

MUNICIPAL LIGHT PLANT

David Wood, Director

Concord Light (“CMLP”) is a community-owned electric utility, created for and by the citizens of Concord in 1898. The goal then, as now, was to provide reliable and reasonably priced service in a responsive and thoughtful manner. Our mission is to partner with our customers, civic institutions, and employees to foster a vital community, in the near and in the long term, in which to live, raise a family, work, and operate a business. Our 2018 – 2025 Strategic Plan, available at www.concordma.gov/cmlp, describes our goals:

- Maintain service reliability at a very high level;
- Maintain or increase customer satisfaction and perception of value;
- Provide energy-related services to as many customers as possible;
- Increase revenue and net operating income modestly;
- Reduce greenhouse gas emissions

Our work in 2022 focused on several initiatives designed to achieve those goals.

The Town Manager appoints a five-member, volunteer Light Board comprising local residents. Current Light Board members include (in alphabetical order) Gordon Brockway (Clerk), Brian Foulds (Chair), Pamela Hill (Clerk), Alice Kaufman, and Wendy Rovelli. The Board meets monthly to discuss and/or vote on topics such as rates, power supply and renewable energy options. The Board encourages customers to attend.

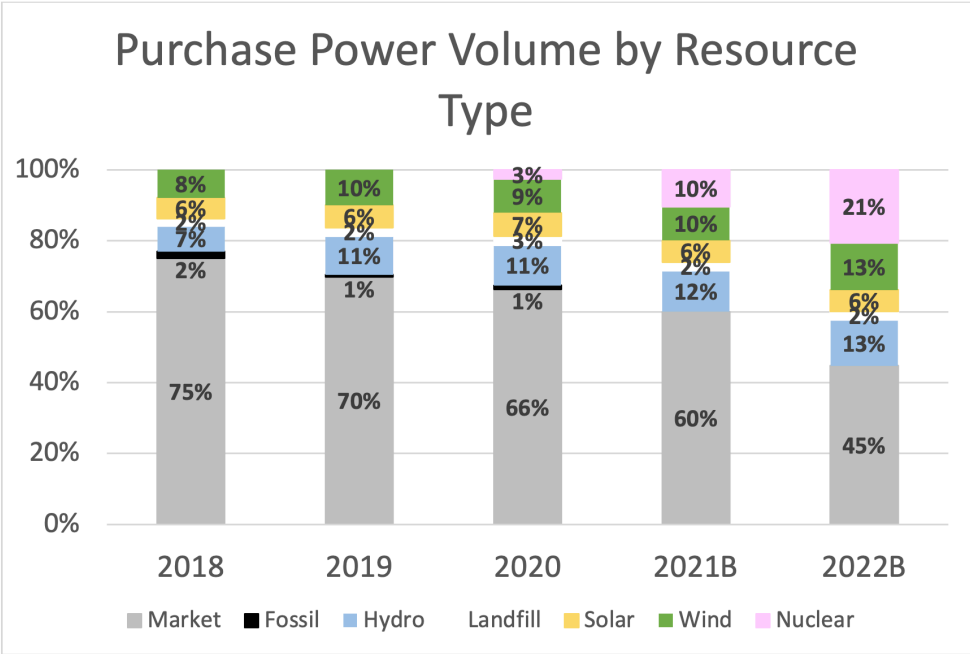
The Concord Municipal Light Plant (CMLP) operates as an Enterprise Fund within the Town government. No property tax money is required or used to operate the Light Plant. All operating expenses including electricity purchases, capital investments, and debt service are paid by the Light Plant customers. In addition, the Light Plant contributes to the Town’s operating budget via a Payment-in-Lieu-of Taxes (PILOT). For 2022, this formula-based payment was \$444,000

Power Supply

All power supply expenses are passed to CMLP’s customer-owners at cost. Power Supply includes the cost of energy, capacity, and transmission. Capacity and transmission are two market services provided by the regional Independent System Operator at Federal Energy Regulatory Commission regulated rates. Energy supply, including the reliable provision of electricity and its price, are managed by CMLP. CMLP has developed a power supply portfolio from multiple sources under a power supply strategy that best suits our community’s needs. The power supply selection strategy included the following tenets:

- Diversified energy supply sources and fuel diversity
- Short and long term agreements to mitigate risk
- Peaking and base load supply sources to match needs
- Inclusion of cost competitive renewable energy sources
- Competitive bids for partial energy agreements on a rotating basis to minimize differences between our cost of power and current markets.

