Delaware Valley Regional Planning Commission (DVRPC)

LED Streetlight Procurement

"The Regional Streetlight Procurement Program exemplifies an innovative model of intergovernmental cooperation. Municipalities were able to pool their buying power to achieve a common goal. By working together, each municipality was able to access guaranteed savings agreements and technical expertise to convert its entire outdoor lighting systems to more energy efficient LEDs at no upfront cost."

- Stephanie Teoli Kuhls, Manager of Middletown Township (Bucks County)

QUICK FACTS

The Delaware Valley Regional Planning Commission (DVRPC) is the Metropolitan Planning Organization for the nine-county Greater Philadelphia region (covering Pennsylvania and New Jersey).

Number of municipalities covered: 35

Number of municipalities able to access utility rebates: 35

Number of streetlights candidate for retrofit: 24,000

Annual guaranteed energy savings: 10,600,333.50 kWh

March 2015
DVRPC began engaging stakeholders

July 2015
Letters of Intent were secured from 45 municipalities

October 2015
An RFP was issued by DVRPC on behalf of the 45 municipalities

December 2015
An ESCO (Johnson Controls Inc.) was selected

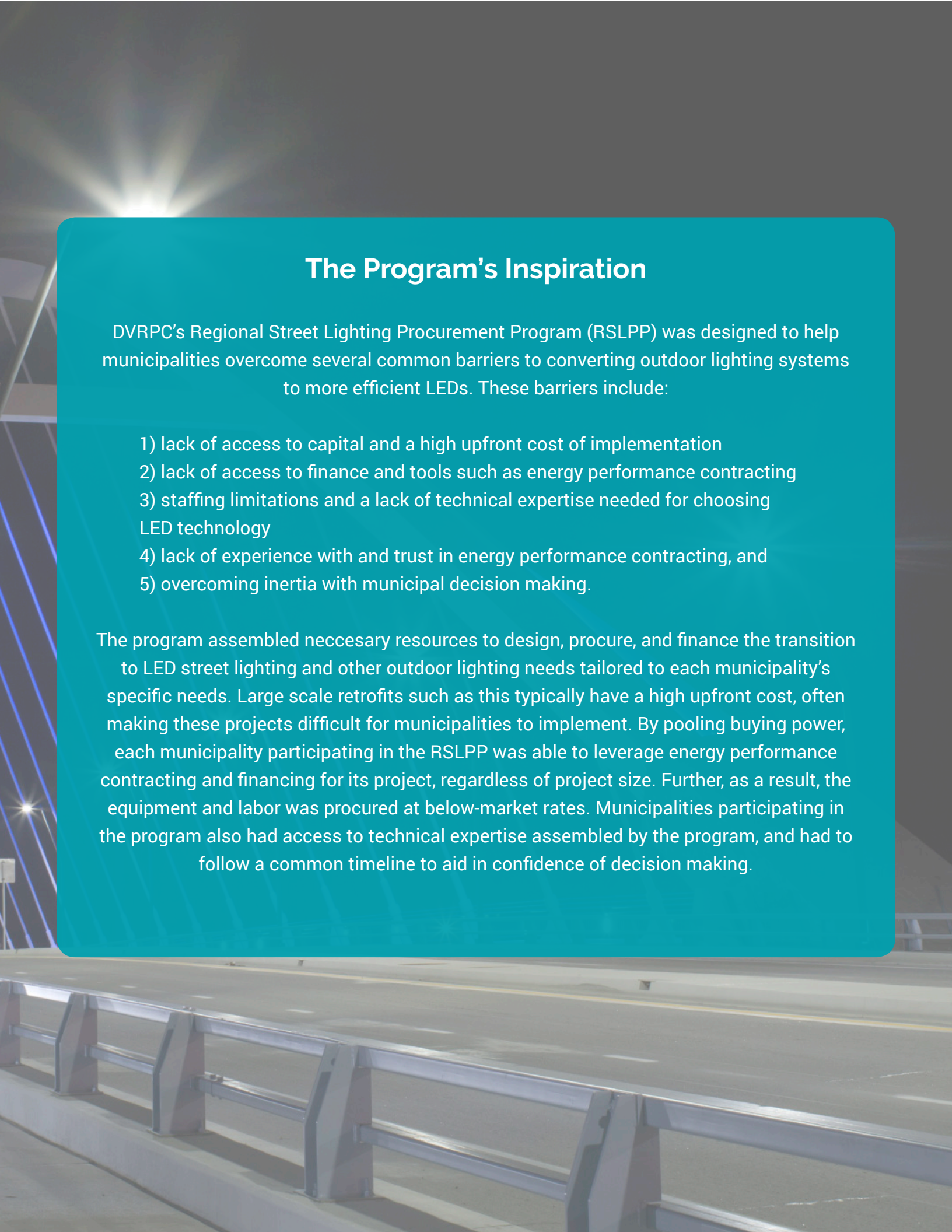
January – April 2016
Preliminary Audit Phase

May – October 2016
Investment Grade Audit Phase (35 municipalities proceeded)

November 2016 – February 2017:
Financing was arranged

March 2017
Construction began. Expected to be completed by the end of 2017

March – May 2017
Procurement occurred



The Program's Inspiration

DVRPC's Regional Street Lighting Procurement Program (RSLPP) was designed to help municipalities overcome several common barriers to converting outdoor lighting systems to more efficient LEDs. These barriers include:

1) lack of access to capital and a high upfront cost of implementation
2) lack of access to finance and tools such as energy performance contracting
3) staffing limitations and a lack of technical expertise needed for choosing LED technology
4) lack of experience with and trust in energy performance contracting, and
5) overcoming inertia with municipal decision making.

