

INSTALLATIONS

An inside look at recent projects completed by NECA Greater Boston Chapter members

Lighthouse Electrical Contracting, Inc. Completes 30kW Photovoltaic Installation at MIT Building 57, Alumni Pool Athletic Facility **NECA Contractor Teams with Project Design and Management Firm Zapotec Energy Inc., Cambridge, MA**

Cambridge, MA — Lighthouse Electrical Contracting, Inc. of Rockland, MA has completed the installation of a solar system at the MIT Building 57 – Alumni Pool athletic facility. The contractor installed the 30kW Evergreen panel system comprised of 158 photovoltaic panels (190W per panel) using a Uni-Rac mounting system. For the project, Lighthouse installed inverters manufactured by Solectria



Photo courtesy of Zapotec Energy Inc.

Renewables. Evergreen and Solectria Renewables are Massachusetts based solar manufacturers. The electrical contractor supervised a field crew of three to six electricians from IBEW Local 103 during the fast-track 3-week project. Output is expected to be approximately 37,000kWh annually. The project was designed and managed by Zapotec Energy Inc. and its principal Paul Lyons of Cambridge, MA. ■

Lighthouse Electrical Contracting and Zapotec Energy, Inc. of Cambridge Provide Solar Installation at 385,000 sf BNY Mellon Bank Facility in Everett

Everett, MA — Lighthouse Electrical Contracting, Inc. of Rockland, MA, in a joint venture with Zapotec Energy of Cambridge, has completed the solar installation atop the Bank of New York/Mellon Bank facility in Everett, MA. The 76 kilowatt system, comprised of 364 SunTech photovoltaic panels in a

5,762 square foot array, is now on-line and supplies electric power to the 385,000 square foot office complex. The solar panels are affixed to two 125-foot by 25-foot sloped steel frames and are prominently located on the roof of the building. The BNY Mellon



installation is among the largest solar projects in Greater Boston and one of the top 25 solar-electric generating projects in Massachusetts.

The solar system directly integrates into BNY Mellon's power grid and is expected to have an annual electrical power output of approximately 103,000 kilowatt-hours, resulting in electrical savings for the Bank of up to \$15,000 per year. The electricity generated will cover between 5% and 10% of the electricity

costs at the BNY Mellon operations center facility, which houses 1,000 employees. Payback for the system is expected to be within about 5 years.

The project received funding from Massachusetts Renewable Energy Trust and is part of National Grid's Congestion Relief Pilot program. Installation of the

solar system was coordinated by BNY Mellon's property manager in Everett, Jones Lang LaSalle. Lighthouse Electrical and Zapotec Energy worked in tandem on a project team that included project designer Symmes Maini & McKee Associates (SMMA) of Cambridge.

Lighthouse supervised a field crew ranging from 3 to 8 electricians from IBEW Local 103. The project commenced in January 2009 and was completed, on Earth Day, April 22, when the system went on-line. The ribbon-cutting ceremony for the facility (shown above) was attended by numerous state and local officials, including Lt. Governor Timothy Murray and Everett Mayor Carlo DeMario, Jr. ■

J.F. White Electrical Shines in Design/Build Solar Projects for Mass Dept. of Correction – MCI Norfolk and MCI Concord

Framingham, MA – On June 18, 2009, J. F. White Electrical of Framingham commissioned two photovoltaic systems for the Massachusetts Department of Correction as the culmination of a design-build contract awarded by The Commonwealth of Massachusetts, Division of Capital Asset Management. The sites are located at MCI Norfolk and MCI Concord, MA. Both sites are waste water treatment plants owned and operated by the Department of Correction. The PV arrays are installed on retired drying beds which are no longer used in the treatment process.

The Norfolk site, the larger of the two, consists of 368 Schott 290 watt PV modules for a total of 106.7 kW DC STC, powering a Solectria Renewables 95 kW grid-tied inverter which provides 208 volt, three phase power to the facility's electrical distribution



system. The PV modules are supported by ground-mount structures made of formed aluminum channel with an integral ballast system. The structure's design lends itself to quick assembly and rapid alignment and installation of the PV modules at a fixed orientation and tilt angle.

