



LUNA

ENERGY PARTNERS

June 6, 2019

VIA ELECTRONIC MAIL

The City of Toledo and Toledo City Council
One Governmental Center
Toledo, Ohio

RE: O-514-17: Street Light Modernization - Phase 1: Luna Energy Partners Final Report

Luna Energy Partners will like to thank the City of Toledo for selecting Luna as its Streetlight Modernization and Sustainability Consultant under O-514-17 in 2017 to include GIS Auditing, Design, Finance Strategy, Community Involvement and Workforce Development. In the interest of expanding its LED street lighting program, the City found it necessary to enlist the services of Luna Energy and our partners, utilizing our expertise to complete the first phase by conducting the design pilot to evaluate LED lighting options for the City of Toledo. When done effectively, replacing streetlights with LED technology can reduce energy, costs and emissions while providing brighter light which creates a well-lit, safer and more attractive community.

Enclosed please find Luna Energy Partners Streetlight Audit, Simulation and Design Final Report as a first step of the above referenced ordinance. At the direction of the Public Utilities Director, Luna Energy Partners conducted a pilot of (100) total light points in the in the areas of Hill Road (50 light points) and The Roosevelt Neighborhood (50 light points) to address the evaluation of converting the existing traditional lighting to LED technology that will prove best for The City. The pilot included a three-phase process:

- **Phase 1:**GIS Audit - gather precise inventory and lighting attributes used as the foundation for the second and third phases
- **Phase 2:**Simulation - photometric modeling representative of current lighting conditions
- **Phase 3:**Modeling - photometric modeling representative of future state illumination

The Final Report summarizes the results for the above referenced phases. The general conclusion reached through the Pilot is through simulation and modeling, is that lighting contained in the Pilot area does not meet the lighting standard established by the American National Standards Institute (ANSI) RP-8-18: Recommended Practice for new Design and Maintenance of Roadway and Parking Facility Lighting. The City of Toledo's Lighting Grid was established prior to the release of the RP-8-18 Standard. Given the existing poles and luminaires in place and owned and maintained by Toledo Edison, A First Energy Company, it has been determined that the only way to meet RP-8-18 would be for the City to invest in additional equipment and infrastructure.

Upon release of the final report, a meeting was held between the following parties:

The City of Toledo:

Paul Rasmusson, Director of Public Utilities

Abby Arnold, Deputy Chief of Staff

Megan Robson, City

Mark Frye, City of Toledo Representative

Luna Energy Partners:

Tamera Lindsay, Principal

Trey Addison, Managing Partner

Robert Boyd, Director of Operations

Keith Krug, Wendel Companies

Samuel Marotta, Wendel Companies

Below is the meeting summary recommendations and next steps:

- A one-for-one LED retrofit project will improve the quality of lighting and public safety where existing poles and lights exist however, this approach will not meet the Illumination Engineering Society RP-8-18 Standard (which applies to new roadway lighting construction).
- Utilizing a phased-approach, city streets such as Hill Avenue (with limited lights), can be upgraded with additional lights in parallel with a City-wide one-for-one retrofit project, however, this will need to be designed and constructed to the RP-8-18 Standard.
- The development of a streetlight guide for The City of Toledo may prove beneficial .
- Luminaires will need to be future-proof and scalable to meet future technology needs.

Two ownership and maintenance options were discussed:

- **Utility owned:** 1) Toledo Edison continues to own and maintain the majority of the street lights. The City will continue to pay the utility for poor quality maintenance, and once converted to LED there will be very limited maintenance required. 2) Financing this option may be a challenge since the City does not own the assets.
- **City owned:** 1) The City will be in control of lighting design, retrofit options, installation schedule, lighting control options and future maintenance by a qualified third party. 2) Larger savings potential with savings in both energy and maintenance. 3) Higher up front cost. 4) Cash flow will yield a larger net savings which can be utilized to add additional lights, pedestrian high intensity activated cross-walks and other enhancements to improve public safety. 5) Financing options available.

The final recommendations include:

- Continuing the audit and design process to address lighting equity throughout the city as lighting is upgraded. This will ensure that streets and sidewalks are illuminated appropriately without the risk of under lighting, over lighting, lighting pollution and trespass. The information collected during these phases also serve as a basis for construction management.
- The City should formally request a street lighting system acquisition offer with price and attached inventory from Toledo Edison. This does not commit the City to purchase anything, and it allows our team to provide a financial analysis of City owned option.

Why Luna Energy and its Partners:

- Over 100 years of combined energy, street lighting, ~~bulb~~ and O&M experience
- Over 75,000 streetlights of expertise
- Proprietary software which supports the implementation phase
- Luna Energy Partners solid, ~~eng~~going relationship with PUCO and First Energy
- Staff with longstanding roots in the City of Toledo to support community involvement, not just engagement

How we would further engage the City of Toledo:

- Citywide GIS Audit will not only serve as a complete inventory for the city which can be used to validate utility billing, but will also serve as the foundation for continued design.
- Working to help the implementation team with planning, material ordering and placement
- Solidify financing construct. We have a vast array of financing partners and relationships with entities willing to finance the streetlight upgrade
- Assist in the negotiations of a ~~bulb~~ as well as assist in the development of a ~~city~~ street light program
- Community Involvement which will help keep The City and its residents engaged ~~intima~~
- Workforce development will create an opportunity for employment to counteract recent changes in contracts like Parks and Recs

It is our pleasure to serve The office of the Mayor of the City of Toldeo, Toledo City Council and The Residents of the City of Toledo.

Sincerely,

Tamera Lindsay
Principal
Luna Energy Partners