

RSLPP Feasibility Study Overview

Tredyffrin Township

Board of Supervisors Meeting

January 22nd, 2019

Discussion Topics

- **RSLPP Overview**
- **Feasibility Phase Overview**
- **Study Scope & Upgrade Recommendations**
- **Financial Results**
- **Next Steps**

RSLPP Overview

Benefits of LED Streetlights

- Reduce energy consumption and cost by 50-75%
- Reduce system maintenance costs by 50-80%
- Improve lighting performance and quality, leading to improved safety
- Reduce light pollution and trespass
- Controllable light source helps manage both the quality and quantity of light
- Advance control options provide additional cost savings opportunities



DVRPC's RSLPP assembles the resources needed to design, procure, and finance the transition to light-emitting-diode (LED) street lighting tailored to each municipality's needs. The RSLPP is designed to help municipalities overcome the barriers of implementing an LED conversion project, such as navigating the conversion process, identifying the best solutions, finding trusted project partners, and paying for the upfront cost of the project.

What are the benefits of LED streetlights?

- LEDs can reduce energy consumption and cost by 50-75% relative to incumbent technology.
- The longer lifespan of LEDs reduces system maintenance costs by 50-80%.
- LEDs provide improved lighting performance and quality, which can improve roadway safety.
- LEDs are a directional light source, which can reduce light pollution and trespass.
- LEDs are a controllable light source. Controls can help manage both the quality and quantity of light.

RSLPP Benefits

- RSLPP provides a **turnkey program approach** that supports all aspects of the project development, municipal decision-making, construction, the ability to access a pool of financing, and post-conversion project savings verification.
- RSLPP provides **technical design assistance** to ensure that all the benefits of an LED lighting system upgrade are realized and the unique needs of each municipality are met.
- RSLPP leverages the project scale of multiple municipalities in a **transparent pooled procurement model** that delivers the best product solutions at the best price. Solicitations for material, distributor, and installer will be developed by technical experts and issued by DVRPC on behalf of municipalities.
- RSLPP provides **project management support** to ensure the implementation of the project causes minimal disruption and expediently addresses any issues that arise during construction.
- RSLPP will arrange an **optional pool of low-cost financing**, structured so that energy cost savings exceed loan payments each year. All projects can be financed with no upfront capital contribution and municipalities may have the ability to reimburse upfront design costs at closing.

RSLPP Round 1 Program Results

DVRPC launched the first round of RSLPP in 2015, resulting in the conversion of more than 18,000 cobrahead and 8,800 "decorative" streetlights, 1,000 metered area lighting fixtures, and 5,700 traffic signals to LED across 35 municipalities in southeastern PA (a list of municipalities is provided on page two). 34% of these municipal projects included controls. The key results of these projects were:

- \$15.3 million net savings over 20 years.
- 10.6 million kilowatt hours and 5,500 Metric tons of CO2 emissions saved annually.
- Median payback for cobrahead-only projects was 8.7 years (including all program, project development, and financing costs). Median payback for whole projects, including cobrahead, decorative, metered area lighting, and controls, was 10 years. Communities that completed a PECCO buyback as part of this process had an average payback of 6.4 years.



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RSLPP Overview

- **Mission**

- DVRPC's RSLPP assembles the resources needed to design, procure, and finance the transition to light-emitting-diode (LED) street lighting tailored to each municipality's needs. The RSLPP is designed to help municipalities overcome the barriers of implementing an LED conversion project, such as navigating the conversion process, identifying the best solutions, finding trusted project partners, and paying for the upfront cost of the project.

- **Approach**

- RSLPP provides a **turnkey program approach** that supports all aspects of the project development, municipal decision-making, construction, the ability to access a pool of financing, and post-conversion project savings verification.
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- **Design Service Professional (DSP)**

- Competitively selected by DVRPC to provide all professional services required during phases 1 thru 4.
- Municipalities utilize DVRPC procurement and selection of DSP to directly contract with DSP during phases 2 thru 4.

