Municipal Light Plant and Public Works

Concord Municipal Light Plant

Daniel J. Sack, Director

Municipal Light Board, standing from left: Robert Kusik, Chair; Hugh C. Lauer, Arthur S. Fulman; seated: Susan A. Miller, Charles Davis

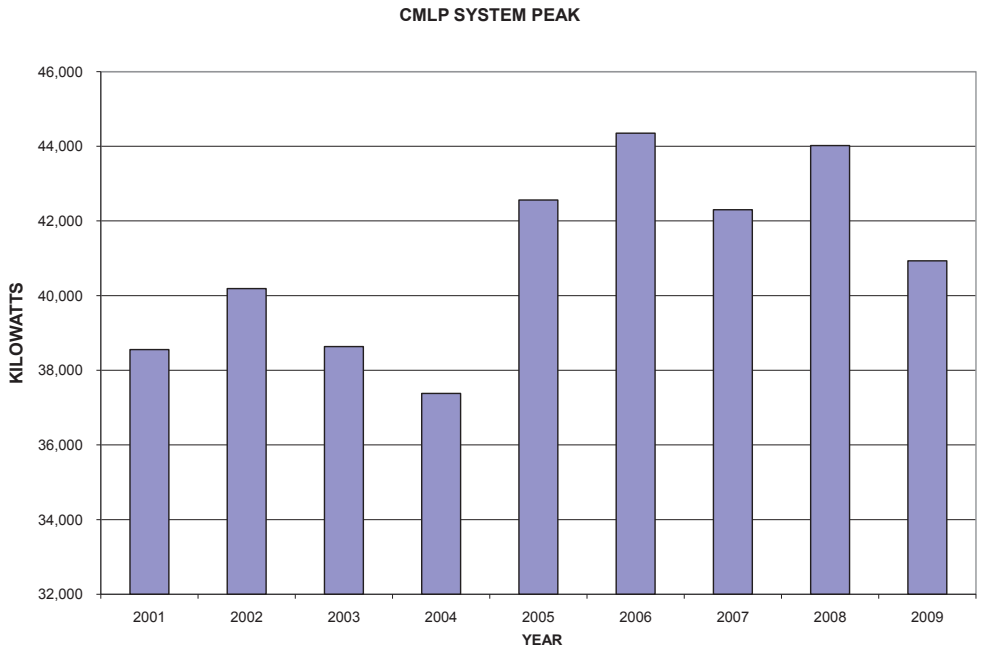
Concord Light is a community-owned electric utility, created for and by the citizens of Concord in 1898. The goal then, as now, was to provide reliable and reasonably priced service in a responsive and thoughtful manner. 2009 has been a worthy addition to Concord Light's history.

In some ways, 2009 has been unprecedented. For the first time since the late 1920's we no longer have our electricity supplied by one entity. From around 1930 until the spring of 2002, The Edison Illuminating Company of Boston, then its successor The Boston Edison Company and then its successor NSTAR provided all our requirements. Then from 2002 until the last day of September of this year, Constellation Energy Source of Baltimore, MD provided all our electrical needs. Effective October 1, because of a lack of competitive bidding for all requirements service, Concord Light embarked on the more conventional power supply process of purchasing our electrical requirements from a diverse group of fuel sources and providers.

In addition to dramatic changes in power supply, Concord Light embarked on a new vision of managing our distribution system, peak demands, pricing signals and communications with customers. The new vision is called Smart Grid, and the citizens of Concord approved a $4.5 million bond authorization in order to provide the resources to embark on the installation of this new system in Concord. It will virtually be among the first of such systems to be installed anywhere in New England and, thus, place Concord on the cutting edge of this promising technology.

