

## MUNICIPAL LIGHT DEPARTMENT

To the citizens of the Town of Marblehead:

The Marblehead Municipal Light Department is pleased to provide its 120th annual report and financial statements for the calendar year ending December 31, 2014.

The weather in the early months of 2014 experienced no extremes in cold temperatures during January and February. As in 2013 constraints on the gas pipelines into New England forced the running of oil-fired generation at a premium cost. These factors as in the past drove up our purchased power costs for the months of January and February.

The heat of summer in 2014 came early with numerous days over ninety degrees. We did not experience any days over one hundred degrees, but had more days of over ninety degrees, with several short lived heat waves. We set yearly demand peak for 2014 on September 24<sup>th</sup> with the demand of 24,624 KW. This was substantially below the previous record of 31,639 KW set in 2013. Total energy consumption for the year 2014 decreased slightly from 107,251,937 to 105,357,501 kilowatt-hours or about 2%.

During 2014 the customers of the Light Department benefited from the lack of any extreme weather. The only stormy weather occurred during October and all of the effected customers were restored within a few hours. Most of these outages were caused by tree conditions with limbs and trees coming in contact with the electric wires. With our preventative maintenance and construction projects, we continue to reap the benefits of that work.

During the year 2014 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 department, 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. With our ongoing preventative maintenance and construction projects, we continue to reap the benefits of that work.

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 in excess of 57,000,000 Kwh and a production capacity exceeding 39%, which rates the units as excellent. Marblehead's share of the project is 6.7 percent of the total generated 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. (BWPC), 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 2014 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 with three new residential systems installed. Presently there are sixteen photovoltaic systems installed on buildings in Marblehead. The Light Department has been contacted by three additional homeowners about the possible installation of photovoltaic systems on their buildings.

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 closure of the Salem Harbor plant in May 2014 will most likely require MMLD to run our diesels more often in the 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 municipalities again through the MMWEC agency. Both of these renewable generation projects went on-line in 2014 and started providing electrical power. 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 and cool home rebates. Through this program administered through MMWEC our customers received a total of \$38,525.63 during 2014. 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.

The installation of our Advanced Metering Infrastructure project (Smart Meters) at MMLD was completed in early 2014. Replacing all 10,400 meters had been a challenge for such a small workforce, but the effort is proving itself to be a good investment. During outages to our customers we are notified through the Smart Meter system as to the location of the outage. This notification in turn allows for faster restoration by identifying the location of the failed electrical component. These types of Smart 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.

As part of the light department's continuing 5-year budget and work-plan, work continued on several distribution projects in 2014.

- The Beacon circuit was in need of conductor upgrade and this project was completed.
- Work began on the Clifton Avenue conductor upgrade project by setting all new poles, and installing new hardware. Completing of this project should be in 2015.
- Work began on the Ocean Ave (Marblehead Neck) conductor upgrade project. This project will continue through 2015.

In addition to our outside plant construction projects, we also began the review and design process for the Commercial Street building in 2013. Reviewing several previous studies and looking towards the future, we are nearly complete with a conceptual design of the facility. The department has retained Winter Street Architects of Salem to work with us to develop plans and go forward on this design in 2015. The original Commercial Street building was updated in 1969 adding the business offices to the generating facility. The building 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.

In 1995 the actual installed cost of the electric plant in service totaled \$9,047,488. By the end of 2014 the estimated installed cost totaled \$27,954,737 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 2014 was \$330,000, part of the thirteen-year cumulative amount through 2014, totaling \$4,680,000.

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,

Andrew F. Hadden, General Manager  
Michael A. Hull, Chairman  
Walter E. Homan, Commissioner  
Michael A. Tumulty, Commissioner  
Joseph T. Kowalik, Commissioner