RSLPP Results

- **RSLPP Round 1 Results**

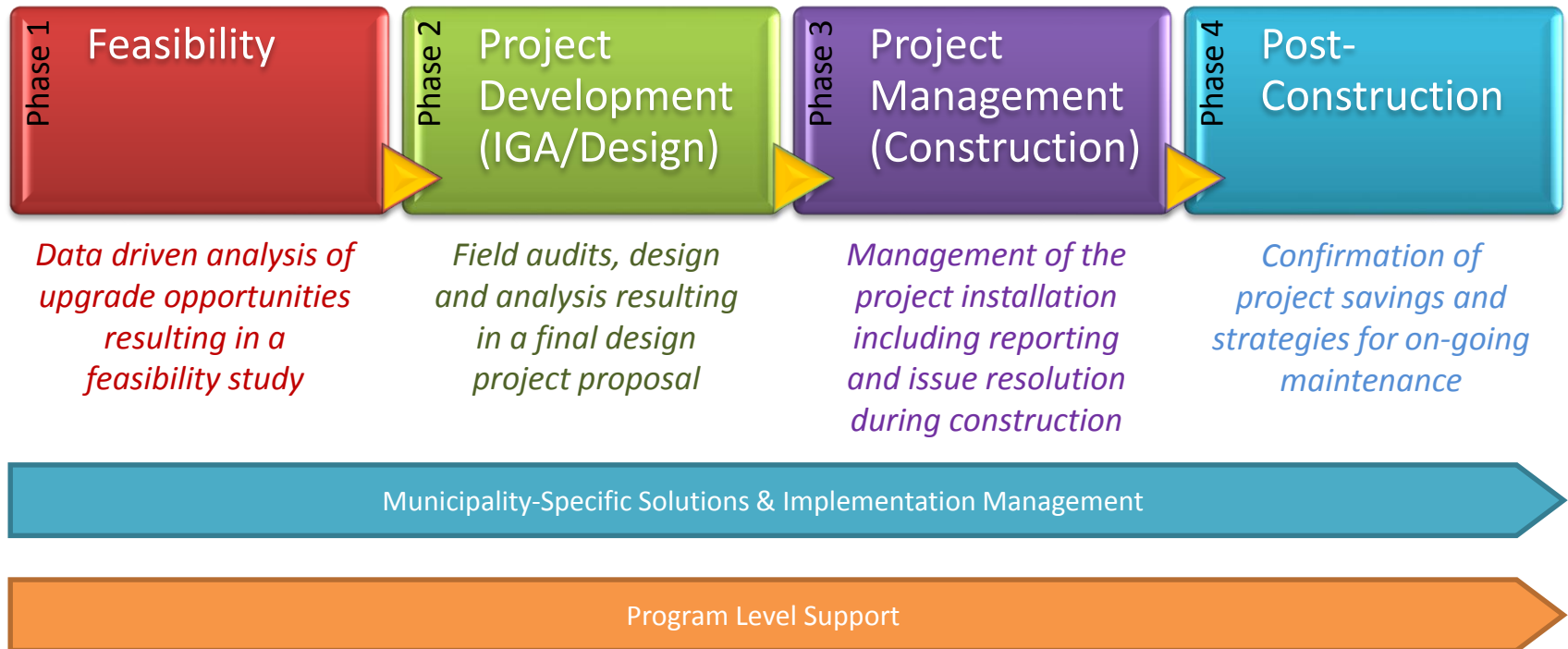
- 35 municipalities in Southeastern PA implemented LED upgrade projects
- Over 25,000 street and area lighting fixtures upgraded to LED technology
- Over 5,500 traffic signal lamps upgraded to LED technology
- \$15.3M net savings over 20 years
- 10.6M kWh and 5,500 metric tons of CO2 emissions saved annually

- **RSLPP Round 2**

- 27 municipalities currently engaged in the feasibility phase of the program
- Approximately 15,000 streetlights represented
- Anticipate similar results on a per fixture basis as achieved in Round 1