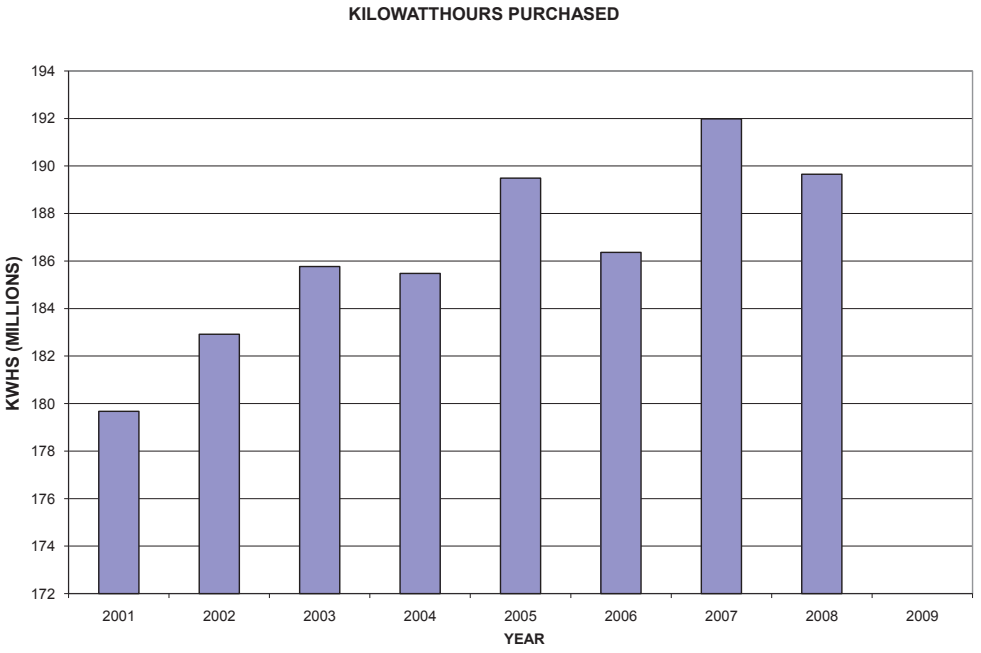
Power Supply

Concord Light has completely changed its method of purchasing electricity as the previous method of having one supplier provide all our needs had become far too risky for the supplier and, therefore, very expensive. Planning for new supplies began some time ago in preparation for October 1, 2009 including a three year, energy only contract with Morgan Stanley which commenced October 1; an 8.75% life of unit share of the new Watson generation plant in Braintree; a three year energy only contract from a hydro plant in Lisbon, ME commencing this spring;and two contracts for capacity from Dominion and Public Service Electric & Gas of NJ. In addition, Concord Light is reviewing other opportunities including a wind facility in western MA, a new power plant in Taunton being planned by several New England municipal light plants, a refurbished gas fired combined cycle plant in Lowell, a biomass plant in Ware, a wood-fired plant in Russell, MA and a solar installation in Concord. All of these options will be considered relative to the energy and capacity needs of Concord and after careful review of attendant risks, operating costs, scheduled availability and impacts on the environment.



Power Supply Costs

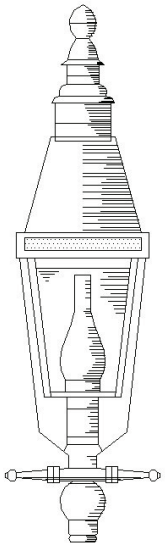
The largest single expense for Concord Light, by far, is the cost of purchasing electricity and transmitting it to Concord. This expense represented over two-thirds of total cost of doing business, or about $13 million. The remaining revenues collected fund the cost of operating the Light Plant, such as line repairs & maintenance, new facilities and equipment, employee salaries, debt service, payment-in-lieu-of-taxes, insurance, conservation programs and billing expenses.



Community

In addition to the $355,000 paid to the Town in-lieu-of property taxes, and compensating the Town for services rendered, Concord Light is involved in a number of community projects. For example:

- This is the nineteenth year of a partnership with Minuteman ARC who assist us by stuffing and mailing electric and water bills. For the past decade they have shared our offices every work day and have become an integral part of our operation.
- With bill inserts and a newsletter article, we encouraged people to donate directly to the Salvation Army's Good Neighbor program, which helps people in need pay their utility bills.
- The Light Plant increased its contribution to the Hugh Cargill Energy Fund by 30% to $26,000 which helps Town residents with their electric bills.
- Thousands of lights lit up the night in Concord Center and West Concord this holiday season. CMLP uses environmentally friendly LED lights that save the Town more than $1,100 in electricity costs each year. LED lights are initially more expensive than standard bulbs, but save over time since they consume far less energy. They also require much less energy to manufacture than other light sources, which further reduces their environmental impact.
- Line crews installed outdoor electric outlet panels, and the Light Plant provided free electricity for the annual Picnic in the Park celebration.
- The Light Plant is purchasing air sealing and energy efficiency supplies to help a coordinated Town effort to weatherize homes. Fifty homes were weatherized by volunteers using these materials. In addition, the Town has made air sealing and energy efficiency supplies available to residents for Do-It-Yourself weatherization projects.
- The Light Plant has worked closely with the Comprehensive Sustainable Energy Committee. We share their long-term goals and support their endeavors. A member of the Light Board is on the Committee and Light Plant staff has coordinated survey efforts and data requests with Committee members to help aid their efforts.
- Customers eligible for our Residential Rate Assistance program are able to lower their bills by as much as 50%. As of December, 107 customers were taking advantage of the program. Qualifications and an application form can be found at: www.concordma.gov/cmlp.



