratemaking mechanisms in Massachusetts, Rhode Island, and Ohio. Developed a cost-benefit model to quantify the impacts of such programs (2012–2013).
- **For the American Clean Skies Foundation** – Developed a dispatch price and emissions model to forecast power system outcomes in the PJM Interconnection, Midwest Independent System Operator, and Southwest Power Pool regions (2012).
- **For a national environmental organization** – Conducted a comprehensive national review of energy efficiency monitoring and verification programs in order to support development of a protocol that

could be used to allow energy efficiency to be used as a compliance tool in national carbon emission control regimes (2012–2013).

- **For the Merck Family Fund** – Co-led a project to carry out an analysis of the economic impacts of the Northeast states’ use of revenues collected from the auctioning of carbon allowances associated with RGGI (2011).
- **For AEE** – Developed background on electric industry structure, regional planning and market structures and operations, and state energy policy organization and initiatives. Assisted with the development of a web-based information platform (2011).
- **For the American Clean Skies Foundation** – Authored a paper on the redesign of wholesale electricity market structures to efficiently integrate a higher level of variable resources (2012). Coauthored a white paper examining electric reliability and air emission issues associated with the potential retirement of the Potomac River Generating Station in Alexandria, Virginia (2011).
- **For the Public Service Commission of Colorado** – Coauthored a white paper on the design of incentives for the photovoltaic (PV) solar energy market (2011).
- **For a national environmental organization** – Conducted an economic analysis of key US cities that were or had been in nonattainment under the National Ambient Air Quality Standards, to explore relationships between air quality control requirements and the local economy (2011).
- **For a national environmental organization** – Completed a comprehensive report on the full scope of energy efficiency and demand response programs administered by New York electric utilities and the New York Independent System Operator (NYISO). Assessed the potential for additional innovative programs to improve energy efficiency and demand response in New York City (2010).
- **For the North Carolina Attorney General** – Managed a project in support of expert testimony on the economic and financial feasibility of requiring the installation of controls to reduce emissions of sulfur dioxide, nitrogen oxides, and mercury from coal-fired power plants owned by the Tennessee Valley Authority (TVA). The project was in the context of a public nuisance lawsuit brought by the North Carolina Attorney General against TVA (2006).
- **For the National Commission on Energy Policy** – Authored white papers on (1) the implications for US energy infrastructure of the damage to Gulf Coast energy facilities from Hurricanes Katrina and Rita (2006); (2) the practical and economic implications of various mechanisms for the allocation of carbon dioxide emission allowances to the electric sector under potential federal carbon control regimes (2005); and (3) national energy infrastructure needs for the electricity, natural gas, and petroleum industries, and for addressing the long-term impacts of energy production and use associated with spent nuclear fuel and carbon dioxide (2004).
- **For the Massachusetts Health and Educational Facilities Authority (MHEFA) PowerOptions Program** – Managed several projects providing regulatory, economic, and strategic advice to PowerOptions to assist in their selection and pricing of retail electricity products from competitive electricity suppliers. Over a three-year period, projects included analyses of forward prices and wholesale markets for capacity and reserves; analysis of contract price options, terms, and conditions; and analysis of congestion pricing implications for retail supply (2002–2004).
- **For the Energy Foundation** – Coauthored a report (with Dr. Susan Tierney) documenting best practices in energy facility siting regulations in the US, and analyzing in particular the impact of California’s energy facility siting process on that state’s electricity crisis (2002). Supported a foundation-based program to provide international assistance to China’s efforts to privatize and restructure its electric industry, and to develop regulations to control air emissions from power plants in that country (2000–2003).
- **For the Massachusetts Technology Collaborative (MTC)** – Managed projects in support of the MTC’s renewable and premium power programs, including the (1) creation of a standard financial

pro-forma for wind and landfill gas technologies in New England under various assumptions related to capital and operating costs, financing, discount rates, and the impact of state and federal policies to support renewable development; (2) development of an economic model to determine the financial impact on potential wind and combined heat and power facilities of proposed changes to utility standby service tariffs; and (3) research, strategic, and regulatory support of MTC's efforts to advance distributed generation in Massachusetts to promote renewable resources and improve power reliability for commercial and industrial customers (2000–2002).

## ENERGY INDUSTRY STAKEHOLDERS

- **For PECO Energy** – Provided testimony on traditional ratemaking principles as applied to PECO's cost of providing gas delivery service (2021).
- **For the Hingham Municipal Lighting Plant (HMLP)** – Conducted an internal evaluation of the impact of decarbonization of residential and commercial energy use in the town, and its effect on HMLP's investments and operations (2020).
- **For a natural gas interstate pipeline company** – Coauthored a white paper and presentation showing options to decarbonize the company's operations. The study included an analysis of its GHG footprint, identification of options and pathways to reduce net GHG emissions from operations to zero over time, and the development of recommendations for senior management (2020).
- **For Oracle Corporation** – Conducted an analysis of and report on the GHG emission reduction impacts of various types of energy efficiency programs and measures, with a focus on the comparison of structural and behavioral energy efficiency programs (2020).
- **For NYISO** – Conducted a study of the parameters used as the basis to set the NYISO's installed capacity demand curves for the four capability years beginning with the summer 2021 capability period (2020).
- **For NYISO** – Conducted an internal study of the potential reliability impacts on the electric grid due to changes in system mix and operations associated with a changing climate, and with state programs to address climate change (2020).
- **For NYISO** – Conducted a study of the potential risks to New York power system operations associated with an increased reliance on natural gas for power generation (2020).
- **For Commonwealth Edison** – Provided testimony on issues associated with a request for a certificate of public convenience and necessity by NextEra related to the proposed acquisition of the transmission assets of Rochelle Municipal Utilities (2020).
- **For Repsol Energy North America** – Provided strategic assistance related to the potential impacts of electric system market rules and public policy on the potential marketability of liquefied natural gas (LNG) in New England (2020).
- **For Liberty Utilities** – Provided testimony on the need for and economic and environmental impacts of the proposed Granite Bridge pipeline and LNG project in the State of New Hampshire (2020).
- **For NYISO** – Coauthored a white paper for NYISO on the potential impacts of a proposed carbon pricing mechanism in New York on power prices; energy policy; and economic, environmental, and public health impacts in New York (2020).
- **For NTE Energy** – Provided testimony before the Connecticut Siting Council on the need for and potential benefits associated with a proposed new natural gas-fired power plant in the State of Connecticut (2020).
- **AltaGas** – Provided testimony before the Maryland and District of Columbia public utility commissions on the potential environmental impacts of a proposed merger between AltaGas and Washington Gas (2017–2018).

- **For Calpine Corporation** – Coauthored a white paper on the design of a proposed carbon trading mechanism in Massachusetts (2017).
- **For Vermont Gas** – Provided testimony on the prudence of Vermont Gas’ decisions and investments with respect to the Addison natural gas project (2017).
- **For the Vermont Electric Power Company (VELCO)** – Coauthored a white paper on VELCO’s capital structure associated with its transmission assets and operations (2016).
- **For the Merck Family Fund** – Coauthored a white paper on economic principles associated with the trading of emission allowances associated with RGGI (2016).
- **For a consortium of solar companies** – Developed a white paper on the appropriate evaluation and treatment of behind-the-meter solar PV generation from the perspective of net metering policies in Massachusetts (2015).
- **For a group of owners of electric generating facilities** – Developed a comprehensive quantitative and qualitative critique of a utility proposal to invest in electricity storage capability in the State of Texas. Drafted a report for circulation to legislative, regulatory, and market interests stating the results of the critique and analysis (2015).
- **For an energy resource developer** – Conducted a financial and ratepayer analysis of the benefits of a project to develop a power plant and natural gas pipeline in the State of Maine. Submitted testimony to the Maine Public Utilities Commission describing the results (2014–2015).
- **For an energy storage company** – Developed an optimization analysis to evaluate the security, reliability, economic, and environmental benefits and costs of multiple battery storage installations across the Hawaiian Islands in different industry settings (renewable generator, island utility, military base, hotel/resort). Drafted a report presenting the results, considering the state’s unique energy price and fuel security context (2014–2015).
- **For NYISO** – Developed a model to compare cost, resource, and emission outcomes of alternative designs for a capacity market in the State of New York. Coauthored a report presenting the results of the analysis and a comprehensive review of the benefits and drawbacks of moving from a spot to a forward capacity market (FCM) structure. Presented results to NYISO senior management and several meetings of New York electricity market participants and stakeholders (2014–2015).
- **For multiple regional transmission organizations (RTOs)** – Provided strategic support at the board-of-director and senior-management levels for considering the changing structures of retail regulation and wholesale market incentives within their regions (2014–2015).
- **For Calpine Corporation** – Provided testimony on the costs and benefits of different proposals for generation capacity in Florida (2014).
- **For an RTO** – Conducted an internal analysis of the financial risk associated with the RTO’s position in administering the trading of power system transmission rights (2014).
- **For a regional transmission operator** – Conducted a top-to-bottom review of the content and design of the RTO’s Rate Schedule 1 tariff for the collection of operational costs from market participants. Presented results of the analysis to the RTO’s board of directors and senior management (2014).
- **For a retail electricity supplier** – Provided analytic and strategic support with respect to the supplier’s participation in a state regulatory proceeding related to changing the nature of and rate structure for electric distribution service (2014).
- **For Ambri Inc.** – Led a study of the economic feasibility of using battery storage in conjunction with wind and solar for a micro-grid application (2013–2014).
- **For Calpine Corporation** – Provided testimony on the costs and benefits of different proposals for generation capacity in Minnesota (2013).

