

MUNICIPAL LIGHT PLANT AND PUBLIC WORKS

CONCORD MUNICIPAL LIGHT PLANT

Robert Kusik, Chair
Jill Appel
Brian Crounse
Charles Davis
Hugh Lauer
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. 2010 has been a worthy addition to Concord Light's history.



Concord Municipal Light Plant, 1175 Elm Street

After 22 years of dedicated service to the Town of Concord, Light Plant Director Dan Sack retired. Highlights of Dan's career here include settling a longstanding rate case with Boston Edison, constructing a 115 kV substation on Forest Ridge, rebuilding Concord's electric distribution system, completing a consolidated operations center at 1175 Elm St., and successfully negotiating new power contracts after deregulation. Dan was a visionary who had over 47 years of experience in the utility industry. Dan's successor, David Wood, joined Concord Light over 15 years ago as an electrical engineer, and served as Manager of Engineering and Operations for

2010 Annual Report

four years before becoming the Director. His experience resulted in a smooth leadership transition and has allowed the Department to stay focused on ongoing and future projects.

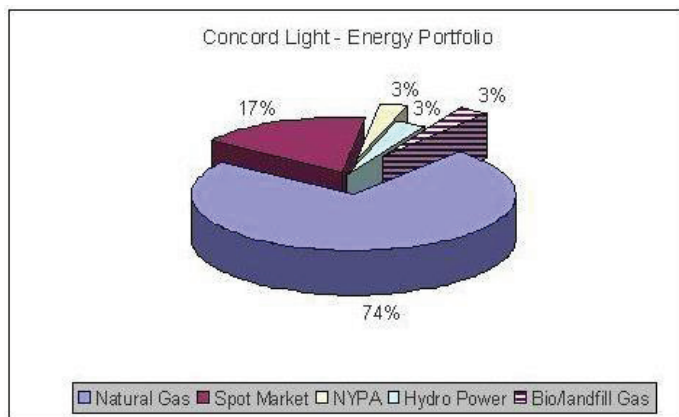
The Town Manager appoints a five member advisory Light Board. The Board meets monthly to discuss topics such as rates, power supply and renewable energy options. The Board encourages customers to attend.

The Concord Municipal Light Plant operates as a completely self-sustaining, non-profit, enterprise fund within 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 (PILOT). For 2010 this formula based payment was \$380,000, the equivalent of the property taxes that would be paid by an equivalent, non-municipal, electric utility.

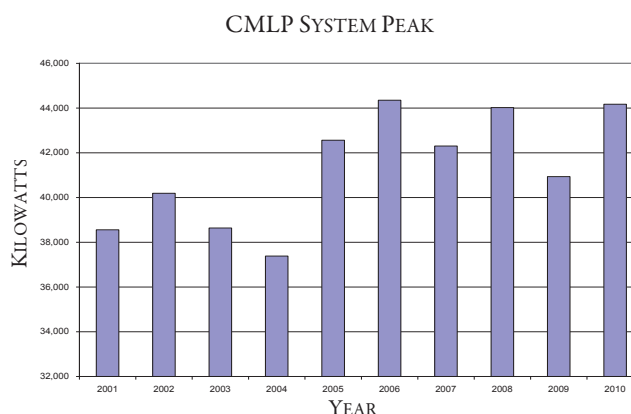
POWER SUPPLY

Since October 1, 2009, 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 suppliers and therefore very expensive. Planning and contracting for new supplies continues as Concord Light diversifies its power supply portfolio and green power options. Concord Light is continually expanding and adjusting its wholesale power supply portfolio including wholesale power purchases under the Morgan Stanley contract through 2012, an 8.75% share of the Watson generation plant in Braintree, a contract with Miller Hydro (currently in the process of being extended), and capacity contracts with Dominion and Public Service Electric & Gas of NJ. A three year contract for electricity generated from land fill gas and a fifteen year contract for electricity generated from wind were completed in 2010. A solar generation facility in Concord, to be constructed by Tioga Energy under a twenty year agreement with

Concord Light, will generate enough electricity to provide for about 250 homes. Concord Light will continue to review wholesale power options relative to the energy and capacity needs of Concord, with consideration of attendant risks, operating costs, scheduled availability and impacts on the environment.



