TEN Connected Solutions

PRESENTED TO
CITY OF PORTLAND, MAINE
11/9/2016

RESPONSE TO REQUEST FOR PROPOSALS

RFP #2917

CONVERSION OF CITY STREET LIGHT SYSTEM TO LED FIXTURES AND TRANSFER OF OWNERSHIP FROM UTILITY TO MUNICIPALITY

PRESENTED BY: TEN CONNECTED SOLUTIONS

TEN Maine
19 Yarmouth Road, Ste 301
New Gloucester ME 04260

TEN Philadelphia
40 West Evergreen Ave
Philadelphia PA 11918

TEN New England
51 Melcher Street
Boston MA 02210

TEN DC/Baltimore
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PROPOSAL FORM

Request for Proposals –
Conversion of City Street Light System To LED Fixtures and from Utility Owned To Municipally Owned and Maintained Fixture On Utility Owned Poles
RFP #2917
**** THIS SHEET MUST BE INCLUDED IN YOUR PROPOSAL ****

The undersigned hereby declares that he/she or they are the only person(s), firm or corporation interested in this proposal as principal, that it is made without any connection with any other person(s), firm or corporation submitting a proposal for the same, and that no person acting for or employed by the City of Portland is directly or indirectly interested in this proposal or in any anticipated profits which may be derived there from.

The undersigned hereby declares that they have read and understand all conditions as outlined in this Request for Proposals, and that the proposal is made in accordance with the same.

The bidder acknowledges the receipt of Addenda numbered: #1, #2, #3, and #4

COMPANY NAME: TEN Connected Solutions, Inc.

AUTHORIZED SIGNATURE: _____

DATE: 11/8/16

PRINT NAME & TITLE: Troy T. Geanopulos, Chief Executive Officer

ADDRESS: 19 Yarmouth Road, New Gloucester, ME 04260 and 1501 Reedsdale Street, Ste. 401, Pittsburgh, PA 15233

EMAIL ADDRESS: troy.geanopulos@tenconected.com

PHONE NUMBER: 412-576-5002 FAX NUMBER: 412-429-8889

TYPE OF ORGANIZATION-PARTNERSHIP, CORPORATION, INDIVIDUAL, OTHER: Corporation

STATE OF INCORPORATION: Delaware

FEDERAL TAX IDENTIFICATION NUMBER (Required): 81-3028722

NOTE: Proposals must bear the handwritten signature of a duly authorized member or employee of the organization submitting a proposal.

CITY OF PORTLAND, MAINE
Conversion of City Street Lights to LED Fixtures & Transfer of Ownership from Utility to Municipality
RFP #2917

Current Date: October 25, 2016

The attention of firms submitting proposals for the work named in the above Invitation is called to the following modifications to the documents as were issued.

The items set forth herein, whether of clarification, omission, addition and/or substitution, shall be included and form a part of the Contractor's submitted material and the corresponding Contract when executed. No claim for additional compensation, due to lack of knowledge of the contents of this Addendum will be considered.

****

ALL BIDDERS ARE ADVISED THAT RECEIPT OF THIS NOTICE MUST BE DULY ACKNOWLEDGED ON THE BID PROPOSAL FORM OR BY THE INSERTION OF THIS SHEET, SIGNED, AND SUBMITTED WITH YOUR PROPOSAL.

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MATTHEW FITZGERALD
PURCHASING MANAGER

We received the following question and are providing a response via this addendum:

Q. You have included Portland's fixture inventory yet there is no mention of pricing in the RFP document. Please confirm whether or not you are expecting pricing with the response.

A. The City will review all proposals based on the criteria listed in the RFP document, which do not include price. The review committee will select the firm they feel offers the best solution for the City and enter into negotiations regarding project implementation and cost. We anticipate proposals that offer a variety of project approaches, services, and technology. Consequently, it would be difficult to compare price quotes fairly at this time. Proposers should be aware, however, that the City anticipates a project that offers high value and will closely scrutinize costs at all stages of implementation

Receipt of **Addendum No. 1** to the City of Portland's **RFP #2917: Conversion of City Street Lights to LED Fixtures & Transfer of Ownership from Utility to Municipality** is hereby acknowledged.

