

Three MMWEC Members Selected for Battery Storage State Grants

Three MMWEC members have been selected through a competitive grant process to receive state grants for battery storage projects.

The grants to the Ashburnham Municipal Light Plant (AMLP), the Wakefield Municipal Gas & Light Department (WMGLD), and the West Boylston Municipal Light Plant (WBMLP) have been awarded through the Advancing Commonwealth Energy Storage (ACES) initiative, a coordinated effort between the Massachusetts Clean Energy Center (MassCEC) and the state Department of Energy Resources (DOER). MMWEC assisted with the grant application process and is assisting with the financing of these projects (see “Pooled Loan...” page 2). AMLP is receiving \$600,000 towards its \$2.5 million project. The project includes installation of a 2-megawatt lithium ion battery. The battery would be used to reduce the town’s electric load and for solar buffering, which will allow for increased installation of additional renewables. The project will help the utility alleviate a current over-saturation of solar in town.

WMGLD will receive \$800,000 towards its \$3.5 million project. The project includes a 3-megawatt lithium ion battery, as part of a dual-purpose distributed generation and energy storage complex. The battery storage unit will help to reduce the town’s electric load.

WBMLP will use its \$243,000 grant for its planned flywheel energy storage project. The \$486,000 project includes a 128-kilowatt flywheel energy storage system, interconnected with the utility’s 370-kilowatt solar project on Shrewsbury Street. The behind-the-meter project will be used for peak load reduction, resulting in lower transmission and capacity charges.

In 2015, the Baker-Polito Administration announced a two-phase, \$10-million



Left to right: Jeff Lissack of Amber Kinetics, Jon Fitch of WBMLP, Doug Alderton of NEC, Dave Polson of WMGLD, Kevin Sullivan of AMLP, Governor Charlie Baker, Brian Quinn and Jason Viadero of MMWEC

Energy Storage Initiative. The first phase resulted in an energy storage study, “State of Charge,” which helped guide future policy and programs related to battery storage, including this solicitation of energy storage demonstration projects. In all, \$20 million in grants were awarded through the ACES program in December. ∞

Stony Brook Supports Grid Reliability During Recent Cold Snap

MMWEC’s Stony Brook power plant played a critical role for the New England power grid during the recent regional cold spell, as it was called upon to run more than usual during the nearly two-week span of extremely low temperatures.

Stony Brook’s dual-fueled capability, which allows it to run on natural gas and oil, makes it a flexible resource to ISO-New England during times of higher electric load. In addition, it features a high level of oil storage capacity, at approximately 17 million gallons.

During especially cold periods, like the recent cold snap, there are constraints on the region’s natural gas pipeline capacity, as more natural gas is needed to heat homes and less is available to generate electricity. Pipeline constraints result in natural gas price spikes, and oil becomes a valuable alternative.

While natural gas prices are typically lower than oil, oil became the less expensive fuel during the cold spell because of increased demand for natural gas.

Higher electric loads during the cold spell, coupled with the oil/natural gas price inversion, resulted in Stony Brook being called upon to run on oil beginning on December 27, and at least one unit at the plant was running for the next 12 days. Stony Brook is a five-unit plant, including three combined-cycle intermediate units and two single-cycle peaking units.

During the cold snap, the intermediate plant had a capacity factor of 40.73%, and the peaking plant had a capacity factor of 7.8%. More than 105,000 barrels of oil were burned at Stony Brook during this time, representing the highest oil burn since the polar vortex of 2014, when 140,000 barrels were burned.

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2018 to be Most Active Year Yet for Pooled Loan Program

Several MMWEC Members will be able to fund needed projects at their utilities this year, thanks to MMWEC's Pooled Loan Program.

The Pooled Loan Program, which became operational with the closing of its first loan in late 2014, offers MMWEC Members the opportunity to access capital for utility projects.

There's been a recent increase in activity under the Pooled Loan Program, after several Members received state grants through the Advancing Commonwealth Energy Storage (ACES) initiative to fund battery storage projects. The Pooled Loan Program will provide the capital funding to see those projects, and others, to completion.

Six MMWEC members will be accessing new money through the program to fund approximately \$37 million in projects. Projects include peak reducing generators, battery storage, a solar project and a substation.

"A convergence of the ACES grant projects and regular

capital projects combined for the need for this funding," said Matthew J. Ide, MMWEC's Executive Director of Energy and Financial Markets.

The Pooled Loan Program has the ability to eventually fix the current loans into a fixed debt public finance offering.

"Members have long recognized the value the Pooled Loan Program provides," Ide said. "Now, their needs have materialized to a point where many can utilize this unique tool that MMWEC membership offers them."

Through the Pooled Loan Program, MMWEC is able to provide members with lower all-in financing costs as compared to individual MMWEC-financed member costs. The program benefits from economies of scale in the financing process, as well as MMWEC's strong reputation with bank lenders and investors.

Projects eligible for the program include various assets such as buildings, substations, energy efficiency projects, vehicles, generating assets and smart meters. ∞

ISO-New England Cites Concerns about Future Reliability in Fuel Security Analysis

A new study by ISO New England finds that maintaining electric grid reliability will become more challenging if current fuel security trends continue into the next decade.