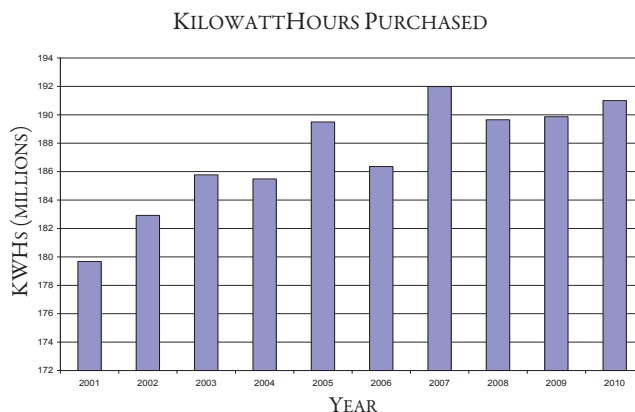
As an indication of its determination to pursue all viable power supply options, Concord Light continues to track the Acton Hydro project along Route 62 on the Assabet River near the Maynard town line. Discussions with the owner to purchase the hydroelectricity generated by this refurbished 1923 facility began in 2002, but have been accompanied by setbacks too numerous to mention. Current plans call for the plant to start up in 2011. This is a small project, but will eventually serve as a fine example of local, renewable energy production.



2010 Power Supply Costs

The largest single expense for Concord Light is the cost of purchasing electricity and transmitting it to Concord. For 2010, this expense represented over eighty percent of the total cost of doing business, or about \$21 million compared to \$13 million in 2009 under the Constella-

tion contract. The remaining revenues 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.



2010 kilowatt-hours purchased data is based on 11 months of actual data with December being estimated

Renewable Energy Strategy

In November, the Light Board implemented a renewable energy strategy for increasing renewable energy sources within Concord's energy portfolio. The Light Board recommends that CMLP commit to increase the renewable energy portion of its energy supply portfolio from 10% in 2010 to 20% by 2015 and 30% by 2020. Each 10% increase in renewable energy will reduce CO₂ emissions by 15 million pounds (7,500 tons) annually. The detailed strategy can be found on the Town's website http://www.concordma.gov/pages/ConcordMA_LightPlant/board.

In addition to the Renewable Energy Strategy, the Light Board implemented a Utility Scale Solar strategy. This strategy is focused on deploying large solar arrays within the boundaries of Concord. The strategy has long and short term goals which will allow the Light Plant a chance to build up the organizational expertise in accommodating solar power into its systems. The strategy can also be found on the Town's website http://www.concordma.gov/pages/ConcordMA_LightPlant/board.

COMMUNITY

In addition to the \$380,000 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:

2010 marked the twentieth year of our partnership with the folks from the Minuteman ARC. They assist us by stuffing and mailing electric and water bills. For over a decade they have shared our offices from 10 AM until 2 PM 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.

Concord Light continued its annual contribution to the Hugh Cargill Trust which helps Town residents with their electric bills.

Thousands of lights lit up the night in Concord Center and West Concord this holiday season. Concord Light has been using environmentally friendly LED -- light emitting diode -- lights. The change saves 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. The current LEDs are rated to last more than 10 times longer than the standard incandescent bulbs, reducing both maintenance and replacement costs. They are also more resistant to breakage, and give off less heat than standard bulbs.

Line crews installed outdoor electric outlet panels and Concord Light provided free electricity for the annual Picnic in the Park celebration.

Public school electric safety and energy efficiency programs and our tenth annual calendar contest, with artwork provided by public school 3rd and 4th graders, were the result of an ongoing collaborative effort with the public schools.

In 2006 Concord Light began a program to help those in financial need. Customers eligible for our Residential Rate Assistance program are able to lower their bills by as much as 50%. As of December 2010, 121 customers

were taking advantage of the program. Qualifications and an application form can be found at: www.concordma.gov/cmlp.

Concord Light hosted an open house to celebrate Public Power Week, an annual event to highlight the power of local service and observed by utilities that supply electricity on a not-for-profit basis to more than 43 million U.S. residents and businesses. Nearly 200 residents attended Concord Light's event in October that featured electric safety lessons, educational presentations on electricity, electrical equipment and utility careers, and other activities such as surveying and pole climbing demonstrations.

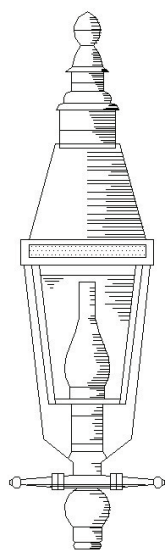
In early November, Concord Light volunteers cooked and served lunch to 70 seniors during the Council on Aging "Wednesday Senior Lunch" program held at the Harvey Wheeler Community Center. Concord Light employees have volunteered their time to prepare and serve lunch to the seniors for the last five years.