COMPANY: TEN Connected Solutions, Inc.

NAME: Patrick Regan

SIGNED BY: Patrick Regan DATE: 10/28/16

PRINT NAME & TITLE: Patrick Regan, VP Streetlighting and Smart Cities

ADDRESS: Local ofc. 19 Yarmouth Drive, Ste. 201, New Gloucester, ME 04260
ZIP CODE

HQ: 1501 Reedsdale Street, Suite 401
Pittsburgh, PA 15233

CITY OF PORTLAND, MAINE
Conversion of City Street Lights to LED Fixtures &
Transfer of Ownership from Utility to Municipality
RFP #2917

Current Date: October 26, 2016

The attention of firms submitting proposals for the work named in the above Invitation is called to the following modifications to the documents as were issued.

The items set forth herein, whether of clarification, omission, addition and/or substitution, shall be included and form a part of the Contractor's submitted material and the corresponding Contract when executed. No claim for additional compensation, due to lack of knowledge of the contents of this Addendum will be considered.

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MATTHEW FITZGERALD
PURCHASING MANAGER

We received the following question and are providing a response via this addendum:

1. *Are funds for this project budgeted/approved for 2017?*

   The City currently has $100,000 available in the Capital budget for the streetlight project. There are additional funds proposed in next year's capital budget, the amount of which may be adjusted depending on how the City chooses to finance the project. The City is not wed to funding the project with a municipal bond and will explore alternative funding sources that may be proposed.

2. *Who is your utility provider? (We ask this for rebate purposes).*

   The investor owned electric utility serving Portland is Central Maine Power.
   http://www.cmpco.com/
   The State efficiency agency is Efficiency Maine: http://www.efficiencymaine.com/

Receipt of **Addendum No. 2** to the City of Portland's **RFP #2917: Conversion of City Street Lights to LED Fixtures & Transfer of Ownership from Utility to Municipality** is hereby acknowledged.

COMPANY: TEN Connected Solutions, Inc.

NAME: Patrick Regan

SIGNED BY: Patrick Regan DATE: 10/28/16

PRINT NAME & TITLE: Patrick Regan, VP Street Lighting and Smart Cities

ADDRESS: Local ofc. 19 Yarmouth Drive, Suite 301
New Gloucester, ME 04260
ZIP CODE

HQ: 1501 Reedsdale Street, Suite 401
Pittsburgh, PA 15233

CITY OF PORTLAND, MAINE
Conversion of City Street Lights to LED Fixtures &
Transfer of Ownership from Utility to Municipality
RFP #2917

Current Date: October 31, 2016

The attention of firms submitting proposals for the work named in the above Invitation is called to the following modifications to the documents as were issued.

The items set forth herein, whether of clarification, omission, addition and/or substitution, shall be included and form a part of the Contractor's submitted material and the corresponding Contract when executed. No claim for additional compensation, due to lack of knowledge of the contents of this Addendum will be considered.

****

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MATTHEW FITZGERALD
PURCHASING MANAGER

We received additional questions related to this RFP and are providing a response via this addendum on the next page.

Receipt of **Addendum No. 3** to the City of Portland's **RFP #2917: Conversion of City Street Lights to LED Fixtures & Transfer of Ownership from Utility to Municipality** is hereby acknowledged.

COMPANY: TEN Connected Solutions, Inc.

NAME: Patrick Regan

SIGNED BY: Patrick Regan DATE: 10/31/16

PRINT NAME & TITLE: Patrick Regan, VP Street Lighting and Smart Cities

ADDRESS: Local ofc. 19 Yarmouth Drive, New Gloucester, ME 04260

ZIP CODE

HQ: 1501 Reedsdale Street, Suite 401
Pittsburgh, PA 15233

CITY OF PORTLAND, MAINE
Conversion of City Street Lights to LED Fixtures &
Transfer of Ownership from Utility to Municipality
RFP #2917

Current Date: November 2, 2016

The attention of firms submitting proposals for the work named in the above Invitation is called to the following modifications to the documents as were issued.

The items set forth herein, whether of clarification, omission, addition and/or substitution, shall be included and form a part of the Contractor's submitted material and the corresponding Contract when executed. No claim for additional compensation, due to lack of knowledge of the contents of this Addendum will be considered.

