

## **MUNICIPAL LIGHT DEPARTMENT**

To the citizens of the Town of Marblehead:

The Marblehead Municipal Light Department is pleased to provide its 119th annual report and financial statements for the calendar year ending December 31, 2013.

Contrary to the weather in the early months of 2012, temperatures dropped for a period of about two weeks in late January and early February of 2013, sending power costs higher than expected. Constraints on the gas pipelines into New England forced the running of oil-fired generation at a premium cost. This drove up our purchased power costs substantially for the months of January and February. Electricity sales were up slightly during this time due to heating systems running more often to keep up with outside temperatures. Energy consumption in 2013 - increased slightly to 107,251,937 from 105,027,165 kilowatt-hours in 2012 or about 2%.

The heat of summer this year turned to be not as high, but longer running than in 2012. We did not experience any days over one hundred degrees, but had more days of over ninety degrees, with several heat waves. We did set a new high on July 19<sup>th</sup> with the record usage of 31,639 KW, exceeding the previous record of 31,185 KW from 2011.

Again this year, Marblehead experienced fewer transformer outages due to the heat than in previous years. In fact, this year there were no outages due to the heat and subsequent overloading of transformers. This continues to be the benefit of the new smart meter system providing much more accurate data to the engineering staff, which has enabled us to pre-empt many of the outages, instead of reacting after the fact. By having the real-time loading on the transformers from the new system, we are able to implement strategies before the heat of summer comes on. We continue to monitor the equipment that could reach overload and possibly fail during the heat of summer. This allows us to do this work on regular scheduled days, not overtime, minimizing outages, inconvenience, and expense to our customers. The new system also gives us the ability to monitor our system on a minute by minute basis during the times of high heat and watch for potential problems.

Unlike 2012 with Hurricane Sandy, 2013 did not produce any storms of great concern. With our aggressive preventative maintenance and construction projects,

we continue to reap the benefit of that work, setting the bar higher for maintenance and service quality than area investor-owned utilities.

With the end of 2013, came another full year of energy production from our Berkshire Wind Power Project, exemplifying the success of public power as a creator of jobs, in conjunction with renewable energy sources. This wind power project has exceeded expectations in the production of clean energy with an annual total production of 51,699,991 Kwh and a production capacity exceeding 35% again, which rates the units as excellent. According to US EPA calculations, it is equivalent to removing 7599 passenger cars from the road for a year, removing 36,477 metric tons of CO<sub>2</sub> from the air, not burning 157 rail cars of coal, or 84,830 barrels of oil. Marblehead's share of the project is 6.7 percent, or 2,711,104 Kwh. The 10-turbine, 15-megawatt wind farm atop Brodie Mountain in Hancock, Massachusetts, started commercial operation on May 28, 2011. The project is owned and operated by the Berkshire Wind Power Cooperative Corp. (BWPCC), a non-profit entity that consists of the Marblehead Municipal Light Department and 13 other municipal light plants, together with our joint action agency the Massachusetts Municipal Wholesale Electric Company.

With the success of Berkshire Wind to build on, we continue to pursue new sources of renewable energy. Throughout 2013 we were looking to add large scale solar generation to our fuel mix, but had not found a project that fit our needs. A solar farm output would add a peak shaving type generation to our mix, alleviating some of the spike that happens on hot summer days. That in turn helps reduce our transmission costs and higher purchase prices associated with power during those peak periods. From the environmental perspective, it would also reduce our carbon production throughout the year. There continues to be a substantial number of solar projects in development in the New England area, which we are constantly reviewing for possible power purchase agreements. We are confident that in the near future, we will finalize a purchase agreement. We did see a small increase in local photovoltaic systems this year from 2012, but it has slowed compared to previous years due to some tax credits expiring, with only two new systems installed.

With greater than 50% of New England's electricity production from fossil fuels, and the largest share being natural gas, changes in the cost of fuels, either up or down, will impact the wholesale cost of electricity in the region. The low cost of natural gas of previous years has now led to congestion and availability problems on the pipelines into New England. Recently the price of natural gas has begun to edge upward again, partially due to a large growth in residential use of the fuel.

Residential use takes priority during the coldest months for heating, leaving little left for power plants. This has in turn caused the need to run oil-fired generation more often in the winter months, which drives up power prices due to increased fuel costs. These power production costs tend to be several times more expensive than when produced by natural gas. We expect this trend to continue for the next few years, at least, until pipeline construction projects can catch up to the demand. Unsure fuel price forecasts have convinced us to make forward purchases well into 2017 to help minimize spikes in power supply costs for our customers. We will continue to monitor the gas pipeline situation going forward.

This continuing pressure on natural gas delivery has also required MMLD to run our diesel generators on occasion to support the power grid in the northeastern Massachusetts (or NEMA) zone, due to few generating stations in the area. It is usually during times of system stress, such as extended cold or hot weather spells, when our units are needed. The impending closure of the Salem Harbor plant in May 2014 will most likely require MMLD to run our diesels more often in the near future. The units are a proven resource for the town, reducing our power purchase costs, reducing overall costs, and supplying the town with emergency power if necessary.

