



Research Team Completes Study on Undergrounding Utilities Under MMWEC DEED Grant

A research team funded through an American Public Power Association (APPA) Demonstration of Energy and Efficiency Developments (DEED) grant awarded to MMWEC has completed an in-depth study of the cost-benefit analysis of undergrounding electric cabling through co-deployment with optical fiber.

The research team, from the University of Massachusetts and Project Groundwork, aimed to advance the technical understanding and financial feasibility of municipal installations of underground utility corridors for the combined distribution of electricity and broadband internet. Researchers built a model that optimizes construction of new utility corridors on the basis of estimated cost and projected benefits, including enhanced reliability of electric service and access to broadband.

Researchers used both literature on electricity and broadband cost elements and data on undergrounding from public and commercial sources. The team also used MMWEC Member Shrewsbury Electric and Cable Operations (SELCO) as a case study for their report.

While high-density cities have been undergrounding electric and telecommunications infrastructure for over a century to enhance reliability, the greater per capita cost of

undergrounding in less dense cities has resulted in a patchwork grid of largely above-ground wires. Recent technical improvements in physical and digital infrastructure have brought significant decreases in the cost for underground installation. This presents an opportunity for municipalities to combine the complementary assets of fiber and electric lines to build next-generation power and information distribution networks, at or below the cost of maintaining legacy infrastructure.

In their preliminary analysis, the researchers found that the per-mile cost of underground installation is a major cost driver. The lifespan expected from underground cable is also a key cost factor, and they found that commonly assumed lifespan values may be significantly underestimated. They found that aggressive conversion strategies – replacing overhead cable before the lifespan of the cable is reached – result in aesthetic benefits and yield higher avoided economic losses. However, optimal potential benefits can be achieved by undergrounding after the complete lifespan of the overhead lines has been reached.

The research team plans to publish additional papers with detailed models and results for use in other municipalities. ∞

IELD, CET Complete Feasibility Study for Tariffed On-Bill Financing

Ipswich Electric Light Department (IELD) and the Center for EcoTechnology (CET) have completed a feasibility study on tariffed on-bill financing for decarbonization and energy efficiency measures.

Tariffed on-bill (TOB) financing is one way to defer the upfront costs of the decarbonization and electrification efforts that will be necessary in order to comply with the Commonwealth's goal of reaching net-zero carbon emissions by 2050.

With tariffed on-bill financing, the utility covers the cost of the residential efficiency upgrades and charges customers a monthly tariff that is less than or equal to what their energy bills currently are. The tariff, tied to the electric meter of the home, is extended until the utility recovers the investment it spent. If a homeowner or renter moves while the tariff is still active, it is transferred to the new occupant.

After reading a study proposing the use of TOB in California, the President of MMWEC's energy efficiency and decarbonization partner, CET, Ashley Muspratt, approached IELD General Manager Jonathan Blair about how that process could be used in Ipswich for energy efficiency measures. In May 2021, IELD, CET, and MMWEC had a meeting with the Massachusetts Department of Energy Resources and the Massachusetts Clean Energy Center (MassCEC) to discuss

decarbonization innovations. MassCEC expressed interest in the TOB project and later agreed to fund a TOB feasibility study.

IELD and CET launched a three-part study: an analysis of which efficiency measures would save enough money in operating costs to be financed using TOB, a survey of utility customers to gauge interest, and a business case analysis for IELD to study program costs, grid-wide benefits, and return on investment of the program.

The analysis focused on the financing of four measures: weatherization, heat pump hot water heaters, air source heat pumps, and solar panels plus battery storage. The installation cost and savings of each measure was calculated for three different size residences in Ipswich. The analysis found that weatherization, heat pump water heaters, and solar panels plus battery storage could be readily financed with TOB, meaning the installed measures would generate sufficient operating cost savings that no more than 80 percent of the savings would be enough to fully recover the capital costs over the life of the measure. The analysis found that using TOB to finance heat pumps would likely require a modest upfront payment by the customer; however, bundling the measure with weatherization could lower or eliminate the upfront cost. *Continued on Page 4*

MMWEC Members Offer Electric and Heating Bill Assistance Programs

As prices increase across the board from gasoline to oil to electricity, municipal light plant (MLP) customers may encounter difficulty paying their electric and heating bills this upcoming winter season. MMWEC member utilities, including those in Chicopee, Mansfield, Shrewsbury, and Sterling, have programs in place for payment assistance for their customers.

