



2013 CONCORD ANNUAL TOWN REPORT

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MUNICIPAL LIGHT PLANT

Concord Municipal Light Board

Comprehensive Sustainable Energy Committee

CONCORD MUNICIPAL LIGHT BOARD

Jim Terry, Chair

Hugh Lauer

Judy Walpole

Gary Clayton

Dan Gainsboro

David G. Wood – Director

Concord Light 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. 2013 has been a worthy addition to Concord Light's history.

The Town Manager appoints a five member advisory Light Board that meets monthly to discuss topics such as rates, power supply and renewable energy options. The Board encourages customers to attend.

The Concord Municipal Light Plant operates as a completely self-sustaining, non-profit Enterprise Fund within the Town government. No property tax money is required or used to operate the Light Plant. All operating expenses, capital investments, and debt service are paid from electric revenues. In addition, the Light Plant contributes to the Town via a Payment-in-Lieu-of Taxes (PILOT). For 2013 this formula-based payment was \$447,800.

Power Supply

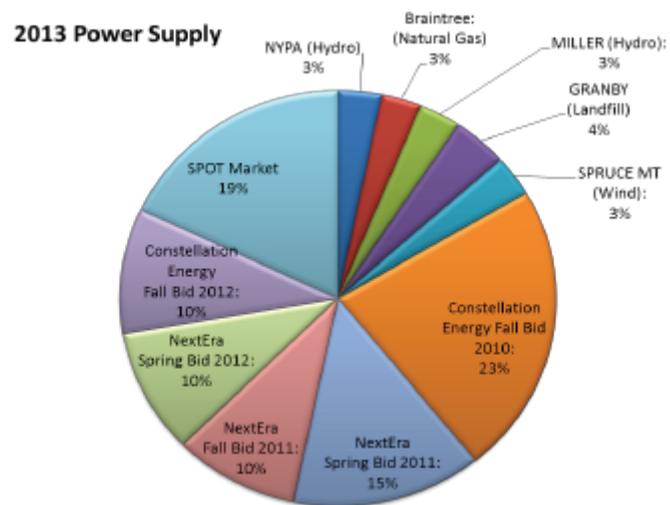
After the creation of Concord Light in 1898, a coal-fired plant located at Keyes Road provided the Town's electricity. By the late 1920's the Town had out-grown the capacity of the plant and decided to retire the plant and purchase all of its electricity from the Boston Edison Company (now NSTAR). In the spring of 2002, NSTAR having sold all of their generating facilities as part of deregulation, Concord Light signed a seven and a half year, all requirements

contract with Constellation Power Source (parent of Baltimore Gas & Electric).

At the conclusion of the Constellation contract in the fall of 2009, none of the energy suppliers were offering all requirements contracts at reasonable prices due to the growing risk of load following, fixed rate contracts resulting from the wide fluctuations in the cost of natural gas. The alternative was the development of a power supply portfolio from multiple sources under a power supply strategy that best suited the needs of Concord. 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.

In 2009, Concord Light began creating the supply portfolio. Since that time Concord Light has developed a diverse power supply portfolio. By following the power supply selection strategy Concord Light was able to reduce energy cost by 10% in 2013.



It should be noted that energy from NYPA (hydro), Miller (hydro), Granby (land fill gas) and Spruce Mt (wind) are all renewable sources and represented over 13% of all wholesale energy purchased in 2013. Concord Light will continue to seek out renewable energy

opportunities along with other economic and reliable supplies of wholesale energy in an effort to provide the most beneficial energy mix for its customers.

Energy Conservation

Concord Light continues to provide a variety of energy conservation services to its customers, including energy audits for residential and commercial customers, and watt meter and thermal leak detectors that customers can borrow to identify sources of energy waste in their homes.

Residential Energy Efficiency Rebates

Concord Light provided residential customers with over \$38,000 in rebates for weatherizing electrically heated homes, and for purchasing energy efficient appliances, lighting and central air conditioning (AC) systems.

Commercial Energy Efficiency Rebates

Fifteen business customers upgraded to more efficient lighting, and received a total of \$84,000 in rebates through the High Efficiency Lighting Program that Concord Light launched in 2012. The fifteen commercial lighting upgrade projects are projected to reduce electrical demand by 200 kW and electricity consumption by more than 1.2 million kWh per year.