In an effort to diversify our fuel mix a bit more, and increase our renewable position, MMLD has entered into power purchase contracts with First Wind of Maine and Eagle Hydro of New Hampshire in 2013. First Wind's Hancock Wind Project in Ellsworth Maine is a 51 Megawatt wind farm that will produce power for 17 municipalities in a 25 year purchase contract through our joint action agency MMWEC. Eagle Hydro is an aggregation of several hydroelectric units in the Manchester NH area that will provide 11 Megawatts of power to municipals again through the MMWEC agency. These contracts help stabilize volatility due to oil prices and gas availability problems for years into the future. They also increase our renewable energy commitment far into the future, thereby reducing our carbon footprint.

Although new sources of generation supply are required to meet the needs of our growing customer usage, we also recognize the importance of energy efficiency and demand side management programs within our community to try and reduce some of that growth requirement. Our programs provide various rebates when customers buy more energy efficient appliances, programmable thermostats, home insulation and residential photovoltaic systems. The total rebate amount to our customers in 2013 was \$122,912.77, up from \$92,406.84 in 2012, indicating more attention is being paid to homeowner energy costs. For further information on the light

department's energy and conservation programs please visit our website at [www.marbleheadelectric.com](http://www.marbleheadelectric.com) or call 781-631-5600.

Continuing our Advanced Metering Infrastructure project(Smart Meters) from 2011, MMLD expects to complete this project in early 2014. Replacing all 10,400 meters has been a challenge for such a small workforce, but the effort is proving itself to be a good investment. Decreases in outages, faster detection and restoration prove that these types of systems are the future of the utility business. Additionally, the new ability to monitor the system from locations other than the office has proven valuable during off-hours to start restoration and problem solving before being on-site, thus reducing outage time and customer interruption. This project was partially funded through the American Recovery and Reinvestment Act grant program, which gave us the ability to fund it on a faster deployment schedule than had originally been planned. The Grant program was aimed at accelerating electric grid investments to help modernize the nation's electric system and create jobs in the process.

Our Critical Peak pricing programs from summers 2011 & 2012 were not continued through summer 2013, as we were using this time to gather and evaluate the previous seasons' data in conjunction with the Department of Energy. After a thorough evaluation, we will determine the next course of action with these new abilities to reduce peaks and the associated expenses that come with them. This will be through new or revisited programs utilizing such things as smart thermostats and load control devices for air conditioning and hot water heaters. Some other pricing signals may also be used to implement load curtailment programs through our new system and software.

As part of the light department's continuing 5-year budget and work-plan, work crews completed several distribution projects in 2013. The Beacon circuit was in need of conductor upgrade to help support that end of town. It needed to be upgraded to give MMLD the ability to feed the Front Street and Orne Street area from another source in times of problems or construction. This gives MMLD more switching flexibility in times of need while minimizing interruption to customers. It also improves voltage support all along Beacon Street and the side roads. The project consisted of replacing every pole from Woodfin Terrace to Norman Street, rigging all new hardware, hanging new conductors, and changing over every house to the new wire, a complicated and time consuming process.

We also began preparations for the work on Clifton Avenue by setting all new poles, and rigging new hardware in expectation of completing that project in 2014.

In a smaller project, we also began making improvements for the Glover School, by requesting new poles from Verizon and reinforcing the feed in the area of the school. Every year we make a new schedule for construction expected to be done to improve the system.

In addition to our outside plant construction projects, we also began the review and design process for the Commercial Street Plant in 2013. Reviewing several previous studies and looking towards the future, we are nearly complete with a conceptual design of the facility. Not having been updated since the 1970's, the facility is in need of considerable work to bring it up to today's building code requirements. Originally constructed in 1894, it has served MMLD well and we plan to continue that service well into the future with thoughtful design and respect for the past. There are few options in a town so fully developed, relocating and new construction were quickly ruled out as options, since parcels of the size needed were virtually non-existent. MMLD has retained Winter Street Architects of Salem to work with us to develop plans to move forward on this design, possibly in 2014.

In 1995 the actual installed cost of the electric plant in service totaled \$9,047,488. By the end of 2013 the estimated installed cost totaled \$27,842,880 demonstrating the light department's continued commitment to infrastructure improvement. This increased investment in the electric plant has been accomplished without the need to issue debt.

Net surplus revenue that was returned to the Town to reduce the tax levy in 2013 was \$330,000, part of the twelve-year cumulative amount through 2013, totaling \$4,350,000.

Appreciation is tendered to the Board of Selectmen, Town Officials, Department Heads, and to all Town employees for their continued support, cooperation, and contributions.

Respectfully Submitted,

Jay P. Anderson, General Manager  
Charles O. Phillips, Commissioner  
Michael A. Hull, Commissioner

Philip W. Sweeney, Chairman  
Walter E. Homan, Commissioner  
Calvin T. Crawford, Commissioner