Chicopee Electric Light (CEL) offers its customers the Chicopee Caring Fund for those who need assistance with paying their electric bills. To qualify, customers' gross household income must fall between 150% and 225% of the Federal Poverty Income Guidelines. CEL collects donations to the program year-round. The program was established in 2002. Since its inception, CEL has received \$143,000 in donations and has provided \$134,000 in matching funds to more than 2,700 customers. The department matches customer donations up to \$10,000 annually.

CEL General Manager Jim Lisowski says he's proud of the program and CEL's involvement.

"The Chicopee Caring Fund is a way for the customers of Chicopee to help those within the community that are less fortunate than themselves or are going through a difficult time," Lisowski said.

Shrewsbury Electric and Cable Operations (SELCO) has offered its Share the Warmth program since the early 1990s. Share the Warmth offers assistance for customers struggling to pay their heat and electricity bills during the winter months. Donations are collected year-round from SELCO customers. Applications must be filled out by March 1 for consideration. Applications are reviewed and all approved applicants receive the same amount of aid. In 2021, nearly 100 customers received \$285 each in aid through the Share the Warmth program.

"Share the Warmth is an important program to help customers in need keep the power on and to reduce their out of pocket expenses," said SELCO Director of Advocacy and Customer Experience Jackie Pratt.

Mansfield Municipal Electric Department (MMED) has

partnered with the West Side Benevolent Circle, Mansfield Bank, and the Mansfield Council on Aging and Social Services to offer the Mansfield Community Assistance Fund for the past four years. Donations are collected throughout the year via envelopes included with MMED monthly electric bills. The fund was formed to help struggling families who are not income eligible for state or federal assistance with the cost of heating, energy, and utility costs as well as unexpected healthcare expenses. In 2022, 14 families have received assistance payments totaling \$6,000.

"Many don't realize how quickly someone could have a life-changing circumstance that creates a significant financial burden on the family in a very short timeframe," said MMED General Manager Joseph Sollecito. "We are so grateful for the staff at both the Town of Mansfield Social Services and the West Side Benevolent Fund to provide such critical financial assistance when it is needed."

The Sterling Neighbor to Neighbor Fund was established in 2012 to help residents of Sterling during difficult economic times with payments toward utilities and other essential living costs. Donations can be made at any time. Sterling Municipal Light Department (SMLD) implemented the "Round Up" program which allows SMLD customers to round up their electric bills to the nearest dollar. The extra funds collected are donated to the Neighbor to Neighbor Fund. The department donates an average of \$300 per month to the fund from the proceeds of the Round Up program. Since 2016, approximately \$30,000 in assistance has been distributed to Sterling residents.

To qualify for assistance, recipients must be residents of the town of Sterling for a minimum of one year. There are no income requirements; applications are reviewed and approved on a case-by-case basis. The Neighbor to Neighbor Fund Committee reviews each application and meets to determine whether funds will be given. Applicants can receive assistance of up to \$1,500. Residents can receive a maximum of two total assistance payments, which must be distributed more than six months apart. ∞

MMWEC Members Offer Zero Interest Loans

Nearly 100,000 homes heated with fossil fuels need to be converted to energy efficient heat pump systems each year in Massachusetts, in order to achieve the net zero carbon emissions targets outlined in the Commonwealth's 2050 Decarbonization Roadmap. South Hadley Electric Light Department (SHELD) and Shrewsbury Electric and Cable Operations (SELCO) are attempting to make that transition easier for customers with zero percent interest loans for energy efficiency projects.

In September 2021, SHELD partnered with the UMASSFive College Credit Union to begin offering zero percent interest home energy conversion loans for customers who want to replace their fossil fuel heating systems with efficient electric heat pump systems. Approved customers are eligible for a loan of up to \$10,000 for a maximum 84-month term. SHELD customers who purchase a qualifying heat pump system are also

eligible for a rebate through the light department, in addition to the loan.