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ALL BIDDERS ARE ADVISED THAT RECEIPT OF THIS NOTICE MUST BE DULY ACKNOWLEDGED ON THE BID PROPOSAL FORM OR BY THE INSERTION OF THIS SHEET, SIGNED, AND SUBMITTED WITH YOUR PROPOSAL.

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MATTHEW FITZGERALD
PURCHASING MANAGER

We received additional questions related to this RFP and are providing a response via this addendum on the next page. This will be the final addendum issued and we will be unable to respond to any further questions.

Receipt of **Addendum No. 4** to the City of Portland's **RFP #2917: Conversion of City Street Lights to LED Fixtures & Transfer of Ownership from Utility to Municipality** is hereby acknowledged.

COMPANY: TEN Connected Solutions, Inc.

NAME: Patrick Regan

SIGNED BY: Patrick Regan DATE: 11/2/16

PRINT NAME & TITLE: Patrick Regan, VP Street Lighting and Smart Cities

ADDRESS: Local ofc. 19 Yarmouth Drive, Suite 301,
New Gloucester, ME 04260
HQ: 1501 Reedsdale Street Suite 401
Pittsburgh, PA 15233
ZIP CODE

Contents

Attachment 1: Key Personnel Detailed Resumes/CVs

Attachment 2: City of Baltimore Street Lighting Upgrade Project Bi-weekly Report dated October 28, 2016

Attachment 3: City of Harrisburg Case Study

Attachment 4: Project Photo Gallery

A. Cover Letter

November 9, 2016

Mr. Matthew Fitzgerald
Purchasing Manager, City of Portland
389 Congress St.
Portland, Maine 04101

Dear Mr. Fitzgerald:

On behalf of TEN Connected Solutions, Inc., a wholly owned subsidiary of The Efficiency Network, Inc. (TEN), I am pleased to present you with TEN's response to the City of Portland's Request for Proposals – Conversion of City Street Lights to LED Fixtures & Transfer of Ownership from Utility to Municipality (RFP #2917). The intent of our response is to highlight our experience and to show why TEN is the best choice to help the City of Portland complete its visionary street lighting and smart cities project. TEN is one of the nation's industry-leading companies helping 21st Century cities, like Portland, implement groundbreaking LED street lighting conversions and Smart Cities technology integration solutions. TEN Connected's street lighting and smart cities' solutions deliver lower costs, better lights, safer streets and brighter, more beautiful city neighborhoods.

TEN Connected has actively worked on developing solutions for more than 200,000 street lights across the United States. Our proven approach has helped cities save millions of dollars annually on utility bills while dramatically reducing energy and maintenance costs and while creating new revenue streams.

As a technology and vendor neutral company, TEN Connected Solutions' approach for Portland will be to vet available technologies and present the best and most applicable products to City leadership. TEN Connected will work with the City of Portland during each step of the project – from audit, to contract, and installation – to develop, plan, and execute a conversion of the street lighting systems, using state-of-the-art technologies including the implementation of smart cities' technologies. Additionally, TEN Connected will deliver a 100% accurate audit in terms of locating and identifying, by GPS, each street lighting system asset.

TEN Connected has the expertise, experience, and national network of partners in place to deliver a world-class lighting project for the City of Portland. The information contained in this proposal accurately describes the services to be provided.

We thank you for the opportunity to submit this response and we look forward to working with you.

Troy T. Geanopulos, CEO

B. Company Profile

Company Description

TEN Connected Solutions, Inc. (TEN Connected), a wholly-owned subsidiary of The Efficiency Network, Inc. (TEN), is one of the nation's industry-leading LED street lighting design, conversion, and Smart Cities technology integration companies. TEN Connected's smart street lighting solutions deliver lower costs, better lights, safer streets and brighter, more beautiful communities.

Headquartered in the Commonwealth of Pennsylvania, in the City of Pittsburgh, TEN has been in the energy-efficiency and smart city solutions business since its incorporation in February, 2012, and has operated under this firm name for nearly five years. In addition to our Pennsylvania headquarters, TEN Connected also has offices in New Gloucester, Maine, Washington DC/Baltimore area, Philadelphia, PA, and Boston, MA.