Telecommunications

Phase 2 of the Smart Grid Pilot program involving fiber optic backhaul was completed. The successes of this phase of the program led us to submit a bond authorization request for town-wide Smart Grid deployment at Town Meeting. The $4.5 million bond issue was approved by the residents.

In August, we submitted an application for matching funds for the U. S. Department of Energy Smart Grid Investment Grant. Unfortunately, it did not receive approval. However, we have continued the Smart Grid deployment project as supported by Town Meeting.

A Request for Quotes for the Smart Grid system resulted in the selection of a design firm that is expected to complete its work in December. Bids will be let in January and construction of the Smart Grid network will begin in April, 2010, with completion by June, 2011.

Automatic Meter Reading

Since 2005, Concord Light and the Public Works Water Division staff have replaced over 7,000 electric meters and upgraded more than 5,000 water meters in the process of converting to the new system. This new technology allows us to read electric and water meters from a vehicle while driving by customer locations. This eliminates errors resulting from manual reading, greatly improves efficiency and lowers costs, and eliminates the need to make appointments to read inside meters.

Customer Service

School Safety and Conservation programs

With the help of safety and conservation consultant Ray Gouley, the 3rd grade students learned about electric safety and ways to reduce electric use. The program focuses on the potential dangers of electricity indoors and outdoors, and a variety of methods to save electricity. This multi year program continues to be very well received – by both students and teachers.

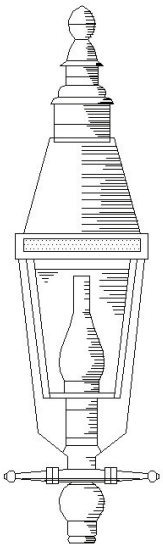
Calendar Contest

Over 225 3rd and 4th grade children submitted artwork in our annual contest for inclusion in the 2010 calendar. As usual the judging was very difficult. The winning artists received a T-shirt with their art piece emblazoned on the front and a collage of all the chosen pictures on the back.

It should also be noted that the Calendar Contest would not have been possible without the able help of Diane Kablik, the K-5 Science Curriculum Specialist who was invaluable in helping to coordinate this fun and educational event.

Direct Payment
This service provides customers with an automated alternative for paying their electric and water bills. With over 1,000 customers participating, this program has been a resounding success. Each customer's bill due amount is directly deducted from their bank account, saving them both time and postage.

Online Payment
This service began in 2006 and has been very successful. Customers can pay their bills through an encryption secured online bill payment center. They can view their bills online and track their past electricity consumption. This approach saves time and postage and lets the customer decide when to pay their bill. This service is expected to be expanded to water customers in the first quarter of 2010.



Energy Conservation Programs

Appliance Rebate Program
This very popular program encourages customers to purchase efficient Energy Star rated appliances. These energy-efficient appliances typically save between 15-50% in energy costs, which saves customers money and helps the environment.

Eligibility is based on the Energy Star program established by the Department of Energy. Appliances that qualify for the rebate include refrigerators, clothes washers, dishwashers, central air-conditioners, room air conditioners and dehumidifiers. Rebates range from $50-$150. Rebates totaling over $32,000 were provided to customers.

Light Bulb Rebate Program
This very popular program allows customers to receive up to a $5.00 credit on their electric bill for every compact fluorescent or LED exit sign kit they purchase. These bulbs use as much as two-thirds less electricity as compared to standard incandescent bulbs, which in turn reduces the emission of carbon dioxide into the air from fossil fuel electricity generating power plants. Over $8,000 was credited to participating customers.

Residential Conservation Service
This complimentary service, contracted through Energy New England, helps Concord Light customers answer their energy-related questions. If required, an energy advisor may be sent to the home to do a complete home energy evaluation. In addition, our Appliance Calculator, located at www.concordma.gov/cmlp, allows customers to determine how much each appliance in their home costs to run. Home energy evaluations were provided to 65 Concord residents, an increase of 35% over the number of evaluations provided in 2008.