SHELD customers who are interested in applying for the home energy conversion loan must first contact a licensed contractor and receive a written quote for the desired updates. Customers then must schedule an Air Source Heat Pump Assessment through MMWEC's NextZero Program to confirm that a heat pump is the right fit for their home and to ensure proper sizing. After completing the assessment, customers must contact SHELD to begin the internal application process and then visit the UMASSFive College Credit Union's website to continue the application process.

"While SHELD provides South Hadley with 90% clean-carbon free power generation, we look for new ways to further decarbonize and improve the quality of life for customers," says SHELD General Manager Sean Fitzgerald.

Shrewsbury Electric and Cable Operations Purchases First Fleet EV

Customers of Shrewsbury Electric and Cable Operations (SELCO) may now see a shiny new Ford Mustang Mach-E electric vehicle (EV) driving through town since the light department recently added it to their fleet.

The Mach-E SUV is the first EV SELCO has purchased for the department's fleet. SELCO Director of Advocacy & Customer Experience Jackie Pratt said the department chose the Mach-E model specifically because it met the needs for gas meter reading and engineering site visits. The EV will be split for daily use between those departments.

The EV will also be used for promoting driving electric at community events, such as the Shrewsbury Police Department's National Night Out, where the Mach-E made its community debut in August. SELCO plans to bring the Mach-E to other town events to promote EVs, such as the farmer's market and events surrounding Earth Day. The EV is wrapped with eye-catching decals that promote the light department.

The Mach-E was ordered in March and arrived in June 2022. Pratt said that while the Mach-E is SELCO's first EV, the department has also ordered three Ford F-150 Lightning electric pickup trucks for its electric and cable foremen to use. SELCO also ordered new bucket trucks, which include electric booms. The booms help reduce vehicle emissions because idling the truck while using the bucket is not necessary.

In addition to the EVs SELCO has ordered, the department also owns and operates two dual port Level 2 EV charging stations located at the Shrewsbury Town Hall, which opened

for business this past spring. The town of Shrewsbury has a handful of other public EV chargers, and chargers

are planned to be installed at the town's new police station, which is currently under construction.

Pratt said she hopes that SELCO customers who see the department's EV around town will be inspired to drive electric.

"We are seeking to reduce our own reliance on fossil fuels for transportation as well as setting an example for other town departments and consumers," Pratt said. "With SELCO's current power supply at 50% non-emitting in 2022 and a goal of 100% net-zero by 2032, widespread use of electric vehicles within our service territory can significantly reduce carbon emissions in our community."

Pratt added that the advice she would give to other light departments considering purchasing EVs would be to start small with electrifying the department's fleet vehicles first before moving on to bucket trucks and other heavy-duty vehicles.∞



SELCO's Mach-E electric vehicle

MMWEC Awards Scholarships to Four MA High School Students

Four Massachusetts high school students are getting a break on the cost of their college educations because of the Massachusetts Municipal Wholesale Electric Company (MMWEC) and Berkshire Wind Power Cooperative Corporation (BWPC) scholarship programs.

MMWEC has awarded \$1,000 scholarships to local high school students through the MMWEC scholarship program for more than 20 years. Ludlow High School students who are pursuing college degrees in engineering, environmental sciences, business, finance, accounting, or a related field are eligible.

This is the inaugural year of the BWPC scholarship program, which offers two \$1,000 scholarships annually to Mount Greylock students who are planning to attend a two- or four-year college or trade school program. The BWPC owns and operates the Berkshire Wind Power Project, a 12 turbine, 19.6-megawatt wind farm located on Brodie Mountain in Hancock and Lanesborough, Mass. The non-profit BWPC consists of MMWEC and 16 of its Member municipal utilities.

This year's scholarship recipients are Ryan Colson and Jessica Morgado from Ludlow High School and Maisie Dufour and Rosario Larios Sontay from Mount Greylock Regional High School.

Colson plans to study mechanical engineering at the University of Miami. While attending Ludlow High School, he

served as a class representative and participated on the Math team, Interact Club, and As Schools Match Wits team. He was also a member of the golf, indoor track, and volleyball teams.