Feasibility Phase Overview

DSP Services for each RSLPP Phase



Study Scope & Upgrade Recommendations

Feasibility Study

- Executive Summary
- Existing Lighting System
- Design Approach and Standardized Upgrade Plan
- Upgrade Details & Savings
- Financial Analysis & Summary
- Phase I Action Items

Roadway, Street & Area Lighting Upgrade Feasibility Study

Tredyffrin Township

1/16/2019

Prepared by:

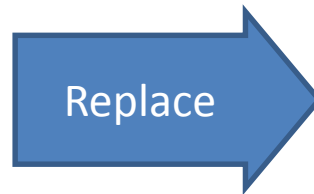


Keystone Lighting Solutions
Michael Fuller, President

In Partnership with:

**Delaware Valley Regional Planning Commission's
Regional Streetlight Procurement Program**

Unmetered Streetlight – Cobrahead Upgrades



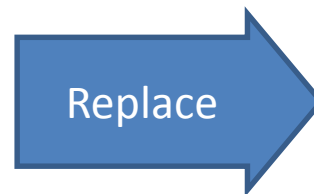
- (1,761) Existing “cobrahead” fixtures of varying wattages and lamp technology with photocell control

- (1,761) New LED “cobrahead” fixtures of varying wattages with photocell control
 - Re-use existing arms

Unmetered Streetlight – Decorative Upgrades



- (60) Existing “decorative” fixtures using 250-watt metal halide lamps



- (60) New LED “decorative” fixtures using 80 watts
 - Fixture head replacement only; re-use existing poles
 - Retrofit options to be fully considered in Phase 2 Project Development

Unmetered Traffic Signal Upgrades



- (2,052) Existing traffic signal lamps and pedestrian signals of varying wattages and lamp technology



- (2,052) new similar style LED traffic signal lamps and pedestrian signals

Financial Results

Payback Matrix

Energy Conservation Measure	Energy Savings	Maintenance Savings	Total Operating Savings	Material Costs	Install Costs	KLS Fees	Program Costs	Cost Contingency	Interest Costs	Rebates	Total Project Costs	Payback w/ Financing (Years)	Payback w/o Financing (Years)
PECO Buyback													
Adjustment	(\$383)	\$0	(\$383)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.0	0.0
Cobrahead	\$66,404	\$19,254	\$85,657	\$354,402	\$193,710	\$59,874	\$19,437	\$54,811	\$171,929	(\$92,512)	\$761,651	8.9	6.9
Decorative	\$3,724	\$887	\$4,611	\$83,458	\$9,600	\$2,040	\$2,894	\$9,306	\$27,040	(\$5,270)	\$129,068	28.0	22.1
Area Lighting													
Traffic Signals	\$12,786	\$25,839	\$38,625	\$118,986	\$55,540	\$21,888	\$6,330	\$17,453	\$55,492	\$0	\$275,689	7.1	5.7
Totals	\$82,531	\$45,979	\$128,510	\$556,846	\$258,850	\$83,802	\$28,661	\$81,570	\$254,461	(\$97,783)	\$1,166,407	9.1	7.1

Cash Flow Analysis

Cobrahead, Decorative & Traffic Signal Upgrades

Project Cash Flow (Requested ECM Scope)

Project Summary	
Construction Cost	\$815,696
DSP Fees	\$83,802
Program Fees	\$28,661
Contingency	\$81,570
Total Project Cost	\$1,009,729
Capital Contribution	\$0
Financed Amount	\$1,009,729
Loan Rate	4.31%
Loan Term (Years)	10
Loan Payment	\$126,419
Interest Paid	\$254,461

ECM	In Scope
PECO Buyback	No
Cobrahead Lighting	Yes
Decorative Lighting	Yes
Area Lighting	No
Traffic Signals	Yes