Approximately 100 visitors attended an open house in November to learn more about solar energy and the recently-completed 48 kW solar project at the Willard School. Concord Light staff discussed the Willard School solar photovoltaic installation project and showed a video of the installation during the open house held at the school. The solar photovoltaic panels installed on the school roof are expected to provide about 10% of the electricity used by the school. The project was funded by a federal grant, a contribution from Concord Light, and an allocation from the Sawyer Trust.

Smart Grid

Smart Grid project is moving forward. Installation of the Town-wide fiber optic network began in September and is proceeding in four phases, covering four parts of Town. The first phase and most of the second phase of the network were completed by the end of 2010, and the remaining phases are expected to be completed by summer 2011. Fiber-optic electronics are being installed in the CMLP substation at the corner of Main Street and Old Road to Nine Acre Corner, and additional electronics will be installed in the Williams Road substation.

The Intelagrid electronic system will communicate



over this fiber optic network to provide the Smart Grid functionality for managing electrical loads and for controlling electric hot-water heaters and electro-thermal storage heaters. It will enable CMLP to better manage the electricity network and to develop incentive-based rates for reducing demand at peak times.

The Town-wide fiber optic network has been designed so that it can be expanded to support telecommunications and other services in the future.

CUSTOMER SERVICE

School Electrical Safety and Energy Conservation programs

With the help of safety and conservation consultant Ray Gouley, 3rd grade students in the public schools 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.

Annual Calendar Contest

Third and fourth grade students from Alcott, Thoreau, and Willard Schools submitted artwork for Concord Light's annual calendar contest. The themes for the contest were electrical safety, energy conservation, and renewable energy. 200 entries were received and the judging was very difficult due to the high caliber of entries. One winner was selected for each month and the calendar cover. 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. Diane Kablik, K-5 Science Curriculum Specialist, was invaluable in helping to coordinate this fun and educational event.

Direct Payment

The service provides customers with an automated alternative for paying their electric and water bills. With over 1,000 customers participating, this program, operated in partnership with the Water Division and the Finance Department, 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 now pay their bills through an encrypted online bill payment center. They can also view their bills online and track their past electricity consumption. This approach also saves time and postage and lets the customer decide when to pay their bill.

ENERGY CONSERVATION PROGRAMS

Residential Rebate Programs

Concord Light offers rebate programs to encourage residents to purchase efficient appliances and compact fluorescent lights (CFL's). Rebates of over \$40,000 were provided to customers through our appliance and CFL rebate programs.

Appliance Rebates

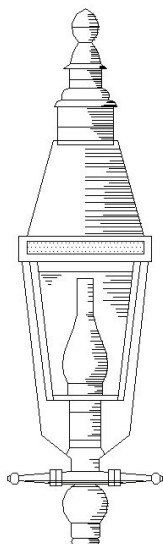
Concord residents who purchase energy efficient appliances are offered rebates from \$50 to \$100 to offset the typically slightly higher price for qualified appliances. Energy efficient appliances typically save 15-50% in energy costs and can help reduce the need for additional generation during peak times – which saves money and helps the environment. Eligible Energy Star rated appliances include refrigerators, washing machines, room air conditioners, dishwashers, and dehumidifiers.

Compact Fluorescent Light Bulb Rebates

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. Energy efficient compact fluorescent bulbs last up to 10 times longer than standard incandescent bulbs and use 70% less electricity - which translates to a savings of \$20 - \$40 in electricity over the life of the bulb and in turn reduces the emission of carbon dioxide into the air from fossil fuel electricity generating power plants. Concord Light also offers CFL recycling to residents.

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, an Appliance Calculator, located at www.concordma.gov/cmlp, allows customers



to determine how much each appliance in their home costs to run.

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 also reduces the region's need for expensive and often environmentally unfriendly peaking power plants.

In 2010, Concord Light CARES continued to focus on air conditioning load management, and weatherization for those with electric heat, small commercial lighting, and rebates for solar photovoltaic (PV) installations. Almost \$16,000 was provided in rebates for high efficiency central air conditioners and \$6,000 for weatherization for those with electric heat. Small businesses in Concord received almost \$10,000 in rebates for energy efficient lighting retrofits. Homeowners who installed PV systems on their homes received a total of \$10,000 in rebates from the Light Plant. In all, the Concord Light CARES program provided almost \$42,500 in rebates to reduce peak demand.