In 2016, the region's grid operator announced plans to conduct the "Operational Fuel-Security Analysis," the results of which were released in January. The study examined, through 23 hypothetical scenarios, whether there would be enough fuel to ensure bulk power system reliability throughout an entire winter seven years in the future. The study was prompted by concerns over an increasing reliance of natural gas in the region, inadequate natural gas pipeline infrastructure, tightening emissions restrictions and other factors.

The study does not provide cost estimates for the various scenarios. The study focuses on system reliability impacts, not cost impacts, an important consideration for MMWEC.

Based on the winter of 2014-2015, because of periods of sustained cold, ISO-NE considered whether and how various levels of power plant retirements, renewable energy, liquefied natural gas (LNG), replenishment of stored oil, as well as plant and compressor station outages would effect grid reliability. The study assumed no new gas pipeline capacity in the region.

While not intended to precisely predict the future, the study found that with almost every fuel-mix scenario in 2024-2025, energy shortfalls due to inadequate fuel would occur. These shortfalls would likely require frequent use of emergency actions to keep power flowing and protect the power grid.



The study's major conclusions include:

- The region is vulnerable to the season-long outage of any of several major energy facilities
- Reliability is heavily dependent on the availability of LNG, imports and dual-fueled (oil and natural gas) capability
- The timely availability of fuel is critical
- All but four of the scenarios would require load shedding, also known as rolling blackouts
- Renewables help lessen fuel-security risk, but could also prompt coal and oil retirements
- Delivery assurances for LNG and electricity imports, and transmission expansion, will be required

Shortly after the study's release, ISO-NE President and CEO Gordon van Welie testified before the U.S. Senate in a hearing to examine the performance of the electric power system under certain weather conditions. Van Welie said he is increasingly concerned over the lack of secure fuel arrangements for the region's generators, and also the possibility that both wholesale energy prices and emissions will rise when extreme weather results in natural gas pipeline constraints. He went on to say that New England's limited fuel infrastructure will eventually cause "severe reliability issues if fuel security is not addressed."

Last fall, ISO-NE delayed its planned release of the fuel security analysis after Energy Secretary Rick Perry initiated the Proposed Rule on Grid Reliability and Resilience Pricing, which called for outside-of-market supports for coal and nuclear

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FERC Rejects New England Transmission Owners' Request for Rehearing in ROE Case

The Federal Energy Regulatory Commission (FERC) has rejected requests by New England transmission owners (NETOs) for rehearing of a 2016 FERC ruling enabling a complaint seeking reduced transmission rates to move forward.

The NETOs and the Edison Electric Institute sought rehearing of the FERC ruling, which involves the fourth of four complaints seeking reduced transmission rates for New England consumers. In these cases, MMWEC and other municipal utilities, the Massachusetts Attorney General, attorneys general and consumer advocates from other New England states are arguing for a reduced rate of return on equity (ROE) for transmission owners, which essentially is the amount of profit the NETOs are allowed to earn on their investments in transmission facilities.

In the first case, the FERC reduced the base rate of ROE from 11.14% to 10.57%. That decision was appealed to federal court and portions of the decision were returned to the FERC for further consideration, although the current base ROE for the NETOs remains at 10.57%. The second and third complaints are awaiting action by the FERC.

In the fourth complaint, complainants contend that the

NETOs' current 10.57% base ROE is unjust and reasonable, and that the base ROE should be reduced to 8.07%. In its post-hearing briefing in the fourth complaint, MMWEC and others argue that the current base ROE is materially higher than the best estimate of the NETOs' actual cost of equity.

In the same case, a brief submitted by the FERC staff agrees that the 10.57% ROE is unjust and unreasonable, and states that the base ROE should be reduced to 8.55%. An initial decision in the fourth complaint is expected in late March.

In October 2017, FERC rejected a plan by NETOs to unilaterally increase transmission rates without FERC approval. The NETOs unsuccessfully argued that the federal court ruling on appeal of the FERC decision on the first complaint justified reinstatement of the higher 11.14% ROE. The U.S. Court of Appeals for the D.C. Circuit vacated the landmark 2014 FERC decision reducing the ROE from 11.14% to 10.57% and remanded the case to the FERC for further consideration. The court determined that FERC had not adequately explained how it determined that 11.14% was unreasonable. In rejecting the NETOs filing stating the transmission owners intended to begin billing at the higher rate, FERC stated that it reserves the right to adjust the existing 10.57% ROE, up or down, in the future. ∞

Agencies Issue Ratings, Outlook Updates on MMWEC Power Supply Projects, Berkshire Wind

Fitch Ratings has issued an improved outlook on the 'A+' credit rating for the revenue bonds associated with three MMWEC power supply projects, upgrading the outlook to Positive from Stable.

The new outlook applies to Nuclear Project No. 3, Nuclear Project No. 5 and Project No. 6, which represent a portion of MMWEC's ownership interests in the Seabrook Station nuclear plant in New Hampshire and the Millstone Unit 3 unit in Connecticut. Fitch also affirmed its 'A+' rating on the bonds.