As a result, CMLP has developed a diverse power supply portfolio with a wide variety of suppliers and resources. The chart below shows the sources and fuels that make up the generation portion of CMLP’s supply portfolio.



CMLP is actively replacing fossil-based generating resources with carbon-free sources in a fiscally responsible manner. Below is a list of recent power purchases from non-carbon emitting sources. In 2018 CMLP began collecting an extra \$0.01 per kilowatt hour from customers on all energy sales in order to establish a fund to pay for the purchase of Massachusetts Class 1 renewable energy certificates (“MA Class 1 RECs.”) In September 2020

Non-Carbon Emitting Sources

Project	Location	Year Purchased	% of needs
Canton Mountain Wind	Canton, ME	2017	2%
Seabrook Nuclear	Seabrook, NH	2017	20%
Granite Wind	Coos County, NH	2018	1.5%
Existing Hydro	Housatonic River, CT	2019	3.4%
Chariot Solar	Hinsdale, NH	2019	2.7%
Cabot/Turners Falls	Connecticut River, MA	2020	12.5%
Seabrook Nuclear	Seabrook, NH	2020	15%
Rox Wind	Roxbury, ME	2020	3.6%
Gravel Pitt Solar	CT, MA or NH	2020	1.9%
Nuclear Energy & Capacity	Seabrook, NH	2020	8.0%
Broadleaf Solar	CT, MA or NH TBD	2021	4.3%
Spruce Mt Wind Extension	Woodstock, ME	2022	3.1%

the charge was increased to 0.015 per kilowatt hour, and on January 1, 2021 the charge was increased to 0.02 per kilowatt hour. The table below shows how many RECs were retired by generation year and where the RECs came from – whether they were associated with the purchase of physical energy or purchased separately. Note, CMLP will not complete the purchase of non-associated 2022 RECs until June 15, 2023. The figures provided for 2022 are only estimates.

2.5% in 2021 growing to 12.5% in 2023
 Beginning in 2025
 Beginning in 2023
 Beginning in 2023
 Beginning in 2023 Beginning in 2024
 Beginning in 2026

Generation Year	Associated RECs Retired	Purchased RECs Retired	Total RECs Retired	% of Sales
2022	75,472	95,586	171,057	97%
2021	56,756	84,623	141,379	84%
2020	39,519	42,475	81,994	51%
2019	35,620	55,703	91,323	56%
2018	26,658	74,256	100,914	58%

Despite the increase in REC prices, CMLP is on track to meet its goal of 100% non-emitting electricity by 2030. In 2023 new wind and solar supply contracts will increase the total amount of MA Class 1 RECs. The renewable energy surcharge can be increased to broaden the funds available to offset the cost of either non-associated MA Class 1 REC purchases or renewable energy contracts. As CMLP's purchases of energy from resources with certificates increase further in 2023 and beyond, it is expected that CMLP will be able to retire RECs equal to 100% of its sales with REC prices remaining at current levels.

CMLP will continue expanding its percentage of non-carbon emitting power as market economics allow without increasing rates substantially.