Proudly, and specifically to assist cities and towns in Maine to acquire their street lighting systems to convert to LED, TEN Connected has established our local office at 19 Yarmouth Drive, Suite 301, located on the Pineland Business Park Campus in Gloucester, a mere 20-minute drive from the City of Portland.

TEN Connected – Maine (Pineland Business Park Campus)
19 Yarmouth Drive, Suite 301
New Gloucester, ME 04260

For the purposes of the City of Portland, TEN Connected Solutions' Project Management team will be based out of our Maine office to ensure a closely monitored, managed, and successful project.

It is important to note that TEN's in-house team has designed and implemented over $700 million in energy efficiency projects for a multitude of customers over the past several decades. And TEN's seasoned professionals have, in the past, worked in material roles for some of the country's most well-known energy efficiency companies, including TEN, Siemens, Johnson Controls, NORESCO, Opterra, Chevron, and Constellation An Exelon Company.

TEN Connected's commitment to offering street lighting and Smart City technology solutions is evident based on the credentialed, high-caliber team assembled at TEN Connected to provide world-class energy efficiency projects – including a significant focus on performance contracting which encompasses, to a large degree, municipality-wide roadway and street lighting LED conversions, city and college-owned parking facility upgrades, as well as smart energy efficiency projects. This is our exclusive focus. There are few, if any, energy and utility situations TEN Connected has not already encountered and successfully addressed (even most recently) for other street lighting clients such as the cities of Scranton, PA, Baltimore, MD, Harrisburg, PA and Bethlehem, PA.

Experience and Performance Capabilities

In addition to substantial energy performance contracting design and implementation experience, and the significant references of TEN's team, TEN itself carries with it the Qualified Energy Service Company (ESCO) Certification by the United States Department of Energy (DOE). This designation is proof of expertise and experience through a rigorous DOE qualification process and allows TEN to perform Energy Savings Performance Contracting (ESPC) at Federal agencies.

Similar/Current Projects Underway

Project	Client/Owner	Number of Street Lights Converted	Value
City of Baltimore, MD	City of Baltimore, Maryland	7,000	$3.2 million
City of Bethlehem, PA	City of Bethlehem, Pennsylvania	5,400	$3.8 million
City of Harrisburg, PA	City of Harrisburg, Pennsylvania	6,000+	$3.6 million
City of Scranton, PA	City of Scranton, Pennsylvania	6,000+	$4.0 million

Experience developing projects that conform to relevant state laws, local standards, and local Public Utility Commission rules.

1. The **City of Baltimore, MD** selected TEN to serve as its design and construction management representative to the local utility company, Baltimore Gas & Electric (BGE) to manage their extensive street lighting conversion to LED, beginning with a Phase I asset inventory audit and conversion of approximately 7,000 fixtures to LED which are in 17 high-crime zones designated by the City. Enhanced public safety/homeland security is the primary focus of Baltimore's Phase I project. So much so, that the City asked TEN to evaluate and recommend fixtures best suited to have the ability to "overdrive them" in these areas to shine a light on potential criminal activity – with the added feature to be able to dim the LED in the future if necessary, as well as to be able to troubleshoot maintenance from a centralized location. The project conformed to all relevant state laws, local standards, and local Public Utility Commission rules.

2. The **City of Bethlehem, PA** selected TEN to replace 5,400 of the City's existing High Pressure Sodium (HPS) street lamp fixtures with 60% more efficient LED fixtures. TEN's Bethlehem project represented, at the time of completion, the largest and most comprehensive city-wide LED street light conversion project completed in Pennsylvania, including pilot projects that already had been completed in Philadelphia and Pittsburgh – only to be eclipsed by TEN's conversion of all the street lighting in the City of Harrisburg, PA (6,000+ fixtures) to LED to be handed over to Harrisburg at the end of December 2016. In Bethlehem, TEN served as designer, project manager, and primary point of contact between Bethlehem and TEN's local project installer and the fixture manufacturers. Bethlehem chose Philips for their cobra heads as the result of a highly competitive bid process that drove project costs down, facilitated by TEN. The project conformed to all relevant state laws, local standards, and local Public Utility Commission rules.