- **For the New England Independent System Operator (ISO-NE)** – Assisted on several projects related to addressing the codependence of electric and natural gas systems in New England through a mix of short- and long-term market rule changes and administrative actions. Assistance included review of market structures to improve unit performance, particularly under stressed natural gas system conditions; quantification of the costs of potential natural gas and electric system infrastructure, and contractual responses to market rules and administrative actions (e.g., dual-fuel capability, new pipeline investment, LNG purchasing, and firm natural gas transportation agreements); and assistance with a series of discussions between ISO-NE and regional electricity and natural gas market participants. Also quantified the potential benefits of improved performance associated with reduced system interruptions (2012–2013).
- **For the ISO-NE** – Developed an economic supply/demand model of the FCM to estimate the cost impact of integrating a new long-term performance incentive design element into the FCM auctions and pricing structure (2012–2013).
- **For Calpine Corporation** – Filed a report with the EPA on the impact of emergency generation demand response programs on the costs and emissions associated with power system dispatch in the PJM electricity market (2012).
- **For the ISO-NE** – Organized and helped lead a strategic planning initiative to address unit retirement, fuel mix, operational performance, and wind resource integration issues. Oversaw comprehensive generating unit performance analysis and electric-gas system risk review. Conducted a thorough internal risk assessment and key-challenge solution development. Facilitated meetings and developed organizational and concept documents to explore outcomes and assist in deliberations with states and regional industry stakeholders, and participated in external meetings to gain input and feedback (2010–2012).
- **For an RTO** – Conducted a top-to-bottom review of its external market monitoring function and a comprehensive best-practices survey of all internal and external market monitoring functions at US RTOs and independent system operators (ISOs) (2012).
- **For a wind power development company** – Conducted a regional review of wind power development projects and an assessment of potentially valuable projects for acquisition based on power system location and siting viability (2012).
- **For an energy services company** – Oversaw and conducted an analysis of business, legal, and regulatory conditions related to a legal dispute over the legitimacy of a contract for energy and water management services. Coauthored a report to be used in the development of legal strategy and legal proceedings (2012).
- **For an international power company** – Conducted a review of a regional utility’s compliance with the FERC requirements for transmission open access, and developed strategies for the filing of complaints of anticompetitive conduct before the FERC (2011–2012).
- **For an RTO** – Comprehensively reviewed and suggested changes to the design of regional market structures; oversaw data review and analysis related to key market design features and asset performance (2011).
- **For Direct Energy** – Assisted with the development of strategies to increase retail choice in Pennsylvania, including the design of an opt-in descending-clock auction to increase migration from default service to competitive supply. Prepared comments and analysis on utility contract structures. Provided testimony before the Pennsylvania Public Utilities Commission (2011).
- **For Algonquin Gas** – Submitted affidavits and testified in bankruptcy court on the impact on power plant value of changes in market rules related to the FCM in New England. Also provided testimony on the impact on power system reliability of the availability of firm transportation contracts for natural gas supplied to power plants in New England (2010).

- **For an RTO** – Conducted a best-practices and performance metrics analysis to benchmark the ISO’s performance against industry peers with respect to responsiveness to consumers, stakeholders, and policymakers. Drafted a report with comprehensive benchmarking and performance metric recommendations; participated in stakeholder discussions (2010).
- **For a power generators trade association** – Developed and facilitated an all-day group discussion concerning key economic, environmental, legal, and policy challenges to the economic viability of existing and new power generation capacity in regional wholesale electricity markets (2010).
- **For a coalition of electric companies** – Coauthored the report “Ensuring a Clean, Modern Electric Generating Fleet while Maintaining Electric System Reliability,” which reviewed the impact on power plant operations of proposed EPA rules to reduce emissions of sulfur dioxide, nitrogen oxides, mercury, and other hazardous air pollutants. Presented findings to numerous regional and national industry and regulatory groups (2010).
- **For an industry coalition** – Conducted a study and coauthored a white paper (with Dr. Susan Tierney) for the New England Energy Alliance on New England energy infrastructure needs and policy issues (e.g., facility siting policies, RGGI/climate change) influencing the future addition of energy infrastructure in the region (2006).
- **For an interstate pipeline company and offshore LNG developer** – Authored a report related to recent developments in the supply and demand for natural gas in New England, and surveyed the development, regulatory, and commercial status of proposed LNG projects across the US (2006); coauthored a report (with Susan Tierney) providing an overview of Northeastern natural gas markets and conditions, and an assessment of natural gas supply and demand conditions (2005).
- **For independent system operators** – Managed several projects and coauthored reports or analyses for the Northeast region’s ISOs/RTOs related to ISO/RTO annual strategic plans; market monitoring and mitigation best practices; and the links between wholesale electricity markets and local distribution company retail prices (2002–2006).
- **For electric utilities** – Managed or participated in numerous engagements with wires-only as well as vertically integrated electric utilities within New England and across the country related to rate case strategy and regulatory support; strategic planning; power supply resource planning and procurement (including the role of independent monitor of utility procurements); price and environmental analyses related to the siting of new high-voltage transmission lines; and evaluation of the allocation of SO<sub>2</sub> and NO<sub>x</sub> emission allowances under the EPA Clean Air Interstate Rule (CAIR) program (2001–2006).
- **For a developer of a land-based LNG facility** – Assisted in the preparation of confidential reports on US natural gas supply/demand conditions, market pricing indices, US LNG facilities’ status, Northeast interstate and intrastate pipeline infrastructure conditions and prospects, and LNG supply contract prices, terms, and conditions (2006).
- **For retail energy providers** – Managed projects and authored or coauthored confidential reports on the experience with retail competition in the US, a benefit/cost analysis of wholesale electricity competition, and comparative analyses of retail electricity prices for utility and competitive retail suppliers in select states (2004–2006).
- **For merchant generating companies/coalitions** – Managed production cost dispatching analyses for strategic planning related to the construction of new generating capacity in New England; assisted in the development of regulatory proposals for new wholesale market organizations and policies in New England (2001–2002).
- **For a major interstate pipeline owner/operator** – Modeled the electrical load characteristics of pipeline operations and utility rate structures to quantify the extent to which the company was being overcharged for electricity services. Supported company intervention in public utility commission proceedings and with analytical support in settlement negotiations (2002).

- ***For a renewable power developer association*** – Provided testimony on the potential negative effects – and remedial policy options – related to the impact of locational marginal pricing on the development and operation of renewable generating resources in New England (2001).

## **OTHER PROFESSIONAL ACTIVITIES**

### **AEE**

*Advisory Board* (2011)

## **SELECTED REPORTS, TESTIMONY, PUBLICATIONS, AND PRESENTATIONS**

Testimony of Paul J. Hibbard before the Rhode Island Public Utilities Commission, Docket No. 22-20-NG on behalf of The Narragansett Electric Company, d/b/a Rhode Island Energy (September 1, 2022)

Answering Testimony of Paul J. Hibbard before FERC, Docket No. ER20-2441-002 on behalf of McKenzie Electric Cooperative, Inc. (July 15, 2022)

Testimony of Paul J. Hibbard before the US District Court, Southern District of Florida, Ft. Lauderdale Division on behalf of Simon Property Group et al., Case No. 0:20-cv-60981-AMC (June 6, 2022)

*Methane Reduction Technology Electricity and Abatement Costs: The Cost to Power Zero-Emission Pneumatic Controllers and Pumps in Grid-Connected and Remote Locations*, with Scott Ario and Elisa Gan (May 6, 2022)

Affidavit of Paul Hibbard and Charles Wu before FERC, Docket No. ER22-772-000 on behalf of NYISO (January 5, 2022)

*Modifications to the BSM Construct in the NYISO Capacity Market: Analysis of Potential Capacity Market Competitiveness and Reliability Outcomes*, with Charles Wu (December 2021)

*Economic Impact of a Clean Electricity Payment Program*, with Pavel Darling and Luke Daniels (September 2021)

“Why Hydrogen?,” presentation during the EBC Energy Resources Webinar: Future of Green Hydrogen – Earthshot Effort to Meet the Needs of Climate Change (September 30, 2021)

“Decarbonization and The Power System,” presentation during the Northeast Public Power Association RodE&O Conference and Expo, Engineering Track (September 22, 2021)

“Net Zero Carbon: What Is It and What Should It Be?,” presentation during the LDC Gas Forum (September 14, 2021)

“Net Zero Carbon: What Is It and What Should It Be?,” presentation during the NEPPA Annual Conference, General Session (August 23–24, 2021)

“Motivating Customers to Decarbonize with an Eye Toward Equity,” presentation during the 2021 NARUC Summer Policy Summit (July 18, 2021)

*Economic Impact of Stimulus Investment in Advanced Energy for America*, with Pavel Darling (June 2021)

*Economic Impact of Stimulus Investment in Transportation Electrification*, with Pavel Darling (June 2021)

“A Step Through the Looking Glass – Outlook for Natural Gas in the Northeast,” Webinar for the Northeast Gas Association (NGA) Regional Market Trends Forum, What are the Market Pathways and Their Various Implications (April 29, 2021)

*Accelerating Job Growth and an Equitable Low-Carbon Energy Transition: The Role of the Clean Energy Accelerator*, with Susan F. Tierney (January 2021)

“Carbon Pricing: This Is the Way,” presentation on a plenary panel to the New England Restructuring Roundtable (December 11, 2020)

“Approaches to Meeting Decarbonization Mandates: Important Decisions with Cost, Equity, and Reliability Implications,” presentation during the EUCI Decarbonization Summit on state decarbonization opportunities (December 9, 2020)

“Approaches to Meeting Decarbonization Mandates: Important Decisions with Cost, Equity, and Reliability Implications,” presentation during the New England Energy Summit on state decarbonization opportunities (November 23, 2020)