Solar Photovoltaic (PV) Rebates

Concord Light's residential and commercial customers installed one hundred and three PV systems with an overall capacity of over 725 kW AC in 2013. Concord Light contributed over \$290,000 in rebates towards the installation of these systems, and committed over \$110,000 in rebates for installations that will be completed in 2014.

COMMUNITY SERVICE

Hands-On Energy Education for Concord Public School Students

Staff met in February with each of the 12 third-grade classrooms in Concord public schools to talk about how electricity is made, how it gets to local homes, and how line workers do their job. As part of the interactive lesson, students got the chance to make electricity by riding a bicycle generator, create circuits to operate fans and pinwheels, and touch a real solar panel – the same type of panel that

provides some of the electricity used by the Willard School.

Concord Light's energy conservation coordinator, customer service staff, administrative assistant, engineering staff, lineworkers, electrician and custodian all pitched in along with Concord Public School faculty and staff to make these sessions a success.

Concord Light Presentations on Energy Conservation Resources

Concord Light participated in the League of Women Voters of Concord Carlisle's house tour that focused on new concepts in efficiency, accessibility and design. Staff set up an energy efficient lighting display at one local home, and spoke with visitors about lighting products available for sustainable living. Concord Light reprised this role at Emerson Umbrella's Musketaquid Earth Day Festival.

Reducing Energy Consumption in Town Operations

In order to help building managers assess their progress toward Town government's goal of reducing its energy use by 20% of 2008 levels by 2015, Concord Light prepares energy consumption updates for building managers each quarter.

Concord Light is also taking action to reduce energy consumption in its Operations Center. Staff has removed lamps from overhead fixtures where lighting levels were excessive, coordinated efforts to turn off lights and equipment in common areas at the end of the day, installed smart power strips to reduce standby power consumption and installed a Vending Miser® to cut down on energy consumed by its soda vending machine.

Smart Grid

CMLP completed the conversion of existing load management customers to the smart grid wireless, fiber-based system. CMLP installed new meters and switches for 353 electric water heater customers participating in our controlled water heating program; 135 electric thermal storage (ETS) heating customers; 2 electric vehicle customers; and 1 customer with a swimming pool pump. We are now fully operational with using the smart grid software to schedule one time, daily, and recurring load management events for all these devices to reduce peak demand.

Annual holiday tree lighting

Concord Light line crew decorated trees with energy-efficient LED lighting for the holidays in the West Concord business district and at the Town House.

Minute Man ARC

Minute Man ARC is a human services agency offering programs and job coaching for people with developmental and intellectual disabilities. Concord Light has partnered with Minute Man Arc for more than twenty years and employs a team of Minute Man workers to stuff and mail utility bills and newsletters.

Hugh Cargill Trust

Concord Light contributed \$14,000 to the Hugh Cargill Trust which helps eligible Town residents with emergency assistance to pay their electric bills.

Residential Rate Assistance

Concord Light began our Residential Rate Assistance program in 2006 to help Concord residents in financial need. Eligible customers are able to lower their bills by as much as 50%. As of September, there were 150 Concord households enrolled in this program.

OPERATIONS

Substation 219 Capacity Upgrade



CMLP commissioned two new 115 kV substation transformers. This project provided a 20% jump in our ability to provide sufficient electricity to the town by upgrading the transformers from 50 MVA to 60 MVA.

Additionally, these transformers permit up to 75 MVA of electric demand that will give us a jump-start of future load growth.

(Photo Credit: Courtesy Concord Light)

Substation 479 Voltage Upgrade

CMLP's Substation 479 Conversion Project is aimed at converting the remaining section of the Town's electrical distribution system from the antiquated



(Photo Credit: Courtesy Concord Light)

4,000 Volt system to the current 13,800 Volt system. This section has four separate 4,000 Volt circuits that are fed out of Substation 479 located off of Williams Road. These circuits account for approximately 20% of the Town's total electrical load. Throughout 2013 CMLP crews were literally "overbuilding" the new infrastructure above the old. This will allow crews to safely perform their work and transfer customers to the new system while minimizing customer power outage time. Once an area has been completely converted CMLP crews will remove the 4000 Volt system. Due to the extensive area that needs conversion work, this project will continue into the fall of 2014.