Morgado will attend Western New England University and major in finance/accounting. While in high school, she was a member of the varsity tennis team, the National Honor Society, and the Portuguese Club. She also teamed up with other Ludlow High School students to compete in the Mathworks Math Modeling Challenge, which mimics real life situations that mathematicians face, and made it to the second round of the competition.

Dufour plans to study communications at Michigan State University. While attending Mount Greylock, she served as secretary of the National Honor Society and was a recipient of the Smith College Book Award. She also was a member of the Yearbook club, Youth Environmental Squad, and the Register, Educate, and Vote club.

Larios Sontay will attend UMass-Amherst in the fall and major in business. While in high school, she was a member of the National Honor Society and participated on the soccer, basketball, and tennis teams. She also volunteered for Habitat for Humanity and the Berkshire Humane Society. Since 1998, MMWEC has awarded \$58,000 in scholarships to help students defray the cost of higher education. ∞

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Of note, these study results do not account for the recently passed Inflation Reduction Act, which includes rebates and tax credits for all measures considered in the study. These funds will effectively reduce the upfront cost of measures and enhance the attractiveness of TOB financing for the balance.

More than 300 IELD customers were surveyed about TOB. When asked about the barriers to energy efficiency, 28% responded that upfront cost was the primary barrier. After learning about the TOB process, 75% said they were interested in enrolling in the program and many responded that TOB was more attractive than a zero percent interest loan.

The business analysis found the TOB program would generate a 29% rate of return for IELD and a net present value of more than \$32.5 million. The average value generated for IELD for each participant is nearly \$10,000. Due to the positive analysis results, IELD plans to move forward with implementing a TOB program for its customers. The department sent a letter of intent to the

U.S. Department of Agriculture's Rural Energy Savings Program to apply for a zero percent interest credit line in July and was formally invited to submit an application for the \$5 million line of credit. IELD plans to complete the application this fall and hopes to gain access to funds in early 2023.

Blair said he looks forward to making energy efficient measures more accessible to all customers through the TOB program.

"The wide accessibility, inherent to TOB financing, makes it an economically, environmentally, and socially responsible program that hits at the core of energy and environmental justice," Blair said. "I hope we can continue to demonstrate that the program is viable and has real value to our utility and to our customers." ∞

MMWEC Members Offer... Continued from Page 2

"The new zero percent loan program helps lower carbon emissions in the residential sector while providing streamlined access to loans for fossil fuel replacements."

SELCO has offered zero percent interest loans for electrification and efficiency projects for owner-occupied houses and condominiums since 2007, but the department recently updated its loan offerings. The program originally included loans for insulation and energy efficient windows and doors. On June 1, SELCO expanded the program to include loans for service upgrades and heat pump installation. To qualify, customers must be residential customers of SELCO with a minimum of 12 months in good standing with the department.

To be eligible for the loan, SELCO customers must contact NextZero to schedule a home energy audit and/or heat pump consultation and complete a loan application for pre-approval before beginning any efficiency work. Once approved, customers are eligible for a loan between \$1,000 and \$10,000, depending on the efficiency project, with a 12 to 60 month payback period. Income-eligible customers may be approved for up to 84 months. SELCO customers who are approved for loans are also eligible for NextZero rebates once the efficiency upgrades are completed. Customers are only permitted one loan at a time, but once the loan is paid off, they can reapply if they have additional eligible efficiency projects planned. In addition to the loan programs, SHELD and SELCO both offer rebates for other energy efficient and decarbonization measures including ENERGY STAR® certified appliances and electric yard equipment. ∞

IELD's Ashley Wilson demonstrates electric yard equipment at the department's Summer Sustainability Showcase.



Above, MMWEC gives a tour of Berkshire Wind to project participants. At right, MMWEC's Wind Turbine Technician Alex Vega conducts a pre-inspection on the blades of a turbine at Berkshire. The blades suffered delamination on the trailing edges which is caused by harsh weather conditions. The Berkshire Wind Power Project has been in operation since 2011.



Massachusetts Municipal Wholesale Electric Company

MMWEC

A non-profit, public corporation and political subdivision of the Commonwealth
Joint Action and economies of scale for Massachusetts municipal utilities

327 Moody Street, Ludlow, MA 01056

(413) 308-1392

mmwec@mmwec.org

www.mmwec.org