Affidavit of Paul J. Hibbard before FERC, Docket No. ER21-502-000 on behalf of NYISO (November 30, 2020)

*Economic Impact of Stimulus Investment in Advanced Energy* (series of 10 state-specific reports), with Pavel G. Darling (September–October 2020)

*Climate Change Impact and Resilience Study – Phase II: An Assessment of Climate Change Impacts on Power System Reliability in New York State*, with Charles Wu, Hannah Krovetz, Tyler Farrell, and Jessica Landry (September 2020)

Presented virtually at the Annual NECA Conference on how New England can transition away from fossil fuels, as well as the costs, reliability, and societal implications of moving toward low-carbon alternatives (September 30, 2020)

*Independent Consultant Study to Establish New York ICAP Demand Curve Parameters for the 2021/2022 through 2024/2025 Capability Years – Final Report*, with Todd Schatzki, Charles Wu, Christopher Llop, Matthew Lind, Kiernan McInerney, and Stephanie Villarreal (September 9, 2020)

*Utility energy efficiency program performance from a climate change perspective: A comparison of structural and behavioral programs*, with Jonathan Baker, Mona Birjandi-Feriz, and Hannah Krovetz (August 2020)

“Energy Efficiency for Climate, Not Ratepayers,” presentation on a plenary panel to the American Council for an Energy-Efficient Economy (ACEEE) Summer Study Session (August 19, 2020)

For the New England Power Generators Association (NEPGA), coauthored a report assessing the potential use of carbon pricing in New England; the analysis applied tested industry models to identify effective and efficient economy-wide pricing of carbon dioxide (CO<sub>2</sub>) emissions consistent with New England states’ GHG emission reduction targets (June 23, 2020)

*Carbon Pricing for New England: Context, Key Factors, and Impacts*, with Joseph Cavicchi (June 2020)

“Decarbonization and Wholesale Markets in New England – Looking Ahead: Achieving 80% GHG Reduction by 2050,” presentation on a plenary panel to the Association of Energy Engineers Conference, “ISO-NE in 2050: Getting to an advanced energy future in New England,” Boston, MA (March 18, 2020)

“Decarbonization and Natural Gas in the Northeast,” panel moderator and presenter at the EUCI conference on Natural Gas Decarbonization, Denver, CO (January 22–23, 2020)

*Fuel and Energy Security in New York State: An Assessment of Winter Operational Risks for a Power System in Transition*, with Charles Wu (November 2019)

*Clean Energy in New York State: The Role and Economic Impacts of a Carbon Price in NYISO’s Wholesale Electricity Markets*, with Susan F. Tierney (October 2019)

“Natural Gas in Power Generation: Role Going Forward,” 7th Annual Maine Natural Gas Conference to discuss power generation in the New England region. Falmouth, ME (October 3, 2019)

Direct Testimony of Paul J. Hibbard before the New Hampshire Public Utilities Commission on the need for and economic and environmental impacts of proposed Liberty Utilities Granite Bridge pipeline and LNG project, Docket No. DG 17-152 (June 28, 2019)

Rebuttal Testimony on Reopening of Paul J. Hibbard before the Illinois Commerce Commission on Behalf of Commonwealth Edison, Docket No. 18-0843 (May 31, 2019)

Pre-filed Testimony of Paul J. Hibbard before the Connecticut Siting Council on behalf of NTE Connecticut LLC, Docket No. 470 (January 18, 2019)

*Vehicle Fuel-Economy and Air Pollution Standards: A Literature Review of the Rebound Effect*, with Susan F. Tierney, Benjamin Dalzell, Grace Howland, Jonathan Baker, Tom Beckford, Sarah Centanni, Asie Makarova, and Scott Ario (June 28, 2018)

“An Expanding Carbon Cap-and-trade Regime? A Decade of Experience with RGGI Charts a Path Forward,” with Susan F. Tierney and Pavel G. Darling, *The Electricity Journal* (June 2018)

Testimony of Paul J. Hibbard before the District of Columbia on behalf of AltaGas, Case No. 1142 (May 25, 2018)

*The Economic Impacts of the Regional Greenhouse Gas Initiative on Nine Northeast and Mid-Atlantic States*, review of RGGI’s third three-year compliance period (2015–2017), with Susan F. Tierney, Pavel G. Darling, and Sarah Cullinan (April 2018)

Post-Settlement Testimony of Paul J. Hibbard before the Maryland Public Service Commission on behalf of AltaGas, Case No. 9449 (January 5, 2018)

Rebuttal Testimony of Paul J. Hibbard before the Public Service Commission of the District of Columbia on behalf of AltaGas, Formal Case No. 1142 (October 27, 2017)

*Capacity Resource Performance in NYISO Markets: An Assessment of Wholesale Market Options*, with Todd Schatski and Sarah Bolthrunis (November 2017)

*RGGI and Emissions Allowance Trading: Options for Voluntary Cooperation Among RGGI and Non-RGGI States*, with Ellery Berk (July 2017)

“Analytical Issues in Linking,” presentation on Virginia and the Regional Greenhouse Gas Initiative, Virginia Commonwealth University, Richmond, VA (July 12, 2017)

*Electricity Markets, Reliability and the Evolving U.S. Power System*, with Susan Tierney and Katherine Franklin (June 2017)

“Storage and Microgrids – New Applications,” panel presentation during the Electricity Advisory Committee’s Energy Storage Session (June 8, 2017)

Supplemental Affidavit of Paul J. Hibbard before FERC, Docket No. ER17-386-000 on behalf of NYISO (December 18, 2016)

Affidavit of Paul J. Hibbard before FERC, Docket No. ER17-386-000 on behalf of NYISO (November 18, 2016)

*Evaluation of Vermont Transco, LLC Capital Structure*, with Craig Aubuchon and Mike Cliff (October 2016)

Rebuttal Testimony of Paul J. Hibbard before the State of Vermont Public Service Board on behalf of Vermont Gas Systems Inc., Docket Nos. 8698 and 8710 (September 26, 2016)

*RGGI and CO<sub>2</sub> Emissions Trading Under the Clean Power Plan: Options for Trading Among Generating Units in RGGI and Other States*, Susan Tierney and Ellery Berk (July 12, 2016)

Affidavit of Paul J. Hibbard before the FERC, Docket No. ER16-1751-000 on behalf of the NYISO (May 20, 2016)

Declaration of Paul J. Hibbard and Andrea M. Okie in the US Court of Appeals for the District of Columbia Circuit, Case No. 15-1363 (and consolidated cases) on behalf of multiple parties (December 8, 2015)

*Power System Reliability in New England: Meeting Electric Resource Needs in an Era of Growing Dependence on Natural Gas*, report for the Massachusetts Office of the Attorney General, with Craig Aubuchon (November 2015)

Testimony of Paul J. Hibbard before the Senate Committee on Global Warming and Climate Change, *Power System Reliability in New England: Meeting Electric Resource Needs in an Era of Growing Dependence on Natural Gas* (November 24, 2015)

*The Economic Impacts of the Regional Greenhouse Gas Initiative on Nine Northeast and Mid-Atlantic States*, review of RGGI’s Second Three-Year Compliance Period (2012–2014), with Andrea Okie, Susan Tierney, and Pavel Darling (July 14, 2015)

*Electric System Reliability and EPA’s Clean Power Plan: The Case of MISO*, report for the Energy Foundation, with Susan Tierney and Craig Aubuchon (June 8, 2015)

*Net Metering in the Commonwealth of Massachusetts: A Framework for Evaluation* (May 2015)

*NYISO Capacity Market: Evaluation of Options*, report for the NYISO, with Todd Schatzki, Craig Aubuchon, and Charles Wu (May 2015)

*Ohio's Electricity Future: Assessment of Context and Options*, report for Advanced Energy Economy, with Andrea Okie (April 2015)

*Electric System Reliability and EPA's Clean Power Plan: The Case of PJM*, report for the Energy Foundation, with Susan Tierney and Craig Aubuchon (March 16, 2015)

*Electric System Reliability and EPA's Clean Power Plan: Tools and Practices*, report for the Energy Foundation, with Susan Tierney and Craig Aubuchon (February 2015)

*Tools States Can Utilize for Managing Compliance Costs and the Distribution of Economic Benefits to Consumers Under EPA's Clean Power Plan*, Electricity Forum, with Andrea Okie and Susan Tierney (February 2015)

*The Economic Potential of Energy Efficiency*, report for the Environmental Defense Fund, with Katherine Franklin and Andrea Okie (December 2014)

*Assessment of EPA's Clean Power Plan: Evaluation of Energy Efficiency Program Ramp Rates and Savings Levels*, report for the Environmental Defense Fund and National Resources Defense Council, with Andrea Okie and Katherine Franklin (December 2014)

"EPA's Proposed Clean Power Plan and States' Planning for Implementation," presentation to the Power-Gen International Annual Conference (December 2014)

"Storage/Renewables Valuation: A Case Study Hitting Multiple Perspectives," presentation to the Caribbean Renewable Energy Forum 2014 (October 2014)

"Electric Industry Transformation: A New World, or a Step Through the Looking Glass?" presentation to the New England Independent System Operator Quarterly Meeting (September 2014)

"Consumers, Markets, and Infrastructure: New England at a Crossroads," presentation to the New England Consumer Liaison Group (September 2014)

"Columbia River Treaty Hydropower: Perspectives on Power Benefits," presentation to the LSI Conference on the Columbia River Treaty (September 2014)

Direct Testimony of Paul J. Hibbard on Behalf of Calpine Construction Finance Company, L.P., before the Florida Public Service Commission, Docket No. 140110-E1 (July 2014)