New Warehouse

CMLP completed construction of the new warehouse at our Operations Center. This new space will provide approximately 7,500 SF of secure storage for nearly our entire inventory, including many items previously stored outside. In addition to securing our valuable material, a workspace has been included in the design to accommodate unloading deliveries and loading stock onto the line trucks out of the elements. In this workspace, a 5-Ton overhead

crane was installed to aide in this capacity, as much of our stock is comprised of exceedingly heavy cable and transformers. CMLP is excited to utilize our new space for the first time in early 2014.



(Photo Credit: Courtesy Concord Light)



(Photo Credit: Courtesy Concord Light)

The OMS system is integrated into the Geographic Information System (GIS), which provides highly detailed geographical images and technical data about the electric grid. The OMS system will group the calls and perform network traces to predict which upstream devices are out. This will give CMLP operations staff the power to quickly identify potential outages and get crews dispatched faster and more accurately.

Outage Management System



CMLP announced the launch of an advanced outage management system (OMS). The outage management system will enable CMLP to provide more timely information to customers and help utility personnel restore electricity to customers faster.

(Photo Credit: Courtesy Concord Light)

Landfill Solar

CMLP concluded an extensive yearlong negotiation with Kearsarge Energy LLC regarding the proposed solar array at the Concord Landfill. Construction began shortly thereafter on a 1.72 MW array with an expected completion date in March 2014. We expect to receive about 1,800 kWh annually, which is approximately 1% of the Town's electric use.

TELECOMMUNICATIONS

CMLP and the Town took significant steps toward bringing the Town's municipal fiber optic based Internet service to market. The 2013 Annual Town Meeting approved Article 48 that authorized borrowing to fund startup expenses. The article provided a funding mechanism to expand CMLP's telecommunications service offerings while ensuring that those expenses are repaid exclusively by current and future telecommunication revenue. Under the leadership of Chief Information Officer Mark Howell, CMLP hired a new telecommunications coordinator and telecommunications technician. Both these positions had previously been open.

With the staff in place, the Telecommunications Division acquired fiber optic installation and testing equipment, procured inventory to perform installations, added servers to support telecommunications

operations, upgraded the CMLP Internet connection to use redundant high capacity suppliers and began to develop service offerings and business procedures. A new van, outfitted with a lift and fiber splicing equipment, was purchased and is expected to be in service in January 2014. As part of a 2013 pre-production service offering, the CMLP moved existing broadband pilot customers to the production platform added nine new customers.

CMLP will begin offering Broadband from Concord Light in 2014 to residential and business customers throughout the Town. Initial interest has been high since Town Meeting; over 450 individuals have subscribed to an e-mail list for information. High Speed Internet Data services will be offered first. The fiber to the home installation will include integrated Wi-Fi and be competitively priced. Information about the offering can be found on the Town's web site at www.concordma.gov/broadband (<http://www.concordma.gov/broadband>).

The ability to cost effectively deploy advanced secure telecommunications to municipal facilities is benefit of having in-house telecommunications operations. In support of municipal services the telecommunication staff, working with Town IT staff, added fiber optic connections to the Waste Water Treatment Facility, five Water Department well sites and pumping stations, Substation 219 for the Light Plant and to three new locations for the Police and Fire Department Radio system. New fiber connections to the Sleepy Hollow Cemetery and Community Services offices help to reduce operating expenses for the Town and improve phone and data services for employees working in these locations. CMLP upgraded the Internet service it provides to the School Department from 100 megabits per second (Mbps) to 300 Mbps and then to 400 Mbps all at lower cost than the previous at 100 Mbps service.

CMLP also added five new dark fiber leases to its book of business as well. These lease agreements serve local businesses by providing fiber connections to telecommunication companies who gain access to a premise in Concord so as to provide service to the business directly. CMLP earns revenue from the fiber lease, while the business and service providers benefit from faster installation time.