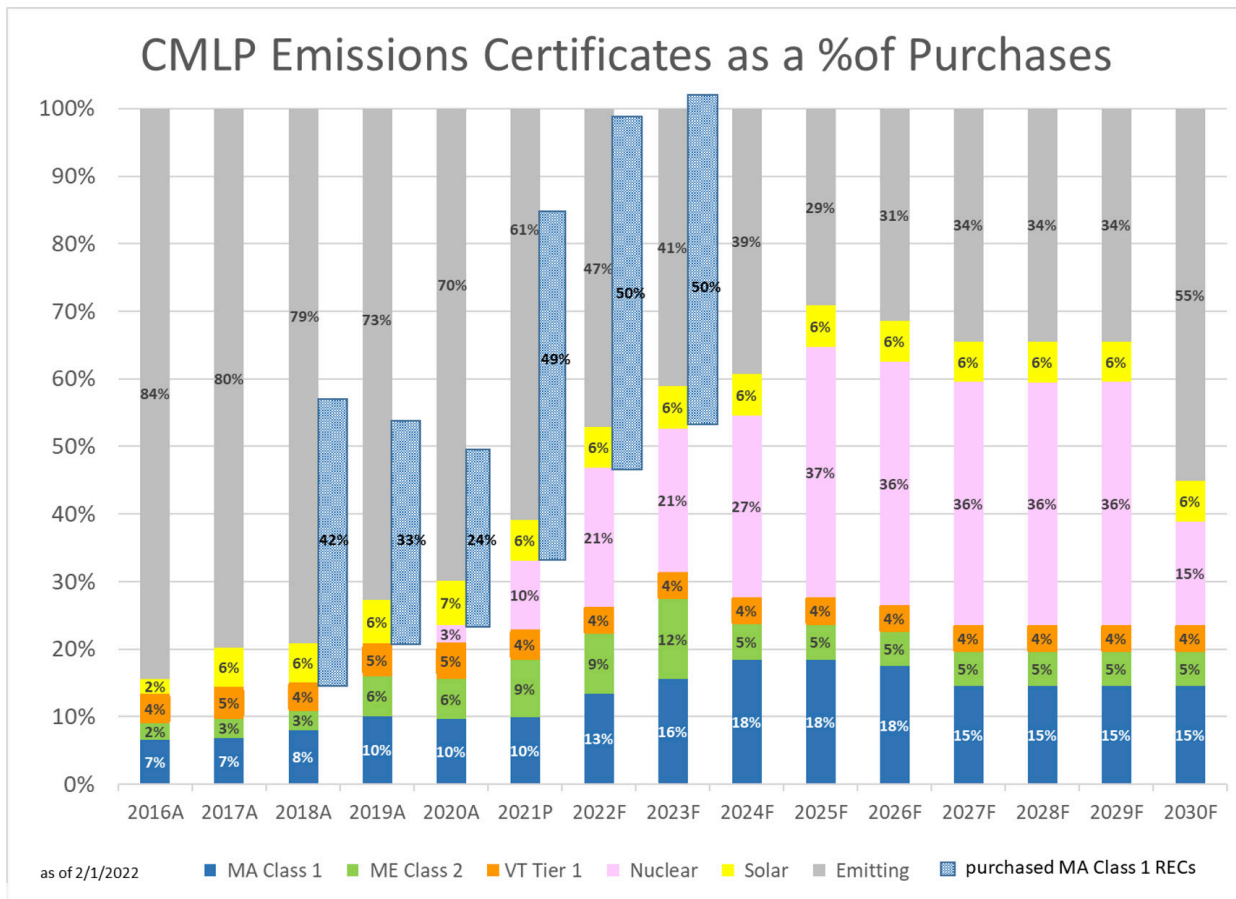
Energy Management

CMLP's energy management services help our customers manage their energy costs and reduce their carbon emissions through electrification, improved efficiency, and generation of carbon-free solar power at their home or business.

CMLP staff, EV Specialists, heating/cooling coaches, and local EV and heat pump owners participated in ten community events this year, talking with attendees about the rebates and services that CMLP offers to help them reduce their energy use and electrify home heating and transportation.

Electric Vehicles

Registry of Motor Vehicles records showed 545



electric vehicles (EVs) garaged in the Town of Concord in early 2022, 3.7% of all vehicle registrations in Concord, and an increase of 16% compared to 2021.

In 2022, CMLP launched a Commercial EV Charging Station Rebate Program to help our customers provide electric vehicle charging at workplaces, apartments, condominiums, schools, shops and more. Concord businesses and multi-unit dwelling properties can get a rebate of up to \$6,000 for the installation of a Level 2 electric vehicle (EV) charging station. CMLP's commercial EV charging station rebate is in addition to rebates available from the state through the MassEVIP Program.

The level of CMLP funding is designed, when combined with a MassEVIP rebate, to cover a substantial portion of the cost of installing a typical \$30,000 dual port charging station.

CMLP's free Electric Vehicle Toll-Free Support Line and Email, which allows Concord residents to ask questions about all things EV, handled over 70 interactions with 44 unique customers in 2022.

CMLP's DriveEV Rebate Program offers rebates ranging from \$350 to \$1,000 upon purchase or lease of a new or pre-owned EV. This range includes higher rebates for Concord families earning less than 80% or 120% of Boston metropolitan area median income. In 2022, its first full year of operation, 27 rebates were distributed through the DriveEV program. Two of those rebates were provided to households earning less than 80% of Boston Metropolitan Area Median Income.