"States in Control: EPA's Clean Power Plan and State Implementation," presentation at the National Association of Regulatory Utility Commissioners Summer Meetings (July 2014)

"EPA's Clean Power Plan: States' Tools for Reducing Costs and Increasing Benefits to Consumers," with Andrea Okie and Susan Tierney, *The Electricity Journal* (July 2014)

Direct Testimony of Paul J. Hibbard on behalf of Calpine Construction Finance Company, L.P., before the Florida Public Service Commission, Docket No. 140110-E1 (July 14, 2014)

“Project Vigilance: Value of Ambri Batteries at Joint Base Cape Cod,” presentation to the Raab Restructuring Roundtable, Boston MA (June 2014)

*Further Explanation on Rate Calculations*, with Todd Schatzki, memo to the New England Independent System Operator Markets Committee on setting the compensation rate for the ISO Winter Program (May 28, 2014)

“Markets, Infrastructure, and Policy: New England at a Crossroads,” presentation to the US/Canada Cross-Border Power Summit (April 2014)

“Siting Infrastructure: Economic and Siting Hurdles,” presentation to the US/Canada Cross-Border Power Summit (April 2014)

*Economic Impact of the Green Communities Act in the Commonwealth of Massachusetts: Review of the Impacts of the First Six Years*,” with Susan Tierney and Pavel Darling (March 4, 2014)

*Crediting Greenhouse Gas Emission Reductions from Energy Efficiency Investments: Recommended Framework for Proposed Guidance on Quantifying Energy Savings and Emission Reductions in Section 111(d) State Plans Implementing the Carbon Pollution Standards for Existing Power Plants*, report for the Environmental Defense Fund, with Andrea Okie (March 2014)

“Climate Policy and the Economy,” presentation to the 2014 Joint Institute for Strategic Energy Analysis Annual Meeting, NREL, Golden CO (March 2014)

Testimony of Paul Hibbard and Todd Schatzki on behalf of the New England Independent System Operator before the Federal Energy Regulatory Commission, Docket Nos. ER14-1050-000 and ER14-1050-001 (February 12, 2014)

*Project Vigilance: Functional Feasibility Study for the Installation of Ambri Energy Storage Batteries at Joint Base Cape Cod*, report for demonstration project under the MassInnovate Program of the Massachusetts Clean Energy Center, with Steve Carpenter, Pavel Darling, Margaret Reilly, and Susan Tierney (February 2014)

Testimony of Paul J. Hibbard before the Maine Public Utilities Commission on behalf of Loring Holdings LLC; testimony described the results of a financial and ratepayer analysis of the benefits of a project to develop a power plant and natural gas pipeline in the State of Maine (2014–2015)

Rebuttal Testimony of Paul Hibbard on behalf of Calpine Corporation before the Minnesota Public Utilities Commission, MPUC Docket No. E-002/CN-12-1240 (October 18, 2013)

Direct Testimony of Paul Hibbard on behalf of Calpine Corporation before the Minnesota Public Utilities Commission, MPUC Docket No. E-002/CN-12-1240 (September 27, 2013)

*Assessment of the Impact of ISO-NE’s Proposed Forward Capacity Market Performance Incentives*, with Todd Schatzki (September 2013)

“Market Monitoring at US RTOs,” presentation to the 12th Annual Gas and Power Institute, Houston, TX (August 2013)

Testimony of Paul J. Hibbard before the Massachusetts Department of Public Utilities on behalf of the Massachusetts Department of Energy Resources, DPU 13-07 (May 31, 2013)

Testimony of Paul Hibbard before the House Committee on Energy and Commerce, Subcommittee on Energy and Power, *The Role of Regulators and Grid Operators in Meeting Natural Gas and Electric Coordination Challenges* (March 19, 2013)

Testimony of Paul J. Hibbard, on behalf of the Massachusetts Department of Energy Resources, on the ratepayer and social benefits of reducing methane leaks from a local natural gas distribution company's system (2013)

*California's Advanced Energy Economy – Advanced Energy Business Leaders' Perspectives and Recommendations on California's Energy Policies*, with Andrea Okie and Susan Tierney, Advanced Energy Economy Institute, (February 2013)

*Information from the Literature on the Potential Value of Measures that Improve System Reliability*, memo to the New England Independent System Operator (January 24, 2013)

*Information on the Range of Costs Associated with Potential Market Responses to Address the Risks Associated with New England's Reliance on Natural Gas*, New England Independent System Operator (January 24, 2013)

*Summary of Quantifiable Benefits and Costs Related to Select Targeted Infrastructure Replacement Programs*, with Craig Aubuchon, report for the Barr Foundation, (January 2013)

“Demand Response in Capacity Markets: Reliability, Dispatch and Emission Outcomes,” *The Electricity Journal*, with Andrea Okie and Pavel Darling (November 2012)

“The Electric Generation Landscape – A Marathon of Challenges,” presentation to SNL Generation Landscape, Chicago IL (October 2012)

“Economics, EPA, and Old Capacity – Bring Out Your Dead,” presentation to LSI Energy in the Northeast, Boston MA (September 2012)

Paul Hibbard, *Reliability and Emission Impacts of Stationary Engine-Backed Demand Response in Regional Power Markets*, report to the EPA on behalf of Calpine Corporation (August 2012)

“Uncertainty in Electricity Infrastructure Development – Key Drivers, International Context,” presentation to NCEA Annual Conference, Brainerd, MN (June 2012)

“The Interdependence of Electricity and Natural Gas: Current Factors and Future Prospects,” with Todd Schatzki, *The Electricity Journal* (May 2012)

“Economic Impacts of RGGI,” presentation to the New Hampshire Environmental Business Council (April 2012)

Testimony of Paul Hibbard before the California Legislature, *The Economic Impacts of RGGI's First Three Years*, California Select Committee on the Environment, the Economy, and Climate Change (March 27, 2012)

Testimony of Paul Hibbard before the New Hampshire Legislature, *RGGI and the Economy – Following the Dollars*,” New Hampshire House Committee on Science, Technology, and Energy (February 14, 2012)

Testimony of Paul Hibbard before the Massachusetts Legislature, *RGGI and the Economy – Following the Dollars*,” Massachusetts Senate Committee on Global Warming and Climate Change (February 13, 2012)

“Economic Impacts of RGGI: Following the Dollars,” presentation to the California Business Climate Network, with Susan Tierney (February 2012)

“Carbon Control and the Economy: Economic Impacts of RGGI’s First Three Years,” with Susan Tierney, *The Electricity Journal* (December 2011)

“Public Policy Transmission: Competition and Cooperation,” presentation to the Energy Bar Association Renewables Subcommittee, Washington, DC (November 2011)

“Competitive Markets and Wind Power: Challenge and Opportunity,” presentation to the Governors’ Wind Energy Coalition, Washington, DC (November 2011)

*The Economic Impacts of the Regional Greenhouse Gas Initiative on Ten Northeast and Mid-Atlantic States; Review of the Use of RGGI Auction Proceeds from the First Three-Year Compliance Period*, with Susan Tierney, Andrea Okie, and Pavel Darling (November 15, 2011)

Testimony before the Pennsylvania Public Utilities Commission on retail opt-in auctions (November 10, 2011)

“Interdependence and Opportunity: The Growing Link Between Electricity and Natural Gas,” presentation to the Colorado Oil & Gas Association Energy Epicenter Conference, Denver, CO (August 2011)

*Potomac River Generating Station: Update on Reliability and Environmental Considerations*, with Pavel Darling and Susan Tierney (July 19, 2011)

“Retirement is Coming: Preparing for New England’s Capacity Transition,” *Public Utilities Fortnightly* (June 2011)

*Generation Fleet Turnover in New England: Modeling Energy Market Impacts*, with Todd Schatzki, Pavel Darling, and Bentley Clinton (June 2011)

*Solar Development Incentives: Status of Colorado’s Solar PV Program, Practices in Other States, and Suggestions for Next Steps*, with Susan Tierney and Andrea Okie (June 30, 2011)

“The Balancing Act: Challenges in Traversing the Modernization of New England’s Infrastructure,” presentation to the NECA Annual Conference, Mystic, CT (May 2011)

“Renewables v. Gas: The Future of New England Infrastructure,” presentation to the EBC Energy Seminar, Waltham, MA (April 2011)

“Upcoming Power Sector Environmental Regulations: Framing the Issues About Potential Reliability/Cost Impacts,” presentation to the Raab Restructuring Roundtable, Boston, MA (October 2010)

“Carbon Regulation: Action and Convergence Spanning the Pond,” presentation to the Energy Smart Conference, Boston, MA (October 2010)

“Renewables Development – A Tricky Time to be Placing Bets,” presentation to the NECA Renewables Committee, Boston, MA (October 2010)

“Energy Infrastructure Challenges in the Current Policy Environment, A Wide Angle Point of View,” presentation to NARUC, Providence, RI, September 2010.

