



Save the Date!

PMEA Annual Finance Workshop – June 8, 2022 (online)

PMEA 2022 Annual Conference – September 7 – 9, 2022 @ Penn Stater, State College

Schuylkill Haven's Smart Lighting Project Offers Multiple Benefits

Schuylkill Haven Borough is in Southern Schuylkill County, about 100 miles northwest of Philadelphia and 50 miles east of Harrisburg. With a population of 5,400 residents, it prides itself on its rich history as a former rail and canal town near the Schuylkill River. Utilities provided by the Borough include electric, water and sewer. Electric has been a great asset for the borough's residents, supplying consistent and prompt in-person attention to any service issues.

The Borough was on a 10-year journey to upgrade their street lighting system to LED technology. In June 2020, subsidiaries of NextEra Energy, Inc. proposed an upgrade from Schuylkill Haven's existing streetlights to new high-quality Smart LEDs. NextEra Energy designed a turn-key smart LED street lighting solution tailored to meet the community's long-term goals, as well as their budget, that could be completed in a fraction of the time. They simplified the entire project by integrating it into a wholesale power supply transaction, providing Schuylkill Haven the ability to realize the benefits of emerging technology quickly and fully without the typical implementation issues.

Although the Borough did not have issues with its previous streetlights, the administration and electric foreman still investigated the project to determine if upgrading the system made sense. Schuylkill Haven's previous streetlight system was yellow and dim, very common of any small borough or town. The lights operated but were comprised of a mixture of all different types of bulbs resulting in light pollution. This poor use of artificial outdoor light disrupts the natural patterns of wildlife, contributes to the increase in carbon dioxide in the atmosphere, disrupts human sleep, and obscures the stars in the night sky.



Figure 1: Before LED Project

Schuylkill Haven evaluated several factors when making its decision. Not only did those aspects prove to be beneficial, but many other values of the project were discovered.

The Warranty

The overall savings - both energy and monetary through the extended warranty - all weighed favorable for an upgrade. The borough was provided a 15-year warranty term that includes initial re-lamping for the entire borough. An independent contractor approved by NextEra Energy completed the installation service. For any LED that needs to be replaced, NextEra Energy will reimburse Schuylkill Haven for installations and replacement lights if any should fail during this period.



Figure 2: After LED Project

Energy Savings

There is typically a 40 - 60% savings to streetlights that are switched to LEDs. This number is only an estimate since the older lights contributed to a portion of electric loss. For Schuylkill Haven, the energy savings reached 60%, due to LEDs being energy efficient, as well as the ability to dim and create customized schedules.

Dashboard Functionality

In general, communities are incorporating smart LED lighting to reduce response times for outages and better control. The dashboard function is operated through smart node technology. A node is

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Smart Lighting (continued)

installed on each light fixture, and it provides a plethora of functions, such as real-time alerts, power outage notifications, 24-7 monitoring, controlling lights for special events, and dimming and brightening the lights. Not only that, but the user also can use a laptop, iPad, or smartphone to monitor the system in real time. It can identify a power outage in town and quickly isolate and address that LED outage. In the past, residents would call the borough to report an outage. Now, the electric department can look at the entire system on the dashboard to see any outages, see the voltage that is coming into the lines, and if there is any discrepancy in voltages.

Quickly Fix Outages

It was a user-friendly solution. Having the ability to look at the Borough's system on a screen and see what lights were on, what were not on, the capability of dimming, and identifying power outages, proved the system was most beneficial for both the borough and residents. With approximately 3,000 customers in the town, being able to identify a power outage to a specific neighborhood, a specific block, or to a specific line, is the top priority. The project made a big difference to Jim Haeseler, the borough's electric foreman. In Jim's words "I don't have to commit my electric department to the maintenance of the existing – lights. Previously, we would commit a couple of hours or better every week to replacing bulbs, doing maintenance on lights, and keeping a large inventory of all different types of lights. So just freeing up time, freeing up inventory, has been huge to us."

Safety

When residents noticed the change, immediately, they said the smart LED efficiency offers brighter lights and more direct lights. The Borough's Chief of Police's feedback with the administration was, "We love this. There's no place for anybody to hide in the shadows."

Project Installation

The estimated start to finish execution of the service agreement was three to four months. The original installation took about five weeks. A project like this would take longer in January and February but, fortunately, this minimized traffic delays by having a project of that magnitude done in a short timeframe.

Final Outcome

The new LED streetlighting system has exceeded Schuylkill Haven's expectations. It offers greater brightness, is more direct and reduces light pollution. In addition, this solution saved Schuylkill Haven money while reducing their carbon footprint and helping them take steps towards a smart city future.

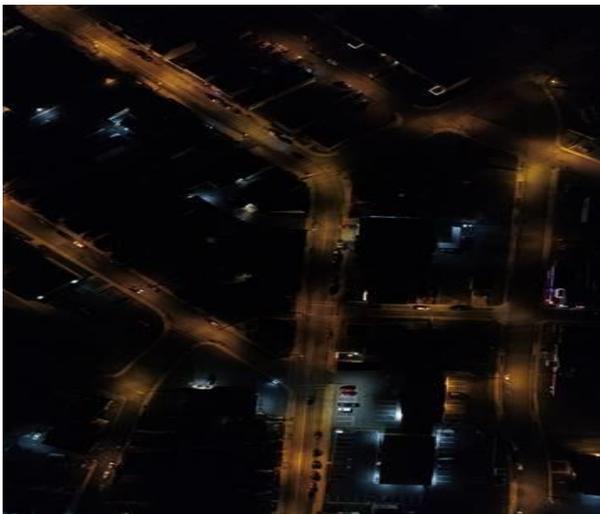


Figure 4: Before LED Project



Figure 3: After LED Project

Aging Electric Utility Systems

By: Norm Baron, PE – Utility Engineers, PC

One of the things in life that we cannot control is aging. Every day we get a little older and every day our bodies need more maintenance to keep us in top operating condition. The same is true for our electric utility systems. Our electric systems need to be maintained to keep them operating at peak performance. Many of us take it for granted that because the lights come on when we turn on the switch that our electric system is in good operating order, and nothing needs to be done. This way of thinking can get us in trouble. Like our own bodies, electrical equipment needs periodic maintenance, repair and sometimes replacement to operate at peak levels.