Fifty-seven customers received a \$250 Level 2 home charging system rebate in 2022. Over 270 CMLP customers have programmed 290 EVs to charge off-peak since the EV Miles Program began in 2018, qualifying for bill credits.

Heat Pumps

In 2022, CMLP began offering \$10,000 air source heat pump rebates and \$15,000 ground source heat pump rebates to Concord households that switch from oil, propane, electric resistance or ETS to heating their whole home with heat pumps. For households that switch partially to heat pump heating from those same fuels, CMLP introduced rebates of \$1,250 or \$2,000 per ton of capacity for air source or ground

source heat pumps respectively in 2022. Mass Save began offering the same rebates to gas-heating households that switch to heat pump heating.

CMLP documented 173 heat pump installations in Concord in 2022, up from 71 in 2021. 102 heat pump projects received rebates from CMLP in 2022.

In its first full year of operation, the Concord Clean Comfort Program continued to offer our customers a list of vetted heat pump installers and heating/cooling coaches, who help customers decide if a heat pump is right for them and make the process of switching to heat pumps easier.

The Concord Clean Comfort Program received 310 coaching requests in 2022, averaging almost one per day, and representing 50% more than the number of coaching requests received in 2021. About 90% of those who requested coaching services followed through and meet with a coach, for 282 coaching engagements in 2022. 61% of the heat pump installations in 2022 involved assistance from a coach, up from 35% in 2021.

CMLP rebates also supported installations of 17 heat pump water heaters in 2022, a 70% increase from 2021.

Lawn Mower Rebates

Thanks to funding from a generous Concord resident, CMLP began offering rebates in June 2022 to residents who replace gas-powered lawn mowers with new electrically-powered lawn mowers. Twelve residents each received a \$100 electric lawn mower rebate this year.

Home Energy Assessments

159 customers received home energy assessments from CMLP in 2022, a 94% increase from 2021.

Residential Energy Efficiency Rebates

In mid-2022, CMLP began making larger weatherization rebates available to lower income households. While standard income households are eligible for up to \$1,000 per calendar year, lower income households are eligible for \$1,500 to \$2,000 per year, depending on household size and income. 31 weatherization rebates were distributed to customers in 2022, a 55% increase over the number distributed in 2021. Four households earning less

than 120% of the Boston Metropolitan area median income received the larger rebates.

Beginning in 2022, CMLP also made a Participating Weatherization Contractor List available to our customers. The list is administered by Abode Energy Management. It consists of four contractors who are active in the Mass Save program but are willing to do projects for non-gas heating households in Concord, at standard Mass Save pricing. In the past, when customers have asked for help finding weatherization contractors, we have pointed them to lists on the Mass Save website. However, many of those contractors are not willing to do projects for non-gas customers, which is why we felt it was important to identify contractors who would. These contractors have appropriate insurance, licenses and building science expertise.

Commercial Energy Efficiency Rebates

In 2022, business customers received almost \$6,000 in rebates through CMLP's High Efficiency Lighting Program.

Solar Photovoltaic (PV) Rebates

Thirty-four customers received CMLP's solar rebate in 2022. There are now a total of 456 PV systems on residential and commercial rooftops in Concord with a combined capacity of 4.6MW DC.

COMMUNITY SERVICE

125th Anniversary in 2023

CMLP will celebrate 125 years of service next year in April 2023 and the planning and preparations for the celebration are already underway. Rough plans include hosting a mini open house for customers to come and share birthday cake in April and a larger-scale open house held during Public Power Week in October 2023. Other happenings are being planned as well to make the anniversary celebration complete.

Annual holiday tree lighting

CMLP line crew decorated trees with energy-efficient LED lighting for the holidays in the West Concord business district and at the Monument Square.

Residential Rate Assistance

CMLP offers a Residential Rate Assistance program to Concord residents in financial need. On this rate,

customers can receive a credit of \$0.1000 per kilowatt hour on their first tier of usage. Eligible customers can lower their bills by as much as 50% if they qualify for this rate. Customers must complete an application and be re-certified annually to stay on this program. As of December 2022, there were 166 customers enrolled in the program -- 138 Electric and 28 Water customers.