*Ensuring a Clean, Modern Electric Generating Fleet while Maintaining Electric System Reliability*, with Susan F. Tierney, Michael J. Bradley, Christopher Van Atten, Amlan Saha, and Carrie Jenks (August 2010)

“Renewables Development – National Policies, New England Progress,” presentation to the National Association of State Energy Officials Annual Meeting, Boston, MA (September 2010)

“Northeast US and Eastern Canada – Competitive Markets and Renewable Resource Development,” presentation to the LSI Conference on US/Canada Energy Transactions, Vancouver, BC (August 2010)

“Renewables in the Northeast – Local Opportunities, National Context,” presentation to the Council of State Governments, Portland, ME (August 2010)

“Ensuring a Clean, Modern Electric Generating Fleet while Maintaining Electric System Reliability,” with Susan Tierney, Michael Bradley, Christopher Van Atten, Amlan Saha, and Carrie Jenks (August 2010)

“Federal Transmission Legislation,” comments to Capitol Hill briefing of the Coalition for Fair Transmission Policy, Washington, DC (April 2010)

“Transmission Planning & Cost Allocation Alternatives under Order 890,” comments to the Energy Bar Association’s 64th Meeting, Washington, DC (April 2010)

“Deregulation and Sustainable Energy,” class lecture, Massachusetts Institute of Technology (Jonathan Raab Energy Course), Cambridge, MA (March 2010)

“Transmission for Renewables,” presentation to the Raab Restructuring Roundtable, Boston, MA (March 2010)

“US Electric Power Transmission: The Battle of the Jurisdictions,” comments to CERAWeek 2010 (March 2010)

“New England Blueprint and the Federal Context,” presentation to the New England Independent System Operator Consumer Liaison Group Meeting, Westborough, MA (February 2010)

“Interconnection-Wide Planning and Renewable Energy,” comments to the National Wind Coordinating Collaborative, Transmission Update Briefing (December 2009)

“Infrastructure Planning,” comments to the Northeast Energy and Commerce Association Power Markets Conference, Westborough, MA (November 2009)

“Transmission for Renewables - Risks and Opportunities for the Northeast,” presentation to the Governor’s Clean Energy Innovation Forum, New Brunswick, NJ (October 2009)

“Renewable Energy Development – The Role of Markets and Planning,” presentation to the Northeast Power Planning Council General Meeting, Cambridge, MA (September 2009)

“Transmission Planning,” comments to the Federal Energy Regulatory Commission Technical Conference on Transmission Planning Processes Under Order No. 890, Docket No. AD09-8-000, Philadelphia, PA (September 2009)

“New England Governors’ Blueprint – Purpose and Context,” presentation to the Raab Restructuring Roundtable, Boston, MA (September 2009)

“Wind, Transmission, and Federal Legislation,” comments to the MIT Wind Group, Cambridge, MA (Fall 2009)

“National Transmission Policy,” comments to The Energy Daily’s Transmission Siting Policy Summit, Washington, DC (September 2009)

Testimony before the Massachusetts Joint Committee on Telecommunications, Utilities and Energy Hearing to Review Implementation of the Green Communities Act, Boston, MA (July 8, 2009)

“Federal Transmission Legislation,” comments to the National Association of State Utility Consumer Advocates, Boston, MA (July 2009)

“Renewable Energy Development – The Role of Markets and Planning,” presentation to the Governor’s Wind Energy Coalition, Washington, DC (July 2009)

“Transmission and Renewables: ISO and Regulator Perspectives” comments to the Raab Restructuring Roundtable, Boston, MA (June 2009)

“Renewable Development in and for New England: Massachusetts’ Perspective,” presentation to Law Seminars International, Boston, MA (June 2009)

“Roadmap to New Renewable Resources in New England,” comments on the New England Governors’ Blueprint to the New England Conference of Public Utilities Commissioners Annual Symposium, Newport, RI (May 2009)

“Comments of Chairman Paul Hibbard,” presentation to the EBC Energy Seminar: New Transmission – The Key to Renewable Resource Integration in New England, Boston, MA (April 2009)

“Coordinating Wind and Transmission Development – Who Pays?” comments to the 2009 Platts Wind Power Development Conference, Chicago, IL (March 2009)

“Integrating Energy and Environmental Regulations in Massachusetts,” presentation to the Northeast Sustainable Energy Association Building Energy Conference, Boston, MA (March 2009)

“One Reason for the GCA: Energy Pricing in Massachusetts,” presentation to the South Shore Coalition, Hingham, MA (January 2009)

“Non-Reliability Transmission: State Choice and Control,” presentation to the New England Conference of Public Utility Commissioners Transmission Group, Chelmsford, MA (January 2009)

“Regulation and Renewable Energy Policy,” panel moderator, Center for Resource Solutions National Renewable Energy Marketing Conference, Denver, CO (October 2008)

“Energy Pricing in Massachusetts (... and What We Should Do About It),” presentation to the Berkshire Gas Large Commercial and Industrial Customer Annual Meeting, Lenox, MA (October 2008)

“Conversation with Chairman Hibbard,” presentation to the New England Energy Alliance, Boston, MA (September 2008)

“Creating the Path: Delivering Clean Energy through Transmission Improvements,” presentation to the New England Independent System Operator Lights, Power, Action Conference, Boston, MA (September 2008)

“Distributed Resources, the Decoupling Model, and the Green Communities Act,” presentation to the Raab Restructuring Roundtable, Boston, MA (September 2008)

“Resource Planning: The Contribution of Efficiency and Renewables in Massachusetts,” presentation to the Law Seminars International Renewable Energy in New England Conference, Boston, MA (September 2008)

“Remarks to Economic Studies Working Group,” ESWG Committee Meeting, Westborough, MA (July 2008)

“Power Trade: Market Context and Opportunities,” presentation to the New England Governors’ Council/Eastern Canadian Premiers’ Energy Dialogue, Montreal, Canada (May 2008)

“New England Transmission Investment,” presentation to the Municipal Electric Association of Massachusetts Annual Business Meeting, North Falmouth, MA (April 2008)

“Bringing Power from the North,” presentation to the Raab Restructuring Roundtable, Boston, MA (February 2008)

“Natural Gas: Drivers of Supply, Demand, and Prices,” comments to the Guild of Gas Managers (November 2007)

“Generation and Demand Outlook for New England,” presentation to NECA Dinner Meeting, Cambridge, MA (September 2007)

“Comments on ISO’s Draft Regional System Plan,” presentation to the Independent System Operator Planning Advisory Committee, Boston, MA (September 2007)

“Regulatory Pressures, Policy Opinions,” presentation to the Environmental Business Council, Boston, MA (July 2007)

“Is New England Ensuring the Adequacy and Cost Effectiveness of the Region’s Transmission Grid?” panel moderator, New England Conference of Public Utility Commissioners Annual Symposium, Mystic, CT (June 2007)

“Energy Regulation in Massachusetts – Concerns and Options,” presentation to the Raab Restructuring Roundtable, Boston, MA (June 2007)

“View From the Regulatory Bench,” comments to the New England Energy Conference and Exposition, Groton, CT (May 2007)

“Energy for New England – The Demand, Supply and Price Context,” presentation to Massachusetts Municipal Wholesale Electric Cooperative Annual Meeting, Boylston, MA (May 2007)

“Demand Resources in New England: New Opportunities and Future Directions,” presentation to the New England Independent System Operator Annual Demand Resources Summit, Westborough, MA (May 2007)

“Power Supply for the New England Region,” presentation to the Boston Bar Association, Boston, MA (March 2007)

“Fuel Supplies and the Need for Fuel Diversity: Forecast for Global Fuel Markets and the Likely Impact on Electric Generation in the Northeast,” presentation to the Law Seminars International Seminar on Resource Adequacy and Reliability in the Northeast (October 16, 2006)

“Consumers and Politicians Claim They Want Cheap, Reliable and Clean Energy – Do They Have the Will to Make That Happen?” presentation to the National Association of Energy Service Companies New England Regional Meeting (September 28, 2006)

“The Need for New LNG Infrastructure in Massachusetts and New England: An Update,” report prepared for Northeast Gateway Energy Bridge, LLC, and Algonquin Gas Transmission, LLC (August 2006)

“Natural Gas & LNG for New England: What’s Needed & How To Get It,” presentation to the Foundation for American Communications Meeting on *New England’s Energy Needs – Who Pays and Who Suffers?* (May 17, 2006)

*Energy Policy Act Section 1813 Comments: Report of the Ute Indian Tribe of the Uintah and Ouray Reservation for Submission to the US Departments of Energy and Interior*, with Susan F. Tierney, in cooperation with the Ute Indian Tribe of the Uintah and Ouray Reservation (May 15, 2006)

“US Energy Infrastructure Vulnerability: Lessons From the Gulf Coast Hurricanes,” report to the National Commission on Energy Policy (March 2006)

“New England Energy Infrastructure – Adequacy Assessment and Policy Review” prepared for the New England Energy Alliance, with Susan Tierney (November 2005)

“Federal Legislative Developments in Energy,” presentation to the Law Seminars International Seminar on Energy in the Northeast (October 2005)

“The Benefits of New LNG Infrastructure in Massachusetts and New England: The Northeast Gateway Project,” prepared for Northeast Gateway Energy Bridge, LLC, and Algonquin Gas Transmission, LLC, with Susan Tierney (June 2005)

“Climate Change Policy – New Business and Regulatory Risks,” presentation to EnviroExpo & Conference (May 2005)

“Carbon Cap & Trade Allocation Options – Practical Considerations,” “Carbon Trading Program Emission Allowances: Practical Considerations for Allocation,” and “Allocation of Carbon Allowances to Mitigate Electric Sector Costs,” reports to the National Commission on Energy Policy (May 2005)

“U.S. Energy Infrastructure: Demand, Supply and Facility Siting,” report to the National Commission on Energy Policy (November 2004)

Comments of Susan F. Tierney and Paul. J. Hibbard on their own behalf before the Federal Energy Regulatory Commission, in the Matters of Solicitation Processes for Public Utilities (Docket No. PL04-6-000) and Acquisition and Disposition of Merchant Generation Assets by Public Utilities (Docket No. PL04-9-000), on the role of independent monitors and independent evaluators in public utility resource solicitations (July 1, 2004)