Fitch Ratings cites the MMWEC project participants' continued economic and financial strength and stability as key rating drivers, stating that it expects this trend to continue.

"Participant debt levels are low, and in some cases, will further decline as project debt is retired, and the participants maintain full rate-setting authority over their currently competitive retail rates," Fitch states in its report.

All of MMWEC's power supply project debt will be retired by 2019, with only \$10.68 million in project debt currently outstanding. Millstone Unit 3 is licensed to operate until 2045, and Seabrook Station, which is licensed to operate until 2030, is seeking a license extension to 2050.

Fitch also cites the long-term contracts with participants, which are court-validated to ensure their enforceability and

provide some financial cushion, as a factor in its ratings decision. In addition, a 25% step-up provision for Nuclear Projects No. 3 and 5, and \$15.2 million in bond reserves for Project No. 6, provide additional bondholder protection.

In December 2017, Moody's Investor Service upgraded the credit ratings on the same three MMWEC projects, from 'A3' to 'A1', which is equivalent to an 'A+' rating from Moody's and Fitch. In addition to the sound operating performance of both Seabrook and Millstone, Moody's credited the successful implementation of MMWEC's debt amortization plan and the strong unrestricted liquidity at each project in making the upgrade.

Also in December, Fitch issued an improved outlook on the credit rating for the Berkshire Wind Power Cooperative Corporation, upgrading the outlook from Stable to Positive. Fitch also assigned an 'A+' rating to the project's current debt and advance refunding bonds

issued that month to take advantage of favorable market conditions. Meanwhile, S&P Global Ratings assigned its 'A' long-term rating to BWPCC's advance refunding bonds, while affirming its 'A' rating on BWPCC's wind project revenue bonds outstanding. The S&P outlook is stable.

All of the BWPCC project participants also are MMWEC project participants, and the underlying credit metrics for both entities are similar. ∞

"Participant debt levels are low, and in some cases, will further decline as project debt is retired, and the participants maintain full rate-setting authority over their currently competitive retail rates."

-Fitch Ratings

MMWEC Participates in North American Grid Security Exercise

MMMWEC tested its ability to respond to a threat to the electric grid as part of the North American Electric Reliability Corporation’s (NERC) grid security exercise, known as GridEx, in November. The event is designed to examine the electricity sector’s ability to respond to grid security emergencies, gauge communication between various parties, engage senior leadership and identify lessons learned.



MMWEC has participated in the biennial event since the first exercise took place in 2011. GridEx IV involved more than 6,500 participants from 450 industry and government organizations, including electric utilities, state and federal agencies, critical infrastructure partners and supply chain stakeholders. GridEx allows MMWEC to collaborate with other industry and government participants and to reflect on various challenges, such as recovery of systems, information

and intelligence sharing, coordination of operations, and public communications.

During the two-day event, MMWEC tested three scenarios to gauge its ability to respond to physical threats to the Stony Brook plant and to cyber security incidents involving critical Stony Brook control systems. MMWEC’s cyber security incident response team and Stony Brook managers participated in the exercise, which allowed MMWEC to test incident response plans and reporting procedures.

Although MMWEC has been required to maintain and annually test its cyber security incident response plan since 2010, MMWEC has never needed to implement the plan to respond to an actual cyber security incident. Testing keeps personnel prepared and provides an opportunity for MMWEC to continue to improve its plan. ∞

ISO-NE Cites Concerns...continued from page 2

resources as a way to maintain resiliency and fuel diversity. MMWEC filed comments in response to that proposed rule, in which MMWEC stated that nuclear plants should be properly valued within the markets for their carbon-free attributes, the resiliency benefits they bring to power grid operations and electric system reliability.

In January, the Federal Energy Regulatory Commission (FERC) terminated the Department of Energy rulemaking proceeding regarding grid reliability and resilience, initiating a new proceeding to specifically evaluate the resilience of the bulk power system in the regions run by regional transmission organizations and independent system operators, such as New England. The proceeding directs ISO-NE to provide FERC with information regarding what it currently does to assure or strengthen grid resilience and reliability, as well as ideas regarding additional steps ISO-NE and/or FERC could take to improve resilience and reliability. ISO-NE must respond to FERC by early March with its findings. ∞



The Sterling Municipal Light Department and the Town of Sterling have been selected as one of eight statewide winners of the 11th Annual Leading by Example Awards. The town and SMLD were recognized for becoming a national leader in clean energy, energy resilience and battery storage. Left to right: DOER Commissioner Judith Judson, Sterling Selectman Maureen Cranson, Joanne Bissetta of Mass. Green Communities, and SMLD Manager Sean Hamilton.

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In total, Massachusetts electric generators burned about 2 million barrels of oil during this period, which is more than double the amount burned throughout all of 2016. Oil represented

approximately 30% of the fuel mix in New England during this period, when it typically represents only about 1% on a winter day. ∞



Massachusetts Municipal Wholesale Electric Company

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Joint Action and economies of scale for Massachusetts municipal utilities

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