Period	Energy Cost Savings	Maintenance Cost Savings	Rebates	Total Savings	DSP & Program Fees	Loan Payment	Balance
Design				\$0	\$45,908		(\$45,908)
Construction				\$0	(\$45,908)		\$45,908
1	\$82,531	\$45,979	\$97,783	\$226,292		\$126,419	\$99,873
2	\$82,531	\$45,979		\$128,510		\$126,419	\$2,091
3	\$82,531	\$45,979		\$128,510		\$126,419	\$2,091
4	\$82,531	\$45,979		\$128,510		\$126,419	\$2,091
5	\$82,531	\$45,979		\$128,510		\$126,419	\$2,091
6	\$82,531	\$45,979		\$128,510		\$126,419	\$2,091
7	\$82,531	\$45,979		\$128,510		\$126,419	\$2,091
8	\$82,531	\$45,979		\$128,510		\$126,419	\$2,091
9	\$82,531	\$45,979		\$128,510		\$126,419	\$2,091
10	\$82,531	\$45,979		\$128,510		\$126,419	\$2,091
11	\$82,531	\$45,979		\$128,510		\$0	\$128,510
12	\$82,531	\$45,979		\$128,510		\$0	\$128,510
13	\$82,531	\$45,979		\$128,510		\$0	\$128,510
14	\$82,531	\$45,979		\$128,510		\$0	\$128,510
15	\$82,531	\$45,979		\$128,510		\$0	\$128,510
16	\$82,531	\$45,979		\$128,510		\$0	\$128,510
17	\$82,531	\$45,979		\$128,510		\$0	\$128,510
18	\$82,531	\$45,979		\$128,510		\$0	\$128,510
19	\$82,531	\$45,979		\$128,510		\$0	\$128,510
20	\$82,531	\$45,979		\$128,510		\$0	\$128,510
Total	\$1,650,619	\$919,579	\$97,783	\$2,667,981		\$1,264,190	\$1,403,791

Project Cash Flow (Cobrahead + TS Only)

Cash Flow Analysis Cobrahead & Traffic Signal Upgrades

Project Summary	
Construction Cost	\$722,638
DSP Fees	\$81,762
Program Fees	\$25,767
Contingency	\$72,264
Total Project Cost	\$902,431
Capital Contribution	\$0
Financed Amount	\$902,431
Loan Rate	4.31%
Loan Term (Years)	10
Loan Payment	\$112,985
Interest Paid	\$227,421

ECM	In Scope
PECO Buyback	No
Cobrahead Lighting	Yes
Decorative Lighting	No
Area Lighting	No
Traffic Signals	No

Period	Energy Cost Savings	Maintenance Cost Savings	Rebates	Total Savings	DSP & Program Fees	Loan Payment	Balance
Design				\$0	\$45,908		(\$45,908)
Construction				\$0	(\$45,908)		\$45,908
1	\$79,190	\$45,092	\$92,512	\$216,794		\$112,985	\$103,809
2	\$79,190	\$45,092		\$124,282		\$112,985	\$11,297
3	\$79,190	\$45,092		\$124,282		\$112,985	\$11,297
4	\$79,190	\$45,092		\$124,282		\$112,985	\$11,297
5	\$79,190	\$45,092		\$124,282		\$112,985	\$11,297
6	\$79,190	\$45,092		\$124,282		\$112,985	\$11,297
7	\$79,190	\$45,092		\$124,282		\$112,985	\$11,297
8	\$79,190	\$45,092		\$124,282		\$112,985	\$11,297
9	\$79,190	\$45,092		\$124,282		\$112,985	\$11,297
10	\$79,190	\$45,092		\$124,282		\$112,985	\$11,297
11	\$79,190	\$45,092		\$124,282		\$0	\$124,282
12	\$79,190	\$45,092		\$124,282		\$0	\$124,282
13	\$79,190	\$45,092		\$124,282		\$0	\$124,282
14	\$79,190	\$45,092		\$124,282		\$0	\$124,282
15	\$79,190	\$45,092		\$124,282		\$0	\$124,282
16	\$79,190	\$45,092		\$124,282		\$0	\$124,282
17	\$79,190	\$45,092		\$124,282		\$0	\$124,282
18	\$79,190	\$45,092		\$124,282		\$0	\$124,282
19	\$79,190	\$45,092		\$124,282		\$0	\$124,282
20	\$79,190	\$45,092		\$124,282		\$0	\$124,282
Total	\$1,583,792	\$901,848	\$92,512	\$2,578,152		\$1,129,852	\$1,448,300