The Concord site consists of 224 Schott 290 watt PV modules for a total of 64.96 kW DC STC, powering a Solectria Renewables 60 kW grid-tied inverter which provides 480 volt, three phase power to the facility. Both sites include revenue grade metering and Solectria's Solrenview Data Acquisition System for remote monitoring. Connection to the Worldwide Web is accomplished through a wireless WAN, which was also designed and installed by J. F. White. ■

Lighthouse Awarded PV at The Arsenal

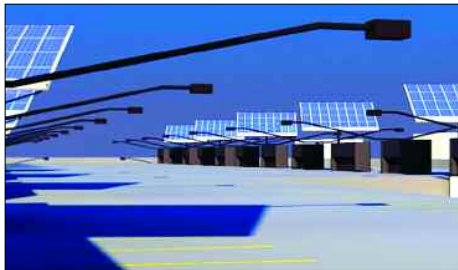
Watertown, MA – Lighthouse Electrical has been awarded the design and installation of a photovoltaic system at The Arsenal on the Charles in Watertown. At 2 1/2 football fields in length, the 500kW - 700kW solar array will be among the largest in the state. The project at the Harvard University-owned office complex is currently in the design phase and installation is scheduled to be completed by the end of 2009. ■

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Broadway Electrical Awarded Logan Airport Terminal B Parking Garage Green Renovation Featuring PV and LED Lighting

Boston, MA — Broadway Electrical Co., Inc. has been awarded the green, renewable energy-focused electrical renovation of the Terminal B parking garage at Boston Logan International Airport by Massport. The project scope will include installation of 16 "solar trees" — photovoltaic solar panels mounted on air ventilation units on the fifth level roof of the garage. Through sunlight harvesting the solar panels are expected to produce 84,000 kilowatt hours of



electricity a year, approximately 2.5% of the garage's energy usage. Broadway will also install energy-efficient LED lighting throughout the garage and walkway areas, expected to reduce electricity usage by nearly 50 percent. Broadway Electrical is scheduled to provide the solar installation project this year. LED lighting will be phased in over the next two years. A rainwater irrigation system will also be integrated into the parking facility. ■

Mass. Electric Installs 100kW Roof Mounted Solar System at Major Defense Contractor's Facility in Andover, MA

Andover, MA — Mass. Electric Construction Company completed installation of a solar system comprised of 528 photovoltaic panels on the roof of a major defense contractor's manufacturing building in Waltham in the spring of 2008. The solar project is capable of producing 100 kW of DC power, which is then inverted to approximately 85,000 W of AC power at 480 VAC. The solar panels are mounted on steel structures and bolted to the structural membranes of the facility's roof. Logistical challenges met



by Mass. Electric Construction included undertaking special safety precautions, addressing restricted access issues, and providing special equipment protection. Mass Electric managed an electrical field crew of 8 electricians from IBEW Local 103 in the 2-1/2 month project. ■

All-Pro Electric, Inc. Completes 33kW Solar PV Installation at Melrose Veterans Memorial Middle School

Melrose, MA — In May 2009, All-Pro Electric, Inc. of Bradford, MA, completed installation of a 33kW solar photovoltaic system at Melrose Veterans Memorial Middle School. The rooftop system is comprised of 176 190-watt Evergreen Solar photovoltaic panels, and 2 Solectria Renewables inverters. All-Pro Electric provided both design and installation services for the grid-tied



project. The NECA Boston Chapter member performed the installation while school was in session, handling the project in a manner to ensure there was no disruption to classes. All-Pro Electric provided services for the City of Melrose. Electrical engineering services were provided by WSP Flack + Kurtz, Boston. ■

John A. Penney Provides 225kW Photovoltaic System for National Grid's Operations Center in Waltham

Architect: Sasaki Interdisciplinary Design, Watertown, MA; GC: John Moriarty & Associates, Winchester, MA; EE: AHA Consulting Engineers, Boston, MA

Waltham, MA — John A. Penney Company, Inc. of Cambridge has completed the installation of a major rooftop photovoltaic installation project for the National Grid new operations center in New England, located in Waltham, Massachusetts. The project is comprised of the installation of 736 photovoltaic panels on the roof of the 312,000 square foot building. Installation of the



225 kWdc (with power output expected to be approximately 300 amps) rooftop photovoltaic system, the associated data acquisition system and weather station began in April 2009. This system is one of the largest rooftop solar installations in Massachusetts. Start-up tests and commissioning began in July. Penney Company retained a field crew of six to 10 electricians from IBEW Local 103 for the photovoltaic installation. The power generated from the system is expected to approximate the output of a typical main distribution panel on a single floor of a high-rise facility. ■

Broadway Electrical Completes Wellfleet Town Public Library 17kW Solar Installation

Wellfleet, MA — In June 2009, Broadway Electrical Co., Inc. of Boston completed the turnkey installation of a 17kw solar photovoltaic solar system at the Town of Wellfleet Public Library. Broadway's scope of work included the engineering, design, and installation of the system, as well as preparation of



Renewable Energy Trust rebate applications and Utility Interconnection Agreements. The project was valued at \$114,500.