“Energy and Environmental Policy in the United States: Synergies and Challenges in the Electric Industry,” prepared for Le Centre Français sur les Etats-Unis (The French Center on the United States), with Susan Tierney (July 2003)

“Controlling China’s Power Plant Emissions after Utility Restructuring: The Role of Output-Based Emission Controls,” with Barbara A. Finamore, Nancy Seidman, and Tara Szymanski, *The Sinosphere Journal* (July 2002)

“Siting Power Plants in the New Electric Industry Structure: Lessons from California and Best Practices for Other States,” with Susan Tierney, *The Electricity Journal* (June 2002)

“Siting Power Plants: Recent Experience in California and Best Practices in Other States,” with Susan Tierney, prepared for The Hewlett Foundation and The Energy Foundation (February 2002)

“Setting and Administering Output-Based Emission Standards for the Power Sector: A Case Study of the Massachusetts Output-Based Emission Control Programs,” prepared for the China Sustainable Energy Program, Paul Hibbard, N. Seidman, and B. Finamore (October 2001)

Joint Affidavit before the Federal Energy Regulatory Commission, New England Power Pool and ISO New England, Inc., Docket No. ER01-2329, on behalf of the New England Renewable Power Producers Association, with Janet Besser, (July 3, 2001)

“Output-Based Emission Control Programs – U.S. Experience,” prepared for the China Sustainable Energy Program, with N. Seidman, B. Finamore, and David Moskovitz (May 2000)

“P2 and Power Plants: The Massachusetts Allowance Trading Program,” *Proceedings of the National Pollution Prevention Roundtable* (March 2000)

“Safety and Environmental Comparisons of Stainless Steel with Alternative Structural Materials for Fusion Reactors,” with Ann P. Kinzig, and John P. Holdren, *Fusion Technology* (August 1994)

“Utility Environmental Impacts: Incentives and Opportunities for Policy Coordination in the New England Region,” US EPA CX817494-01-0, RCEE Core Group (June 1994)

“Final Report: Code Development Incorporating Environmental, Safety, and Economic Aspects of Fusion Reactors,” UC-BFE-027, Fusion Environmental and Safety Group, University of California, Berkeley (1991)

## Concord Municipal Light Board

### September 2022 – Financial Presentation

**Narrative:**

The data presented below and in the accompanying financial statements present the unofficial results as of September 30, 2022 and for the 9 months ended September 30, 2022. Those figures are being compared to figures from the same date and period in the previous year. Unrestricted Cash continued to decrease from the prior year while Restricted Cash rose. The deficit in unrestricted cash reduced from its peak earlier in 2022. Overall, cash increased \$689k due mainly to the addition of the PCA in 2022. Accounts receivable increased substantially over the prior year due to rate increases. Accounts Payable remained consistent with the prior year. Outstanding debt has steadily decreased from the prior year. Electric Sales and the Cost of Power have increased significantly over 2021.

**Statistical Section:**

	September 30, 2022	September 30, 2021	Variance
<b>Unrestricted Cash</b>	\$ (1,183,428.25)	\$ (244,669.66)	\$ (1,538,758.59)
<b>Restricted Cash and Special Funds</b>	\$ 14,993,921.12	\$ 12,766,055.68	\$ 2,227,865.44
<b>Utility Billing Accounts Receivable</b>	\$ 3,784,624.25	\$ 2,904,581.02	\$ 880,043.23
<b>Inventory</b>	\$ 1,468,093.65	\$ 1,275,015.08	\$ 193,078.57
<b>Accounts Payable</b>	\$ 2,114,892.30	\$ 2,004,073.36	\$ 110,818.94
<b>Outstanding Debt</b>	\$ 2,650,000.00	\$ 3,316,000.00	\$ (666,000.00)
<b>YTD Electric Sales</b>	\$ 26,501,273.50	\$ 22,254,800.84	\$ 4,246,472.66
<b>YTD Purchased Power</b>	\$ 16,240,306.76	\$ 13,990,723.18	\$ 2,249,583.58
<b>Broadband Sales</b>	\$ 1,066,374.52	\$ 982,413.30	\$ 83,961.22
<b>YTD kWh Sold</b>	131,433,095	128,339,904	3,093,191
<b>YTD kWh Purchased</b>	133,217,035	131,790,002	1,427,033
<b>Sales per kWh</b>	0.2016	0.1733	0.0120
<b>Cost per kWh</b>	0.1219	0.1062	0.0117
<b>Number of Electric Customers</b>	8,315	8,274	41
<b>Number of Broadband Customers</b>	1,606	1,525	81

*Disclaimer: The financial information included in this presentation is preliminary, unaudited and subject to revision upon completion of the Light Plant's closing and audit process.*

**Balance Sheet**  
as of September 30, 2022

	LIGHT PLANT	BROADBAND	COMBINED
<b>ASSETS</b>			
<b>CASH AND RESTRICTED INVESTMENTS</b>			
Unrestricted Cash	(2,005,474.98)	222,046.73	(1,783,428.25)
Restricted Cash	10,607,673.76	29,586.32	10,637,260.08
Special Deposits	4,311,456.91	45,204.13	4,356,661.04
<b>Total CASH AND RESTRICTED INVESTMENTS</b>	<b>12,913,655.69</b>	<b>296,837.18</b>	<b>13,210,492.87</b>
<b>CURRENT ASSETS</b>			
Investment in Associated Companies	782,056.41	-	782,056.41
Accounts Receivable	5,929,180.84	105,915.76	6,035,096.60
Other Receivables	208,028.18	16,558.51	224,586.69
Prepaid Expenses	3,412,093.47	39,481.70	3,451,575.17
Inventory	1,285,368.59	185,390.96	1,470,759.55
CMLP-Broadband Intercompany	1,843,750.00	(1,843,750.00)	-
<b>Total CURRENT ASSETS</b>	<b>13,460,477.49</b>	<b>(1,496,403.07)</b>	<b>11,964,074.42</b>
<b>NONCURRENT ASSETS</b>			
Depreciable Capital Assets	66,922,797.55	2,848,850.07	69,771,647.62
Nondepreciable Assets	1,416,033.93	-	1,416,033.93
Construction Work In Progress	1,172,736.53	34,772.18	1,207,508.71
Accumulated Depreciation	(33,785,644.21)	(383,965.83)	(34,169,610.04)
Deferred Outflows	2,093,440.84	334,416.16	2,427,857.00
<b>Total NONCURRENT ASSETS</b>	<b>37,819,364.64</b>	<b>2,834,072.58</b>	<b>40,653,437.22</b>
<b>TOTAL ASSETS</b>	<b>64,193,497.82</b>	<b>1,634,506.69</b>	<b>65,828,004.51</b>
<b>LIABILITIES</b>			
<b>CURRENT LIABILITIES</b>			
Accounts Payable	3,228,474.26	117,247.83	3,345,722.09
Accrued Liabilities	185,278.96	22,346.32	207,625.28
Customer Deposits	580,979.83	-	580,979.83
Cust Adv for Construction	239,087.10	9,326.66	248,413.76
Compensated Absences - Current	212,904.80	54,349.30	267,254.10
<b>Total CURRENT LIABILITIES</b>	<b>4,446,724.95</b>	<b>203,270.11</b>	<b>4,649,995.06</b>
<b>NONCURRENT LIABILITIES</b>			
Bonds Payable - Noncurrent	2,287,000.00	363,000.00	2,650,000.00
OPEB - Noncurrent	1,060,504.00	20,010.00	1,080,514.00
Unamortized Bond Premium	194,455.64	57,096.93	251,552.57
Net Pension Liability	1,001,836.00	162,413.00	1,164,249.00
Deferred Inflows	6,112,021.13	341,696.83	6,453,717.96
<b>Total NONCURRENT LIABILITIES</b>	<b>10,655,816.77</b>	<b>944,216.76</b>	<b>11,600,033.53</b>
<b>TOTAL LIABILITIES</b>	<b>15,102,541.72</b>	<b>1,147,486.87</b>	<b>16,250,028.59</b>
<b>NET POSITION</b>	<b>45,509,424.59</b>	<b>323,520.16</b>	<b>45,832,944.75</b>
NET (INCOME) LOSS	3,581,531.51	163,499.66	3,745,031.17
<b>TOTAL EQUITY</b>	<b>49,090,956.10</b>	<b>487,019.82</b>	<b>49,577,975.92</b>
<b>TOTAL LIABILITY AND EQUITY</b>	<b>64,193,497.82</b>	<b>1,634,506.69</b>	<b>65,828,004.51</b>