COVID-19 Assistance

For Concord residents and businesses in financial need during the COVID-19 pandemic, Concord Utilities continued to allow customers extra time to catch up on payment of their bills or to work with Customer Service to devise payment plans and review assistance packages in conjunction with other Town services.

CONCORD MUNICIPAL UTILITIES CUSTOMER SERVICE

The Concord Municipal Utilities Customer Service team is centrally housed at CMLP and provides service and support to residential and commercial services for electric, water, sewer, and broadband. Customers can contact Customer Service at 978-318-3101 or concordutilities@concordma.gov.

ENTERPRISE SOFTWARE

CMLP partnered with NISC (National Information Solutions Cooperative) to implement enterprise software beginning in May 2019 and completing it in 2021. The implementation included the new billing system and SmartHub®, the customer self-service portal. Many Concord Utilities customers have signed up for a SmartHub account since mid-2019, and there are 5,780 customers enrolled with a SmartHub account as of December 2022.

Customers can register for a SmartHub account or download the free app for their smartphone or tablet to access information, receive updates, pay bills and more. Customers can now report an outage, line down or other power-related emergency using SmartHub.

Customers can opt for paperless billing and our payment options including making a payment via SmartHub, credit card, Internet banking, or with our

automated phone system. Customers can also choose to receive one bill for all their utilities or to have multiple accounts mailed together in one envelope.

ADVANCED METERING SYSTEM PROJECT (AMS)

Concord Municipal Light Department (CMLP) and Concord Public Works (CPW) are replacing their existing obsolescing meter systems with a system that will allow two-way communication with customers for improved reliability, efficiency, billing, and customer service. The new metering system will also support Town-wide conservation goals.

More specifically, CMLP and CPW anticipate the Advanced Metering System will:

- 1. Reduce the frequency and duration of outages** by allowing CMLP to isolate outages faster, dispatch repair crews more precisely, and detect equipment in need of repair or replacement.
- 2. Improve operational efficiency** by reducing meter reading costs from a mixed system spanning software and support;
 1. ensuring accurate meter readings especially for water meters by replacing older, end-of-life meters in the field;
 2. reducing labor and vehicle costs for meter reconnects, meter checks, move in and out for final billing;
 3. improving detection of tampering and theft to capture unbilled revenue;
 4. reducing the need for estimated bills due to inaccessible meters;
 5. avoiding expensive power purchases during peak pricing periods by expanding energy management and rate programs to all customers;
 6. reducing the cost of vegetation management by targeting areas with voltage issues using voltage alerts; and
 7. improving safety for employees at risk with on-site premise visits.
- 3. Reduce greenhouse gas emissions** by
 1. decreasing distribution losses (energy waste) through the rightsizing of transformers and voltage management;
 2. promoting solar by enabling net metering;
 3. promoting electric vehicles with the option to charge at off-peak rates;
 4. reducing the use of non-electric company vehicles

- with fewer visits to customers; and
5. enhancing the value of customer-sited battery storage from Time-of-Use rates.

4. Improve customer service by

1. providing a self-service portal to customers containing detailed electric and water usage data for better insight to manage bills,
2. offering Customer Alert Services such as a high bill alert, high usage alert, water leak alerts or usage exceeding a customer set threshold;
3. enabling customers to schedule start and stop service at customer-directed dates and times since a service visit from a technician will not be needed;
4. delivering better outage services by getting targeted notifications from all meters and providing up-to-date outage information on a web portal or mobile application

5. Enable Direct Load Control, automated load control, and customer-driven load control of heating systems, hot water heaters and electric vehicles to lower customer bills and reduce greenhouse gas emissions.

6. Enable time-of-use rates that will: lower customer bills through the improved utilization of infrastructure; promote fairness in revenue recovery; enhance the economics of battery installations; and encourage the charging of electric vehicles during low cost time periods.

CMLP issued a Request for Proposal (RFP) for Consulting Services for a Metering and Communication System(s) Specification and Selection to identify and hire an expert to assist CMLP and CPW select a new system. CMLP hired Lemmerhirt Consulting as the technical lead on the AMS vendor selection project.

With Lemmerhirt Consulting's help in developing the RFP, CMLP issued a Request for Proposal for an Advanced Metering System (AMS) and received nine proposals in response. After a very thorough evaluation process, the RFP Evaluation Team selected the Eaton Corporation AMS solution in November 2021. The RFP Evaluation Team members included a Light Board member, Lemmerhirt Consulting, CMLP senior management and Metering staff, and CPW management.