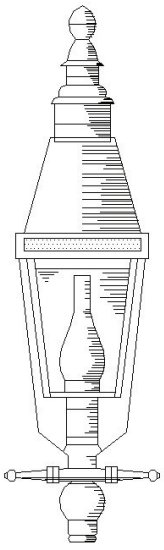
Municipal Building Audit Program
The Light Plant in conjunction with the Town facility managers and the Comprehensive Sustainable Energy Committee completed a series of Level II audits for nine Town buildings. These audits provided in-depth analyses on the energy usage patterns for each building, and recommended a variety of options to help reduce usage in each. The Light Plant contributed $15,000 towards the cost of completing the audits.

Concord Light C.A.R.E.S.
Four new programs aimed at reducing the amount of electric capacity Concord must purchase were approved in 2008. The programs are all part of a new initiative called Concord Light CARES—Conservation And Renewable Energy Services. The idea behind Concord Light CARES is that it makes sense to invest in measures that focus on electric capacity reduction and electricity conservation. Reducing Concord's peak demand for electricity cuts the Town's power supply costs, and reduces the region's need for expensive and often environmentally unfriendly peaking power plants. Concord Light CARES focused on air conditioning load management, and weatherization, small commercial lighting, and rebates for solar photovoltaic (PV) installations. Almost $7,000 was provided in rebates for high efficiency central air conditioners, and over $5,000 for weatherization for those with electric heat. Small businesses in Concord received almost $2,000 in rebates for energy efficient lighting retrofits. Solar PV systems installed on homes in Concord pro-

vide over 17 kW of power. In 2009, homeowners who installed PV systems on their homes received $16,000 in rebates from the Light Plant. The Concord Light CARES program provided almost $30,000 in rebates to reduce peak demand.

Google Group

ISO-NE operates the electrical grid for the six New England states and has the responsibility to ensure there is sufficient electric generating capacity. One of their programs to foster sufficient capacity is called the Forward Capacity Market. Under this program generators receive a monetary incentive paid by the consumers in New England through their respective utility.



These payments, about $3 million by Concord Light over the next twelve months, are based on each utility's peak at the time of the annual New England hourly peak. The trick is trying to guess which day the peak will occur and then trying to reduce consumption during the peak hour on that day. This one peak hour normally occurs in the summer because of the higher electric use due to air conditioning.

In an effort to reduce the electrical usage of our customers during this one hour we formed a Google email group to notify participants of a possible peak and request that they reduce their electric consumption. Anytime we thought we might be approaching a potential peak day we emailed the participants and asked them to reduce their use for a few hours during the afternoon.

As it turned out, we forecasted the correct day and hour and actually reduced our usage during the peak hour saving about $150,000. We plan to continue our Google Group and hope to make an even larger impact. If you would like to join and help reduce our cost of electricity, please give us a call.

Green Power

Toward the end of 2003, the Light Plant began signing up customers interested in "green" power produced at the Acton Hydro Co., Inc. Powder Mill dam on the Assabet River near the intersection of Concord, Acton, and Maynard. Unfortunately, due to a cave-in along the spillway that runs adjacent to the dam and other factors, the startup of the project has experienced significant delays. Permits for the project have been issued and construction work is well underway. It is hoped that with luck and plenty of water flow in the Assabet River, Acton Hydro could be sending green power to Concord by late 2010. When the plant does become operational, this non-polluting and renewable power source will generate about 400,000 kilowatthours annually for use by Concord Light customers

ETS/Water heater Program

Our Electric Thermal Storage (ETS) heater program continues to expand. Currently we control about 2,500 kW of load in the winter including almost one hundred residences, saving Concord ratepayers tens of thousands of dollars each year in avoided transmission and demand charges. In the future, this program will favorably affect our power supply decisions and help keep rates low.

ETS heaters come in a variety of styles— forced-hot-air, forced-hot-water and room units — and are charged off-peak, when electricity costs are low. The stored heat is then used during on-peak periods. Off-peak charging saves the Light Plant on-peak premium costs. These savings are passed on to the customer, which currently make ETS operating costs lower than oil and gas for home heating.