System maintenance is essential for a good, reliable electric system. This is especially important today with more and more of our customers adding generation and the government's push for electric vehicles. Our electric systems need to be evaluated periodically to determine if any weaknesses exist that could prevent us from providing a reliable source of power to our customers. In some cases, system maintenance takes the form of replacing older equipment because the item is no longer manufactured or repair parts are no longer available. Failure of older equipment can lead to prolonged outages especially in today's climate where replacement material lead times have steadily increased from several weeks to several months and in some cases, to several years. Replacing older equipment can be cumbersome and expensive and requires a lot of planning and patience. This is especially true for substation and large distribution equipment. Lead times for substation switches and circuit breakers are in excess of 6 months. Lead times for substation power transformers can range from 12 months to more than 36 months depending on the manufacturer. Some new pad-mounted transformers have lead times in excess of 24 months.

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Aging Systems (continued)



What does this all mean? Since equipment lead times today are much longer than in previous years, we must look years into the future when planning for system upgrades and equipment replacements. This is a difficult task but it must be done to keep our systems running at peak levels. Many of us have electric systems that are 20, 30 and 40 plus years old. If your electric system is in this age group, your system most likely has components that are no longer being manufactured, supported or repair parts are no longer available. Unless you have spare replacement parts in your warehouse for all your equipment, your system could be down for an undetermined amount of time for an unplanned event.

As a guide, the following table lists the typical life expectancies of electrical components typically used by the PMEA members. The years indicated assume normal operating conditions throughout the life of the equipment. The life expectancy is less for any equipment subjected to abnormal operations or conditions. If your electrical system has components whose age falls into the range outlined below, consideration should be given to replacement of these components in the near future.

<u>Electrical Equipment</u>	<u>Typical Life Expectancy (Years)</u>
Substation Power Transformer	30-40
Substation Switches	20-25
Circuit Breakers / Circuit Switchers	25-30
Substation Battery Systems	15-20
Relays & Control Systems – Mechanical	30-40
Relays & Control Systems – Solid State	15-20
SCADA	10-15
Distribution Transformers	25-30
Voltage Regulators	25-30
Revenue Meters – Mechanical	25-35
Revenue Meters – Solid State	7-10
Wood Poles	40+
Underground Conductors – Direct Buried	15-20
Underground Conductors – In Conduit	25-30

“Alley-Cat, Bad Dog”

PMEA Offers Advanced Transformer Classes

Lansdale and Grove City were host sites for PMEA’s first ever training classes. Several member municipalities sent individuals to participate in this classroom and hands-on training for advanced transformers. Our partner, Northwest Lineman College (NLC), brought in their mobile Transbanker to both locations.



Content included transformer anatomy and theory, installation and banking, troubleshooting, paralleling, verifying proper voltages, turns ratio, and three-phase rotation. Participants were provided a workbook, “pocket transformer” card and other materials in addition to access to NLC’s resource videos. Using the mobile training lab, participants were able to work together to install and attach transformer connections and troubleshoot problems. One additional class on advanced transformers will be held in April in Chambersburg (*registration is closed*).

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Transformer Training (continued)



Watch your email for registration information for the next round of classes on **Rubber Glove Safety Certification**. This five-day course will again be offered in Lansdale and Grove City in May and class size is limited.

Fallen Linemen Golf Tournament



The First Annual PA/NJ Fallen Linemen Golf Tournament is scheduled for Thursday, May 19. The shotgun start is set for 10:00 am at the Golden Oaks Golf Course, 10 Stonehedge Drive, Fleetwood, PA.

Only 34 teams will be accepted with a registration fee of \$125 per person or \$500 per team – which includes green fee, cart, prizes, special competitions, all the beverages you can drink, and a meal.

Net proceeds from the tournament will be used to support linemen and their families in the event of injury while working on the job. For more information and to register, go to <https://fallenlinemenfoundation.com/pa-nj-fallen-linemen-foundation-golf-tournament/>.

Associate Member Spotlight

Founded in 1984, AFL is an international manufacturer providing end-to-end solutions to several markets including Enterprise, Energy, Service Provider, Utility FTTx and more. For over 30 years, electric utilities have relied on AFL.

From transmission and substation accessories to cable and fiber optic hardware, AFL's solutions improve the reliability of critical electrical and optical infrastructure used for the transmission and distribution of electricity. That same infrastructure also supports FTTx networks for delivering new services to electric utility customers. Increasing demand for high-speed applications is driving any utilities to invest in or expand upon fiber optic networks. Today, utility companies, municipalities and electric cooperatives are well-positioned to utilize their existing power grids and rights-of-way to build and maintain effective FTTx networks for delivering new services to rural areas or non-metropolitan locations.



For more information, you can contact PMEA Associate Member Dave Ashenfelter, Territory Sales Manager, Dave.Ashenfelter@AFLglobal.com or visit www.AFLglobal.com.

We Want to Hear From You

Please share with us your exciting projects and photos for future newsletters. Your submissions should be sent to bosak@papublicpower.org at any time and we will use them in upcoming editions. We also welcome your suggestions for topics of interest for our newsletters.

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