CMLP executed the Advanced Metering System contract and Purchase Order with Eaton in September 2022. In early November, Eaton was onsite with CMLP

and CPW for the project kickoff and requirements gathering. Eaton and CMLP have begun the procurement process for electric meters, equipment, and water nodes. Due to ongoing supply chain delays, the approximate delivery times for the various meters and water nodes range from 26 weeks to 61 weeks. Communication equipment and software is preliminarily projected to arrive in March 2023 with the first set of residential meters preliminarily scheduled to arrive in May 2023 and integration testing to begin.

For more information about the Advanced Metering System project, the RFP evaluation process, expected benefits of the new system, and project status, go to: <https://concordma.gov/3192/AMS-Project-Status>.

OPERATIONS AND ENGINEERING

Last year was another challenging year for the Town and CMLP. COVID-19 forced the Light Plant to continue our safety and health protocols well into 2022. Despite several challenges, CMLP was able to accomplish many significant undertakings. Physical repairs, software upgrades and a functional transfer trip test on the Emerson Hospital Automatic Transfer Switch were completed. These actions restored the redundancy and reliability of Emerson Hospital's electric service. We also replaced the aged streetlights along Commonwealth Avenue, between the railroad crossing and Laws Brook Road, in West Concord. The new lights are an upgrade to the previous lights and will provide years of safe, energy efficient light to the area. CMLP Operations also completed a comprehensive chainsaw training course. This course increases the safety and efficiency of our crews when responding to storm damage or performing routine tree trimming work. Our main focus was, and continues to be, providing safe and reliable electric power and broadband service to our customers. Below is a list of some of our other highlighted items.

Underground Direct Buried Upgrades

Bartkus Farm subdivision direct buried replacement project was completed as part of CMLP's direct buried replacement program. As part of this and other direct buried projects, CMLP crews installed a new underground primary and secondary electrical and communication duct bank, new underground primary and secondary conductors, devices, and transformers.

All of this work enhances reliability and resiliency. CMLP has started to collect data and has started preliminary planning for the conversion of Wright Farm Road. Of note, the associated direct buried services are privately owned and are the responsibility of the owner to maintain and replace at their expense.

Underground Conversion Projects

As part of the Cambridge Turnpike Improvement Project (CPW Project), CMLP has committed to converting Cambridge Turnpike's electrical distribution from overhead to underground. Currently approximately half of the house services have been converted. This conversion, along with the entire Cambridge Turnpike Project, greatly improves electric reliability, expansion of broadband services and visual impact in the area. CMLP plans to continue work on Cambridge Turnpike this year, converting the remaining overhead section from overhead to underground.

Overhead Reconductoring

Due to the age and condition of the existing primary conductors along Strawberry Hill Road Area, CMLP plans to start the strategic replacement. This project will afford CMLP engineering the opportunity to update this section to current industry standards. These updates will increase the resiliency and reliability of the overhead distribution system, resulting in fewer outages for customers. The remainder of the Fairhaven Area was converted from 4kV to 13.8kV (standard distribution voltage for CMLP) this year. All components, conductors, transformers, poles, etcetera were inspected and upgraded as necessary. This work will greatly improve the reliability and safety in the Fairhaven Area.

CMLP Pole Inspection, Maintenance and Replacements

This year we completed a comprehensive inspection of the utility poles that CMLP is responsible for maintaining. The inspection is used to allow CMLP engineers to determine the overall condition and health of our utility poles individually and system wide. The information gathered give us the ability to repair or replace poles and upgrade electrical facilities as required. This adds to the resiliency of our distribution system.

Verizon Pole Inspection, Maintenance and Replacements

Verizon conducted pole inspections on several utility poles that they are responsible for maintaining in Concord. Approximately fifty poles have been scheduled for replacement. As a result, CMLP has started the process of transferring the electric primary wires, electric secondary wires and broadband fiber on each pole. This work will continue for the foreseeable future in coordination with Verizon.

Substation Equipment Maintenance

During 2022, basic routine maintenance was performed as part of normal operations. In 2023, CMLP will perform comprehensive maintenance on Substations 219 and 223. This maintenance evolution will encompass circuit breaker maintenance, relay testing and repairs of any deficiencies discovered. Again, this type of deep maintenance is very important and required for a safe and reliable distribution system.