3. In the **City of Harrisburg, PA**, TEN completed the design and installation of more than 6,000 new roadway cobra head and decorative LED fixtures – this process also included a period of public feedback, where the local public was invited to view and vote on the shortlisted LED cobra head fixtures. In addition to an Asset Inventory Audit, TEN is also completing an extensive historical analysis of utility billing for the streetlight system to determine any overcharges paid by Harrisburg to PPL Electric Utilities – known as TEN's Overcharge Lookback Audit. To the extent that any overcharges are revealed, TEN will facilitate return of those payments to Harrisburg for as many years as permitted under applicable law. TEN's process for Harrisburg also minimized the use of project contingencies which then afforded the City of Harrisburg the ability to include more decorative, color-changing LED bridge lighting designed and installed by TEN under the same contract.

Picture shown is TEN installing LED bridge under-lighting for the City of Harrisburg in November, 2016. The LEDs have controls and will be programmed for 26 different color sequences for special occasions such as Red, White and Blue for the 4th of July. This is the "icing-on-the-cake" as 6,000+ streetlights already have been installed across the City.

4. Recently, TEN and the **City of Scranton, PA** entered into a contract for TEN to convert Scranton's 6,000+ streetlights (cobra heads and decoratives) to state-of-the-art LEDs. Scranton selected TEN in a competitive process over Siemens, Johnson Controls and SmartWatt. The project includes the installation of a front-end controls package, as well as the refurbishment (sandblasting and painting) of approximately 300 decorative poles throughout the city. TEN is also in the process of bringing forward, for the City's consideration, a smart media revenue-generating solution estimated to provide the City with more than $2 million in income in the first five years at no additional costs.

Utility Billing Structures & Street Light Acquisition Experience

Due to TEN Connected's contracts with cities like Bethlehem and Harrisburg (both served by Pennsylvania Power and Light - PPL) and Baltimore (served by Baltimore Gas & Electric – BGE) for their LED streetlight conversion projects, TEN Connected has become intimately familiar with utility street light billing structures. Furthermore, TEN's work with the City of Baltimore requires TEN Connected not only to design and project manage Baltimore's LED streetlight conversion project, but specifically includes the technical analysis of Baltimore's BGE utility billing structure, including utility bill reconciliation. TEN Connected is confident that we will be able to provide this same comprehensive level of understanding, experience, and successes to the City of Portland.

In addition, TEN Connected has dedicated staff through its network, who have previously held senior roles in the street lighting divisions of Northeast Utilities and Connecticut Light & Power. This expertise has facilitated repayment of utility overcharge refunds for municipal clients in CT and MA, most recently $1.3 million to Springfield, MA.

Rebate & Incentive Optimization

TEN will undertake careful planning to optimize and obtain maximum value of any and all incentives available, including those available from Central Maine Power / Efficiency Maine. Later on in this response, TEN specifically projects the rebates currently available to Portland for this project.

TEN's street lighting projects have garnered significant rebates for the Cities of Bethlehem, PA and Harrisburg, PA, and TEN anticipates the same success for the City of Scranton, PA. It is important to note that TEN does not look to "participate" in the rebate funding amount allocated to the project, and any rebates or incentives will be paid directly to the City of Portland throughout the project.

Below is the amount of rebates/incentives obtained by TEN for our recent customers.

TEN Customer	Rebate Program	Rebate Obtained* & Paid Directly to TEN Customer
City of Bethlehem, PA	Act 129 PA (PPL)	**$224,000**
City of Harrisburg, PA	Act 129 PA (PPL)	**$385,000**
City of Scranton, PA	Act 129 PA (PPL)	**$234,000 (*estimated)**

In the case of Harrisburg, PA, TEN initially projected the rebate amount for Harrisburg to be $285,000. However, throughout the process, TEN was able to obtain $100,000 more than initially estimated because of our significant team effort. In the end, TEN was able to work with the utility to convince them to use more realistic operating houses of 4,300 hours vs. 3,883 for treatment as street lighting rather than the exterior lighting. Additionally, TEN ensured that omni-directional LED decorative lights would be "DLC" listed.