Peak Management

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 the 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. So the challenge is to ascertain which day the peak will occur and then reduce consumption during the peak hour on that day. This one peak hour normally occurs

on a weekday afternoon in June, July or August 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 in 2009 to notify participants of a possible peak and request that they reduce their electric consumption. We continued this program during summer 2010 and increased the Google Group membership from 115 to 274 members (although this number does not reflect links from our members to other groups).

The Town of Concord and New England achieved their respective "peak demand hour" on July 6. New England's peak was 27,066,000 kilowatts, and Concord's peak was 44,233 kilowatts.

We estimate that notifying residents about forecast peak usage events reduced demand by approximately 2,500 kilowatts (equal to about 4,500 small room air conditioners) from our peak demand hour. In terms of our Forward Capacity payment to the ISO, the annual savings to the Town will be over \$150,000 for 2011.

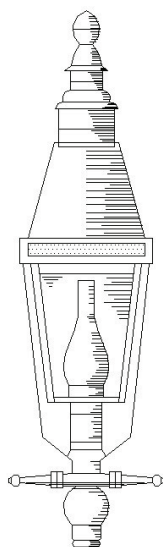
We sent out only 4 peak demand hour notices this summer: July 6, July 7, September 1, and September 2 asking Concord residents to reduce electrical use; signs were also set up throughout Town indicating the peak hour might occur those afternoons.

CMLP will continue to manage peak demand with such community outreach, which will become more effective when coupled with initiatives like the Smart Grid rollout.

ETS/Water heater Program

Our Electric Thermal Storage (ETS) heater program continues to expand. Currently we control over 3000 kW of load in the winter including over 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.

Concord Light continues to offer a residential off-peak domestic hot water (DHW) program. Participating customers have their DHW tank's charging time "shifted" to avoid expensive peak electricity charges. Currently, the water heaters of over 400 customers are controlled. In exchange, these customers receive a reduced rate for water heating, saving almost \$500 per year versus customers using electric water heaters not controlled by Concord Light.

CONSTRUCTION ACTIVITY

Construction achievements for 2010 include:

- Designed and installed new underground electrical facilities on Sarah Way and Mildred Circle.
- Completed 95% of conduit installation for electric services on the Emerson Field underground project.
- Completed the conversion of electrical facilities on Stow Street and Everett Street. This included the removal of the overhead electrical wires that were attached the utility poles in this area.
- Designed and started the upgrade of the underground electrical distribution system in the West Concord Business District.



Construction workers install conduits under a drain line for underground electric cables on Mildred Circle.

- Completed extensive tree trimming for 75% of the overhead electrical facilities.
- Designed and upgraded an antiquated underground electrical distribution system at 280 Silver Hill Road.

- Designed and relocated the electrical distribution system at the Fowler Library as part of the renovation project.

PERSONNEL AND TRAINING

Carole Hilton joined Concord Light as Customer Services Administrator and has a great deal of experience in operations, program management, key account maintenance, marketing and customer service. She has extensive experience in supervising employee teams responsible for servicing large customer accounts. She is an excellent addition to the organization.

Mary-Alice Mullin is the new Senior Department Clerk for CMLP. She comes to us with many years of experience in accounting and customer service. She has a real talent for talking with customers on the phone and in the person. She has proved to be an asset to the organization.

COMPREHENSIVE SUSTAINABLE ENERGY COMMITTEE

Charlie Parker, Chair
Gordon Brockway
Anthony Butler
Gayle Chatlosh
Bill Carlezon
Brian Crounse
Dan Gainsboro
Peter Nobile
Cynthia Wood

The Comprehensive Sustainable Energy Committee continues to advance efforts to conserve energy in Town buildings, to understand the Town's overall energy use patterns both within the government and the community, and to coordinate with Town departments and environmental groups to initiate broad-reaching efforts to reduce energy consumption, promote energy conservation and support renewable energy technology.

Energy Baseline & Energy Plan

In early 2010, through the use of the Local Governments for Sustainability (ICLEI) Clean Air & Climate Protection Software (CACP 2009), the Town completed its baseline carbon footprint calculation for both the government and community sectors. The Committee has taken the baseline data and drafted an Energy Plan for the Town that includes target reduction goals, recommendations for the municipal, residential and commer-