The program assembled neccesary resources to design, procure, and finance the transition to LED street lighting and other outdoor lighting needs tailored to each municipality's specific needs. Large scale retrofits such as this typically have a high upfront cost, often making these projects difficult for municipalities to implement. By pooling buying power, each municipality participating in the RSLPP was able to leverage energy performance contracting and financing for its project, regardless of project size. Further, as a result, the equipment and labor was procured at below-market rates. Municipalities participating in the program also had access to technical expertise assembled by the program, and had to follow a common timeline to aid in confidence of decision making.

An Overview of the LED Streetlight Procurement Project with DVRPC Senior Research Analyst Liz Compitello

Q: *Who owns the streetlights?*

A: This project took place in the PECO utility service territory in suburban southeastern Pennsylvania where an estimated 95 percent of municipalities own their streetlights. Three municipalities in the program did not own their streetlights when they began the project, but were able to purchase them and convert them to LED using energy performance contracting. Because PECO was willing to sell the streetlights at a fair price, the municipalities were able to achieve a very quick payback as a result of the significant reduction in operating costs by taking ownership of their streetlights.

Q: *What type of lighting fixtures were in place before the retrofit?*

A: Across the 35 municipalities, there were approximately 24,000 streetlights candidate for retrofit. Thirty nine percent were mercury vapor, 56 percent were high pressure sodium, one percent were metal halide, three percent were incandescent and less than one percent were LED.

Q: *How many and what type of lighting fixtures and/or controls were in place after conversion?*

A: Conversion is expected to take place from March 2017-December 2017. There will be more than 18,000 cobra heads converted, 4,600 four-sided colonials, nearly 1,000 decorative retrofit kits, and exterior and traffic signals included in the conversion or retrofit. Wattages range from 24W to 241W. Many municipalities elected to use "field adjustable wattage selectors" to extend the life of the fixture and have the ability to dial wattage up or down if needed after installation. L70 rated hours for cobra head equipment ranges from 451,000 (35W) to 244,000 (145-241W).

Q: *What was the total cost of the retrofit project, and how was it financed?*

A: The total cost of the retrofit project, including all administrative costs, was a little more than $13 million. Eleven of the 35 communities paid for their project in cash (about $3 million total), while 24 financed their project (about $9 million total). The 24 municipalities that financed their project accessed financing through the Pennsylvania Sustainable Energy Finance (PennSEF) Program, which is a partnership between the PA Treasury and the Foundation for Renewable Energy and Environment. The PennSEF program pooled the financing across the 24 municipalities, which allowed all projects, regardless of project size and loan term, to access low-interest financing. The average loan size for this project was $415,000. All municipalities all were able to access utility rebates offered by PECO to help offset the upfront cost of their project. Rebates typically reduced the project cost by 5-10 percent of the construction price.

Projected Total Annual Cost ($) and Energy (kWh) Savings

Annual gross savings in energy and operating costs

$1.4M

Total net savings over 20 years

$15.3M

Total annual reductions

10.6M
kWh

5,500
metric tons CO_2

Guaranteed Energy Savings Agreement (GESA)

Municipalities satisfied with the pre-contract audit entered into a GESA with the selected ESCO. The GESA provided:

- An investment grade audit of the LED lighting retrofit that will demonstrate at least 90 percent of the savings identified in the pre-contract audit;
- The highest quality LED fixtures at a price lowered due to the bulk purchase;
- A guarantee of energy cost savings;
- Measurement and verification of energy savings achieved as a result of the project;
- Long-term, low-interest rate financing that is subject to appropriations and will not increase municipal debt (the financing will be self-funded through energy savings); and
- Unbiased technical support throughout the project by a competitively-selected third-party consultant as part of the program.

Measuring Electricity Use from Streetlights: Before and After

Prior to the retrofit, street lighting would typically account for 60-70 percent of a municipality's energy costs (though a smaller percentage of actual energy use, due to a high "fixed service fee" associated with the street lighting tariff).

Participants will all complete a measurement and verification period that will generate the required data to show how much electricity has been reduced as a result of the project.

Lessons Learned and Considerations for Future Programs/Projects

Initially , DVRPC developed a spec for only cobra head fixtures. Now a much more robust specification for products and wider range of fixtures, such as decorative and exterior lighting, would yield greater results.

DVRPC will aim to incorporate the benchmarks from the first project to gain stronger control over products and labor pricing for the next round of projects.

DVRPC will strengthen the pilots so that municipalities can see different options for distribution at intersections, as well as for various street widths or fixture orientations.

Converting all streetlights in your system at once results in significant benefits to lower operating costs and improve overall lighting quality. Yet, many small and medium size municipalities may face significant challenges in accessing the tools needed to do this. Explore opportunities for pooling together with nearby municipalities as a way to overcome these barriers together.

A third party technical consultant is an important team member when executing a streetlight conversion project of this size to ensure that you have oversight of design and procurement strategies. It helps municipalities access the transparency they seek in vetting the ESCOs products and design and builds confidence in the project.

Engage your utility company early on to ensure that their is open communication on the process, timeline, and expectations for when the billing updates occur. This was a tremendously important element to the success of our project.

Interested in Finding Out More about LED Street Lighting? Check out the links below for more info:

NEEP Resource:
LED Street Lighting Assessment and Strategies for the Northeast and Mid-Atlantic

DOE Resources:
Get the Facts: LED Street Lighting
DOE Municipal Solid-State Street Lighting Consortium

DVRPC Resources:
https://www.dvrpc.org/EnergyClimate/EETrafficStreetLighting/Procurement/
Request for Proposals (RFP)

*Contact **John Balfe** (jbalfe@neep.org) for more information on LED street lighting. Or contact **Liz Compitello** (ecompitello@dvrpc.org) for more information about DVRPC's program.*