We also continue to offer our residential off-peak domestic hot water (DHW) program. Participating customers have their DHW tank charging time "shifted" to avoid expensive peak electricity charges. Currently, over 400 the water heaters are controlled. In exchange, these customers receive a reduced rate for water heating, saving each over $250 per year.

Administration

Concord Municipal Light Plant operates as a self-sustaining, non-profit, Enterprise Fund within the Town government. No property tax money is required or used. 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. For 2009 this payment was $355,000 and is the equivalent of the property taxes that would be paid by a non-municipal electric utility.

Construction Activity for 2009

- Completed conduit for nearly 100 services for Emerson Field neighborhood underground project and converted overhead wires to underground as part of the Sudbury/ Thoreau St. intersection work. Removed all overhead electrical facilities on Belknap St.
- Designed and installed new underground switches in Concord center. Replaced undersized switches along Williams Rd. and Old Marlboro Rd.
- Designed an upgrade of the Keyes Rd. distribution system. Designed and installed new underground facilities on Hunter's Ridge Rd. Completed Nashawtuc Country Club overhead to underground primary design.
- Completed installation of tree-resistant primary wire along Central St., Highland St., Fitchburg Tpk. and Powder Mill Rd. Did extensive tree trimming in overhead areas.
- Designed and installed a new primary feed for Verrill Farm and Sydney Lane with provisions for future fiber communications. Designed and installed a new primary wire extension for Attawan Rd. and Barretts Mill Rd. Upgraded overhead facilities along parts of Williams Rd. Designed and installed underground service for the new Willard School.
- Implemented a new overhead to underground service conversion policy.

Sawyer Trust Fund Allocations - 2009

Building/ Proposed Work	Estimated payback	Approved Funds
135 Keyes Road Replace failing HVAC system	5+/- years	$24,605
Hunt Recreation Upgrade Gym lighting	3 - 5 years	$7,500
Hunt Recreation Replace outdoor pool pumps	8+/- years	$5,950
Beede Swim & Fitness Center Improve Lighting controls & perform heating retrofit	3 - 4 years	$19,800
Friends of the Performing Arts Phase 1 – Insulate, air seal, replace/repair windows; replace very old oil-fired boiler	7+/- years	$45,000
Friends of the Performing Arts Phase 2 – Install, replace, repair fiberglass insulation; rehabilitate 8 windows; install exhaust fans in the fly tower	7+/- years	$35,000
24 Court Lane Building Renovate building with open cell insulation, hybrid HVAC system, energy efficient windows, LED lighting	Unknown repurposed building	$39,021
West Concord Fire Station Install hot water boilers & new HVAC system	7+/- years	$35,440
SUBTOTAL		$212,316
Willard School Install solar PV panels on Roof	Depends upon grant	$100,000
TOTAL		$312,316

- Updated our Spill Prevention Control and Countermeasures Plan for CMLP facilities.
- Coordinated with Mass Highway on utility relocations for the Route 62 paving project.

Personnel and Training

Concord Light had two new hires this year. Christopher Roy joined us as Electrical Engineer and has an MSEE in Power Systems Management. Jan Aceti is Energy Conservation Coordinator. She comes to us from her own marketing firm and the City of Cambridge Dept. of Public Works.

Comprehensive Sustainable Energy Committee

Charles Parker, Chair
Eric Gamage, Vice Chair
Brian Crounse
Anthony Butler
Cynthia Wood
Gayle Chatlosh
Sally Hughes
Art Fulman
Julie Vaughan, Staff Liaison

The Comprehensive Sustainable Energy Committee continues to advance efforts to conserve energy in Town buildings, to understand the Town's overall energy use patterns and to coordinate with other environmental groups to initiate efforts throughout the community.

Town Building Energy Audit & Sawyer Trust Fund Projects

Pursuant to its responsibilities to administer the Sawyer Trust Fund in the most effective manner possible, the Committee, with guidance from the Town Building Energy Audit, worked with Town Building Managers to initiate two pilot projects to improve energy efficiency in Town-administered buildings–a Weatherization Pilot that is currently out to bid, and a Lighting Upgrade Pilot that is in the estimate phase.The Committee reviewed and approved eight Sawyer Trust Fund applications, for a total of $212,316 with an average payback period of 6 years and a savings to the Town of approximately $35,000/year

Solar

Solar is the most viable source of renewable energy in Concord; the Committee is focused on expanding the opportunities for solar in Town on all scales. While