The NECA contractor has also been awarded solar projects for Park Development at 2 Park Street in Boston and a Salem State College Central Campus Residence Hall. ■

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Lighthouse Electrical Completes Design/Build Solar System Project at Camp Harbor View, Long Island, Boston Harbor

Boston, MA —Lighthouse Electrical Contracting of Rockland, MA has completed the extremely fast-track design and installation of a 16.72 kW photovoltaic system at Camp Harbor View in Boston Harbor. The solar project commenced November 22, 2008 and was completed by December 17, as the NECA contractor met an aggressive project timeline so that the system was fully installed prior to the onset of harsh winter weather.

Lighthouse supervised the three-person installation team from IBEW Local 103, which consisted of one foreman, one journeyman and one apprentice electrician, headed by Lighthouse principal and project manager Herbert Aikens and Renewable Energy Division Manager, Newell Thomas. Lighthouse provided its services meeting the budgetary needs of the camp's non-profit owner, Camp Harbor View Foundation, which operates the camp in partnership with the City of Boston and the Boys & Girls Clubs of Boston.

The 12,120 square foot camp building, which houses administrative offices, classrooms, an activity room, and kitchen has a south-facing roof, ideal for the installed solar system. The photovoltaic system comprises eighty-eight (88) 190 Watt Evergreen Solar panels, manufactured by Evergreen Solar of Marlboro, Massachusetts. Integral to the system are three (3) 5000 Watt Solectria inverters, required to convert the DC power (generated by the solar modules) to AC

power for use in the building. The inverters were also provided by a Massachusetts-based manufacturer, Solectria Renewables, located in Lawrence, MA.

The annual electrical output of the photovoltaic system is estimated to be 21,000 kWh. The PV system is interconnected to the camp's main panel and, in essence, is a parallel generator, supplying power directly to all loads at the camp in the same manner as grid power. According to Thomas, "Since the photovoltaic system is on the customer side of the electric meter, every kWh of electricity that the system produces first is used to displace electricity that would normally be purchased from the utility. In the event the PV system produces more electricity than the camp uses, the power is fed back to the utility making the camp's meter spin backwards."

Aikens commented on Lighthouse's effort and expertise in bringing renewable energy to Camp Harbor View. "Lighthouse is proud to be associated with such a great project that benefits kids who don't always have the same opportunities as others. This system can be used to help educate children on the benefits of solar and other clean, renewable energy."

Camp Harbor View, opened in the summer of 2007 and offers "a true summer camp experience for 600 children ages 11 to 14 who live in Boston's at-risk neighborhoods," according to the organization's web site. ■



SOLAR APPLICATION NOTE

Lighthouse Electrical Contracting's Installation of 43kW Photovoltaic System at Trolley Square, Cambridge Designed to Meet 120MPH Certification

Cambridge, MA — Lighthouse Electrical Contracting, Inc., the Rockland, MA based electrical contractor with more than 1.5 MegaWatts of completed solar installations in Massachusetts in the past several years, recently provided solar installations for a unique installation at Trolley Square, Cambridge. The project required that a photovoltaic system with 120MPH certification be installed to accommodate a roof that did not have a parapet. Lighthouse installed this Powerlight Foam Base 43kW System so the entire roof was



connected right up to the metal drip edge of the building. This solar system design and installation ideally shows the ability to meet unique project demands and concurrently build a solar system with limited roof space. A vertical PV system was added to the front of the building, adding to the system's electrical capacity and further demonstrating the commitment to solar. ■

All-Pro Electric Provides Fast-track Solar PV Installation at Bradford Christian Academy

Bradford, MA —All-Pro Electric has recently completed the design and installation of a 5.4KW photovoltaic system for Bradford Christian Academy in Bradford, Massachusetts. The NECA contractor performed all phases of the project – contract negotiation, system design, rebate application, material procurement, permitting, grid interconnection approval, installation, inspection, and commissioning – in only 8 weeks to meet schedule requirements.



All-Pro designed the system to allow for maximum usage of available square footage while retaining an aesthetically appealing appearance in keeping with the building's hip style roof. To accomplish this, the Company specified and utilized a Sharp photovoltaic panel system. Project manager John Donovan supervised the project, and system installation was performed in under one week by All-Pro's team of three IBEW electricians, headed by foreman Sean McDonald. The fast-track project was completed in December 2008 when the solar system went online.

The NECA contractor installed the system at no cost to the Academy. This arrangement was accomplished by entering an agreement using Massachusetts Solar 3rd Party Ownership Program. The power produced by the system is purchased by the Bradford Christian Academy at a discount from what they would pay from the local utility company. ■

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Further details coming soon.