**SUMMARY Balance Sheet - Electric**  
3 Year Comparison, As of

	September 30, 2022	September 30, 2021	September 30, 2020
<b>ASSETS</b>			
<b>CASH AND RESTRICTED INVESTMENTS</b>			
Unrestricted Cash	(2,005,474.98)	(440,229.70)	4,772,691.10
Restricted Cash	10,607,673.76	8,587,258.41	8,003,045.78
Special Deposits	4,311,456.91	4,077,835.74	3,587,128.12
<b>Total CASH AND RESTRICTED INVESTMENTS</b>	<b>12,913,655.69</b>	<b>12,224,864.45</b>	<b>16,362,865.00</b>
<b>CURRENT ASSETS</b>			
Investment in Associated Companies	782,056.41	687,610.82	353,765.61
Accounts Receivable	5,929,180.84	4,535,489.10	4,066,406.06
Other Receivables	208,028.18	116,341.98	193,300.96
Prepaid Expenses	3,412,093.47	3,338,662.09	3,497,291.19
Inventory	1,285,368.59	1,125,643.15	1,191,290.40
CMLP-Broadband Intercompany	1,843,750.00	1,900,000.00	-
<b>Total CURRENT ASSETS</b>	<b>13,460,477.49</b>	<b>11,703,747.14</b>	<b>9,302,054.22</b>
<b>NONCURRENT ASSETS</b>			
Depreciable Capital Assets	66,922,797.55	66,539,831.88	64,897,466.87
Nondepreciable Assets	1,416,033.93	1,416,033.93	1,416,033.93
Construction Work In Progress	1,172,736.53	880,841.53	1,890,390.37
Accumulated Depreciation	(33,785,644.21)	(31,945,376.08)	(30,283,320.60)
Deferred Outflows	2,093,440.84	2,614,083.00	2,998,019.00
<b>Total NONCURRENT ASSETS</b>	<b>37,819,364.64</b>	<b>39,505,414.26</b>	<b>40,918,589.57</b>
<b>TOTAL ASSETS</b>	<b>64,193,497.82</b>	<b>63,434,025.85</b>	<b>66,583,508.79</b>
<b>LIABILITIES</b>			
<b>CURRENT LIABILITIES</b>			
Accounts Payable	3,228,474.26	3,064,719.78	5,323,037.61
Accrued Liabilities	185,278.96	164,802.95	318,456.02
Customer Deposits	580,979.83	557,624.83	557,014.83
Cust Adv for Construction	239,087.10	83,256.92	61,347.49
Compensated Absences - Current	212,904.80	197,878.64	216,777.31
<b>Total CURRENT LIABILITIES</b>	<b>4,446,724.95</b>	<b>4,068,283.12</b>	<b>6,476,633.26</b>
<b>NONCURRENT LIABILITIES</b>			
Bonds Payable - Noncurrent	2,287,000.00	2,902,000.00	3,587,000.00
OPEB - Noncurrent	1,060,504.00	2,138,955.00	2,384,868.00
Unamortized Bond Premium	194,455.64	156,332.59	189,263.96
Net Pension Liability	1,001,836.00	2,908,860.00	3,515,760.00
Deferred Inflows	6,112,021.13	4,781,662.40	3,750,105.28
<b>Total NONCURRENT LIABILITIES</b>	<b>10,655,816.77</b>	<b>12,887,809.99</b>	<b>13,426,997.24</b>
<b>TOTAL LIABILITIES</b>	<b>15,102,541.72</b>	<b>16,956,093.11</b>	<b>19,903,630.50</b>
<b>NET POSITION</b>	<b>45,509,424.59</b>	<b>43,719,014.37</b>	<b>45,807,392.92</b>
NET (INCOME) LOSS	3,581,531.51	2,758,918.37	872,485.37
<b>TOTAL EQUITY</b>	<b>49,090,956.10</b>	<b>46,477,932.74</b>	<b>46,679,878.29</b>
<b>TOTAL LIABILITY AND EQUITY</b>	<b>64,193,497.82</b>	<b>63,434,025.85</b>	<b>66,583,508.79</b>

**SUMMARY Balance Sheet - Broadband**  
3 Year Comparison, As of

	September 30, 2022	September 30, 2021	September 30, 2020
<b>ASSETS</b>			
<b>CASH AND RESTRICTED INVESTMENTS</b>			
Unrestricted Cash	222,046.73	195,560.04	(1,619,946.31)
Restricted Cash	29,586.32	24,056.42	20,203.03
Special Deposits	45,204.13	76,905.11	34,661.91
<b>Total CASH AND RESTRICTED INVESTMENTS</b>	<b>296,837.18</b>	<b>296,521.57</b>	<b>(1,565,081.37)</b>
<b>CURRENT ASSETS</b>			
Accounts Receivable	105,915.76	99,071.38	92,938.57
Other Receivables	16,558.51	57,419.35	14,577.11
Prepaid Expenses	39,481.70	54,779.11	(39,029.79)
Inventory	185,390.96	149,419.23	161,420.59
CMLP-Broadband Intercompany	(1,843,750.00)	(1,900,000.00)	-
<b>Total CURRENT ASSETS</b>	<b>(1,496,403.07)</b>	<b>(1,539,310.93)</b>	<b>229,906.48</b>
<b>NONCURRENT ASSETS</b>			
Depreciable Capital Assets	2,848,850.07	2,700,978.71	2,464,752.90
Nondepreciable Assets	-	-	-
Construction Work In Progress	34,772.18	42,149.76	43,713.46
Accumulated Depreciation	(383,965.83)	(311,244.10)	(234,637.00)
Deferred Outflows	334,416.16	189,349.00	150,784.00
<b>Total NONCURRENT ASSETS</b>	<b>2,834,072.58</b>	<b>2,621,233.37</b>	<b>2,424,613.36</b>
<b>TOTAL ASSETS</b>	<b>1,634,506.69</b>	<b>1,378,444.01</b>	<b>1,089,438.47</b>
<b>LIABILITIES</b>			
<b>CURRENT LIABILITIES</b>			
Accounts Payable	117,247.83	131,623.00	35,354.79
Accrued Liabilities	22,346.32	23,826.54	45,784.40
Cust Adv for Construction	9,326.66	1,861.00	7,980.00
Compensated Absences - Current	54,349.30	29,849.33	21,457.26
<b>Total CURRENT LIABILITIES</b>	<b>203,270.11</b>	<b>187,159.87</b>	<b>110,576.45</b>
<b>NONCURRENT LIABILITIES</b>			
Bonds Payable - Noncurrent	363,000.00	414,000.00	388,000.00
OPEB - Noncurrent	20,010.00	27,027.00	722.00
Unamortized Bond Premium	57,096.93	66,111.75	62,029.20
Net Pension Liability	162,413.00	188,967.00	171,456.00
Deferred Inflows	341,696.83	91,134.42	46,329.03
<b>Total NONCURRENT LIABILITIES</b>	<b>944,216.76</b>	<b>787,240.17</b>	<b>668,536.23</b>
<b>TOTAL LIABILITIES</b>	<b>1,147,486.87</b>	<b>974,400.04</b>	<b>779,112.68</b>
<b>NET POSITION</b>	<b>323,520.16</b>	<b>249,163.09</b>	<b>83,404.35</b>
NET (INCOME) LOSS	163,499.66	154,880.88	226,921.44
<b>TOTAL EQUITY</b>	<b>487,019.82</b>	<b>404,043.97</b>	<b>310,325.79</b>
<b>TOTAL LIABILITY AND EQUITY</b>	<b>1,634,506.69</b>	<b>1,378,444.01</b>	<b>1,089,438.47</b>

Statement of Revenues and Expenses  
period ended September 30, 2022

	LIGHT PLANT	BROADBAND	COMBINED
<b>OPERATING REVENUE</b>			
Base Revenues	27,399,918.16	1,154,860.13	28,554,778.29
Rate Refunds	(905,059.29)	-	(905,059.29)
Other Revenues	452,648.34	20,811.07	473,459.41
<b>Total OPERATING REVENUES</b>	<b>26,947,507.21</b>	<b>1,175,671.20</b>	<b>28,123,178.41</b>
<hr/>			
<b>Total REVENUES</b>	<b>26,947,507.21</b>	<b>1,175,671.20</b>	<b>28,123,178.41</b>
<hr/>			
<b>OPERATING EXPENSES</b>			
Purchased Power	16,240,306.76	161,642.11	16,401,948.87
General Operating Expenses	3,512,391.45	633,516.66	4,145,908.11
Depreciation	1,432,930.80	58,354.37	1,491,285.17
Customer Accounts	1,006,145.72	19,521.52	1,025,667.24
Transmission	61,202.86	-	61,202.86
Distribution	771,630.55	117,041.67	888,672.22
<b>Total OPERATING EXPENSES</b>	<b>23,024,608.14</b>	<b>990,076.33</b>	<b>24,014,684.47</b>
<hr/>			
<b>OTHER INCOME AND EXPENSE</b>			
Interest Income	41,861.94	-	41,861.94
Interest Expense	(75,020.81)	(14,325.01)	(89,345.82)
Intergovernmental Obligations	(333,000.00)	(14,291.45)	(347,291.45)
Loss (Gain) on Investments/Disposal of Fixed Assets	(13,478.25)	(239.85)	(13,718.10)
Other	38,269.56	6,761.10	45,030.66
<b>Total OTHER INCOME AND EXPENSE</b>	<b>(341,367.56)</b>	<b>(22,095.21)</b>	<b>(363,462.77)</b>
<hr/>			
<b>TOTAL EXPENSE</b>	<b>23,365,975.70</b>	<b>1,012,171.54</b>	<b>24,378,147.24</b>
<hr/>			
<b>NET (INCOME) LOSS</b>	<b>3,581,531.51</b>	<b>163,499.66</b>	<b>3,745,031.17</b>