Tree Trimming

This past year, CMLP worked with Davey Resource Group to finalize our tree trimming standards and procedures. Our previous tree trimming specification was updated with current methodology, technologies, regulations and standards. Utilizing our new specification, we plan to begin large-scale tree trimming again this year. Of note, line crews performed tree trimming and removal of branches and trees as necessary throughout the system, to keep our system safe and reliable in 2022.

Substation Metering Upgrade Project / SCADA

Power quality meter replacement is required at both of CMLP's Substations. Several of the existing meters either provide unreliable information or are not supported by their respective manufacturers any longer. These meters are needed to measure power consumption, loss, efficiency, etcetera on all distribution feeders. Currently, the meters and equipment needed to begin this project have been identified, and a plan is being formulated. We expect to take delivery and begin installation later this year or early next year.

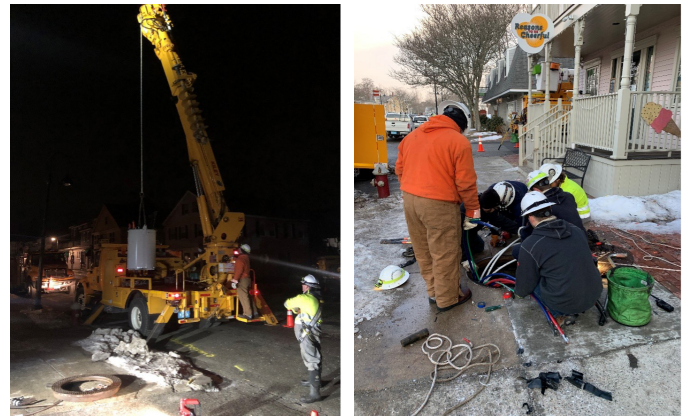
Emergency Response

CMLP responded to numerous emergencies in 2022. These emergencies included severe storms, motor vehicle crashes, wildlife-caused outages, and several

other unforeseen events. Below are some photographs of planned and unplanned events.

TELECOMMUNICATIONS

2022 was the eighth full year of operation for the CMLP's Broadband service. Operating today as Concord Broadband, the demand for service has remained steady, and community support and feedback has been excellent. CMLP launched the Broadband service in March 2014 after the 2013 Annual Town Meeting passed Article 48, which authorized borrowing to fund startup expenses. The 2017 Annual Town Meeting renewed support for the service by passing Article 24, which authorized CMLP to borrow an additional \$1 million to fund additional expansion of telecommunications service offerings.



Deborah's Natural Gourmet – February



Motor Vehicle Crash (Crosby's) - April

The principal and interest expense from this borrowing will be repaid exclusively from future telecommunication revenue.

Service continues to be in demand with subscriptions growth to 1,635 residential and business accounts between January and December 2022, a net increase of 76 subscribers for the year. Revenues in 2022 exceeded \$1.5 million, with a 6.4% increase over 2021. Since the end of 2016, Concord Broadband has been generating sufficient operating income to cover the expected operating expenses.

Concord Broadband has continued to offer no-nonsense pricing with no hidden fees or unexpected price hikes. Our pricing has remained steady in 2022 with no price increases since 2014. Residential service starts at \$49.95 per month for 45 Mbps while offering a true symmetrical service. Our business offerings provide speeds from 70 Mbps to 1 Gbps. Information about the offerings is on the Town's web site at www.concordma.gov/broadband.



Peter Spring Road – August



Verrill Farm – August Heat Wave

*Storm - December
23rd-24th*



Concord Broadband has a staffed help desk that answers calls and provide technical assistance 24 hours a day, seven days a week.

Concord Broadband is committed to Net-Neutrality and the privacy of our customers. We do not monitor, collect or maintain any of our customer's information for any marketing or resale purposes.

In 2022, we continued to provide additional "dark fiber" leases to 3rd parties for point-to-point services. These lease agreements provide access to CMLP fiber telecommunication providers or businesses who wish to gain access to premises in Concord. CMLP earns revenue from the fiber leases and customers benefit from faster, less-expensive installations and access to advanced telecommunication services.

Concord Broadband looks forward to additional improvements as we continue to provide a straightforward service to the community.



Border Road Storm – November



*Hand Setting Poles Fairhaven Wood and MASSPORT
Hanger Project Virginia Road*