Cash Flow Analysis

Cobrahead Only

Upgrades

Project Cash Flow (Cobrahead Only)

Project Summary	
Construction Cost	\$548,112
DSP Fees	\$59,874
Program Fees	\$19,437
Contingency	\$54,811
Total Project Cost	\$682,234
Capital Contribution	\$0
Financed Amount	\$682,234
Loan Rate	4.31%
Loan Term (Years)	10
Loan Payment	\$85,416
Interest Paid	\$171,929

ECM	In Scope
PECO Buyback	No
Cobrahead Lighting	Yes
Decorative Lighting	No
Area Lighting	No
Traffic Signals	No

Period	Energy Cost Savings	Maintenance Cost Savings	Rebates	Total Savings	DSP & Program Fees	Loan Payment	Balance
Design				\$0	\$32,778		(\$32,778)
Construction				\$0	(\$32,778)		\$32,778
1	\$66,404	\$19,254	\$92,512	\$178,170		\$85,416	\$92,753
2	\$66,404	\$19,254		\$85,657		\$85,416	\$241
3	\$66,404	\$19,254		\$85,657		\$85,416	\$241
4	\$66,404	\$19,254		\$85,657		\$85,416	\$241
5	\$66,404	\$19,254		\$85,657		\$85,416	\$241
6	\$66,404	\$19,254		\$85,657		\$85,416	\$241
7	\$66,404	\$19,254		\$85,657		\$85,416	\$241
8	\$66,404	\$19,254		\$85,657		\$85,416	\$241
9	\$66,404	\$19,254		\$85,657		\$85,416	\$241
10	\$66,404	\$19,254		\$85,657		\$85,416	\$241
11	\$66,404	\$19,254		\$85,657		\$0	\$85,657
12	\$66,404	\$19,254		\$85,657		\$0	\$85,657
13	\$66,404	\$19,254		\$85,657		\$0	\$85,657
14	\$66,404	\$19,254		\$85,657		\$0	\$85,657
15	\$66,404	\$19,254		\$85,657		\$0	\$85,657
16	\$66,404	\$19,254		\$85,657		\$0	\$85,657
17	\$66,404	\$19,254		\$85,657		\$0	\$85,657
18	\$66,404	\$19,254		\$85,657		\$0	\$85,657
19	\$66,404	\$19,254		\$85,657		\$0	\$85,657
20	\$66,404	\$19,254		\$85,657		\$0	\$85,657
Total	\$1,328,077	\$385,072	\$92,512	\$1,805,661		\$854,163	\$951,498

Next Steps

Looking Forward to Phase 2 (Project Development)

- **Investment Grade Audit**

- Comprehensive GPS-based audit of entire lighting system gathering all useful attributes of each fixture combined in a single electronic lighting inventory database
- Cloud-based maps for existing lighting system, preliminary and final designs

- **Design**

- Typical Application Design
 - Standardized Fixture Style and Lumen Packages by Roadway Type
 - Fixture Distribution Type by Roadway Application (e.g. intersection, mid-street)
- Control Specifications
- Color Temperature Specification

- **Program Procurement**

- Leveraged procurement process for manufacturer product solutions, distribution partners, installation contractors and financing partners

- **Final Project Design Proposal**

- Final upgrade scope of work, operating cost savings detail and project budgets
- Project financial results represented by payback and cash flow analysis

Next Steps

- **Feasibility Study Questions & Discussion**
- **Action on Resolution to Advance to RSLPP Phase 2 (Project Development)**
- **Sign Contract with KLS for Phase 2 (Project Development)**
 - **\$45,908 Forecasted Phase 2 Design Fees**
 - Possible reimbursement from final project financing package
- **Phase 2 Kick-off in February**

Thank
You!