Statement of Revenues and Expenses - Electric  
3 Year Comparison, As of

	September 30, 2022	September 30, 2021	September 30, 2020
<b>OPERATING REVENUE</b>			
Base Revenues	27,399,918.16	22,767,801.66	20,563,743.58
Rate Refunds	(905,059.29)	455,248.09	(30,457.14)
Other Revenues	452,648.34	355,612.57	438,518.97
<b>Total OPERATING REVENUES</b>	<b>26,947,507.21</b>	<b>23,578,662.32</b>	<b>20,971,805.41</b>
<hr/>			
<b>Total REVENUES</b>	<b>26,947,507.21</b>	<b>23,578,662.32</b>	<b>20,971,805.41</b>
<hr/>			
<b>OPERATING EXPENSES</b>			
Purchased Power	15,936,854.29	13,990,723.18	13,223,546.63
General Operating Expenses	3,512,391.45	3,810,239.04	3,490,031.50
Depreciation	1,432,930.80	1,424,961.27	1,390,451.25
Customer Accounts	1,006,145.72	819,037.26	772,214.97
Transmission	61,202.86	96,264.09	84,780.47
Distribution	771,630.55	666,314.84	794,613.82
<b>Total OPERATING EXPENSES</b>	<b>22,721,155.67</b>	<b>20,807,539.68</b>	<b>19,755,638.64</b>
<hr/>			
<b>OTHER INCOME AND EXPENSE</b>			
Interest Income	41,861.94	341,981.68	89,101.87
Interest Expense	(75,020.81)	(82,246.52)	(104,294.28)
Intergovernmental Obligations	(333,000.00)	(338,625.00)	(355,874.99)
Loss (Gain) on Investments/Disposal of Fixed Assets	(13,478.25)	42,013.71	2,607.49
Other	38,269.56	24,671.86	24,778.51
<b>Total OTHER INCOME AND EXPENSE</b>	<b>(341,367.56)</b>	<b>(12,204.27)</b>	<b>(343,681.40)</b>
<hr/>			
<b>TOTAL EXPENSE</b>	<b>23,062,523.23</b>	<b>20,819,743.95</b>	<b>20,099,320.04</b>
<hr/>			
<b>NET (INCOME) LOSS</b>	<b>3,884,983.98</b>	<b>2,758,918.37</b>	<b>872,485.37</b>

**Statement of Revenues and Expenses - Broadband**  
**3 Year Comparison, As of**

	<u>September 30, 2022</u>	<u>September 30, 2021</u>	<u>September 30, 2020</u>
<b>OPERATING REVENUE</b>			
Base Revenues	1,154,860.13	1,068,376.15	1,007,575.74
Other Revenues	20,811.07	(11,166.11)	16,344.64
<b>Total OPERATING REVENUES</b>	<b>1,175,671.20</b>	<b>1,057,210.04</b>	<b>1,023,920.38</b>
<hr/>			
<b>Total REVENUES</b>	<b>1,175,671.20</b>	<b>1,057,210.04</b>	<b>1,023,920.38</b>
<hr/>			
<b>OPERATING EXPENSES</b>			
Purchased Power	161,642.11	146,547.76	160,485.36
General Operating Expenses	633,516.66	561,736.19	441,218.34
Depreciation	58,354.37	55,442.53	52,981.38
Customer Accounts	19,521.52	30,579.51	15,713.61
Distribution	117,041.67	99,163.26	119,248.68
<b>Total OPERATING EXPENSES</b>	<b>990,076.33</b>	<b>893,469.25</b>	<b>789,647.37</b>
<hr/>			
<b>OTHER INCOME AND EXPENSE</b>			
Interest Income	-	-	-
Interest Expense	(14,325.01)	(15,196.22)	(17,243.88)
Intergovernmental Obligations	(14,291.45)	(4,658.53)	-
Loss (Gain) on Investments/Disposal of Fixed Assets	(239.85)	(392.81)	(697.01)
Other	6,761.10	11,387.65	10,589.32
<b>Total OTHER INCOME AND EXPENSE</b>	<b>(22,095.21)</b>	<b>(8,859.91)</b>	<b>(7,351.57)</b>
<hr/>			
<b>TOTAL EXPENSE</b>	<b>1,012,171.54</b>	<b>902,329.16</b>	<b>796,998.94</b>
<hr/>			
<b>NET (INCOME) LOSS</b>	<b>163,499.66</b>	<b>154,880.88</b>	<b>226,921.44</b>

## Agenda Topic #7

Goal	Type	Priority	Responsible Party	Additional Info.
<b>Policies (p.40)</b>				
<ul style="list-style-type: none"> <li>Universal Access</li> </ul>	Policy	Highest	Select Board/Town Meeting	The Select Board can recommend an article at Town Meeting
<ul style="list-style-type: none"> <li>Expansion outside current territory</li> </ul>	Policy	Low	Select Board/Town Meeting	Because Concord Broadband still has strong demand and continues to grow, this is likely a discussion to have down the road.
<ul style="list-style-type: none"> <li>Support Economic Vitality, Sustainability, Equity &amp; Inclusion</li> </ul>	Policy	High	Select Board/Light Board/TM Economic Development	Rate subsidies in progress; update expected soon
<ul style="list-style-type: none"> <li>Affordable Housing</li> </ul>	Policy	Medium	Select Board/Housing Groups	Rate subsidies in progress; update expected soon
<ul style="list-style-type: none"> <li>Public Safety</li> </ul>	Policy	Medium	Select Board/Town Manager	These are policy discussion for the Select Board; Concord Broadband will work to escalate when possible.
<ul style="list-style-type: none"> <li>Education</li> </ul>	Policy	Medium	Select Board/School Dept.	These are policy discussion for the Select Board; Concord Broadband will work to escalate when possible.
<ul style="list-style-type: none"> <li>Government Access (PEG)</li> </ul>	Policy	Medium	Select Board/PAAC	These are policy discussion for the Select Board; Concord Broadband will work to escalate when possible.
<b>Recommended metrics for tracking (p.41)</b>				
<ul style="list-style-type: none"> <li>Parcels served</li> </ul>	Metric	Medium	Town Staff/Light Board	Complete; will report quarterly

Goal	Type	Priority	Responsible Party	Additional Info.
• Premises served	Metric	Medium	Town Staff/Light Board	Complete; will report quarterly
• Road miles served	Metric	Medium	Town Staff/Light Board	Complete; will report quarterly
• Subscribers	Metric	High	Town Staff/Light Board	Complete; will report monthly
• Take rate	Metric	Medium	Town Staff/Light Board	Complete; will report quarterly, beginning in March 2023
• Churn	Metric	High	Town Staff/Light Board	Working on this; update expected soon. Churn happens for one of two reasons: (1) Customers move out of their premises or (2) They are not satisfied with their service. We will be creating 3 churn statistics: one that captures #1, one that captures #2, and one that captures the combined churn.
• Installations	Metric	Highest	Town Staff/Light Board	Complete; will report monthly. We are only
<b>Governance (p.44)</b>				
• Track progress against completion	Metric	Highest	Light Board/Town Staff	Complete; this is reported quarterly
• Rate of return policy	Policy	High	Light Board/Town Staff	We are currently working within the Town's "Reserves" Finance policy intended to recommend a fund balance level, but it could be expanded to set a desired rate of return.
• Financial goals with regular reporting	Policy	High	Light Board/FinCom	Working on this; there is ongoing work on financial models
• Retained earnings and reserve policy	Policy	High	Light Board/FinCom	We have not yet begun working on this.

Goal	Type	Priority	Responsible Party	Additional Info.
<b>Strategic Planning Goals (p.45)</b>				
<ul style="list-style-type: none"> <li>Marketing and growth</li> </ul>	Metric	High	Light Board/Town Staff	Working on this
<ul style="list-style-type: none"> <li>Business return</li> </ul>	Policy	High	Light Board/Town Staff	Working on this
<b>Budgeting Process for Fiber Expansion (p.46)</b>				
<ul style="list-style-type: none"> <li>Expand to fill existing opportunities</li> </ul>	Planning	High	Light Board/Town Staff	Working on this; this was intended to be gaining customers where we have service to create capital so we can expand.
<ul style="list-style-type: none"> <li>External funding sources</li> </ul>	Research	Medium	Light Board/Town Staff	Working on this; we are looking into available grants and ARPA funds. Bipartisan Infrastructure Law may have additional funds.
<ul style="list-style-type: none"> <li>ARPA Relief Funds Allocation, incl. Lost Revenue</li> </ul>	Finance	Highest	Select Board/Town Manager	Working on this; we have had a few discussions with the Town Manager on this topic.
<ul style="list-style-type: none"> <li>Review/Confirm Internal Loan Findings</li> </ul>	Finance	Highest	Financial Audit Comm/Staff	Complete
<ul style="list-style-type: none"> <li>Review and Rescind PILOF to MMN</li> </ul>	Finance	High	Select Board/Town Manager	Working on this; update expected soon

Goal	Type	Priority	Responsible Party	Additional Info.
<b>Capital Planning Process (p.46)</b>				
<ul style="list-style-type: none"> <li>Review/Revise Debt financing schedule</li> </ul>	Policy	Highest	Light Board/Town Staff	Working on this; personnel at CMLP in Finance and Administration have signaled willingness to extend repayment schedule based on the amount required under the current structure.
<ul style="list-style-type: none"> <li>Quantifying cost of expansion</li> </ul>	Planning	Medium	Town Staff	Working on this
<ul style="list-style-type: none"> <li>How to fund expansion</li> </ul>	Planning	Medium	Light Board/Town Staff	Working on this; we are look at available grant funds and working on a capital plan.
<ul style="list-style-type: none"> <li>Revise/refine methods for computing ROI</li> </ul>	Planning	Medium	Light Board/Town Staff	Working on this; there is ongoing work on financial models
<b>Construction and Logistics (p.47)</b>				
<ul style="list-style-type: none"> <li>Vibratory plow – direct buried fiber cables</li> </ul>	Operations	Medium	Town Staff	Working on this; we have done research on applicability in Concord and the materials/tools used.
<ul style="list-style-type: none"> <li>Revise/Refine Communication conduit construction standards and guidance</li> </ul>	Policy	Medium	Town Staff	We have not yet begun working on this.
<ul style="list-style-type: none"> <li>Integrate Fiber construction with the Roads Program – focus on Streets without fiber that already have underground electric</li> </ul>	Planning	High	Town Staff	Working on this; we have reached out to Concord Public Works to coordinate and better understand their annual roads program.