Examples of Acquisition

Recently, TEN Connected assisted the City of Harrisburg, PA in the acquisition of hundreds of street lights from the large, regional electric utility provider, PPL. In addition, by working with TEN Connected to complete a detailed inventory audit and installing a wireless controls system for the new LED street lights, the City now had the data to dispute any past billing discrepancies and negotiate with the utility for fair and accurate acquisition prices.

Fundamentally, based on significant experience and technical expertise, TEN Connected will deliver to the City of Portland a customized Audit Report showing costs, savings and payback (both simple and with any incentives included) for the LED streetlight retrofit. There are few, if any, energy and utility situations TEN Connected has not already encountered and successfully addressed for other street lighting clients - specifically including successfully applying for rebates, administering the process for, applying for, and obtaining confirmation of corrected billing for newly installed wattages from the utility, obtaining refunds for overcharges related to street lights that no longer exist, and reconciling each and every street lighting utility bill.

Deploying Smart City and Internet of Things (IoT) Technology

TEN Connected Solutions' core business is converting street lighting to LED technology and positioning cities for the future through integrating smart cities technology – including those that generate revenue for cities. In each of TEN Connected Solutions' past projects, our team has worked with city leadership to make the street lighting system "future-ready" for smart city and IoT technology implementation. Streetlights and the poles they are supported by are valuable real estate and by converting the system to LEDs and investing in a wireless controls system, cities now can use the savings – if they so choose – to begin to think about smart cities solutions.

Below are specific examples of TEN's experience deploying smart city and IoT technology as part of LED street lighting projects:

- **Baltimore, MD:** As part of Baltimore's conversion of 7,000 streetlights to LED technology (Phase I of 33,000) TEN recommended that Baltimore acquire fixtures with a built-in base capable of accepting a 7-pin NEMA connector to accept either a photocell or intelligent wireless controls node for the purpose of turning fixtures on/off, dimming fixtures, and troubleshooting for maintenance, as well as the ability to increase light levels in high crime areas.
- **Harrisburg, PA:** TEN has completed the conversion of 6,000+ streetlights to LED as well as the installation of a wireless controls system, resulting in more than $500,000 in annual energy savings, monitored by a centralized front-end system.
- **Bethlehem, PA:** TEN replaced 5,400 of the City's existing High Pressure Sodium (HPS) street lamp fixtures with 60% more efficient LED fixtures complete with an intelligent wireless controls system retrieving data from the streetlights and sending it back to a front-end system.
- **Scranton, PA:** TEN is currently under construction converting Scranton's 6,000+ streetlights to LED. As part of the project, in addition to installing intelligent wireless controls on all cobra head streetlights, TEN is installing a smart media system to generate City revenue and better connect visitors and local residents to activities and information in the area. The system includes wireless mobile beacons providing free Wi-Fi in addition to a Scranton-specific app delivering special offers around the City, as well as important information and notifications provided by the City.

In addition to Scranton, TEN Connected is working with the cities of Baltimore and Harrisburg, to implement smart city kiosks. The kiosks, like similar devices currently being used in New York City and Kansas City, will connect

visitors, residents, and businesses to local attractions, city services, and public information while generating revenue for each city.

Smart Cities' Partnerships and Approach

TEN Connected Solutions is not an equipment manufacturer and as such allows us to be vendor neutral to the benefit of the City of Portland. This also allows TEN Connected to maintain a competitive process through final design to maximize value for the City, both in terms of fixture costs, labor costs, maximizing post-installation warranties and minimizing long-term life cycle costs.

TEN Connected has a proven process to administer an additional competitive bidding process amongst a short list of City-approved LED fixture manufacturers for improving the cost and warranty terms for the City. Sample areas, using short-listed products, can also be provided to the City of Portland. In the City of Harrisburg, 2 fixtures each of equivalent wattages from five (5) manufacturers were installed by TEN along a stretch of city roadway for purposes of visual inspection and comparison in furtherance of final product selection.

With TEN Connected's competitive platform, not only will the City of Portland have final approval of the high-quality LED luminaires included in the competitive process, but the City will also have final approval of the product chosen for installation by having procured this project through a competitive performance contract process.

As one of the nation's industry-leading LED street lighting conversion companies, TEN Connected has established significant relationships with world-class LED fixture and controls manufacturers, and Smart City and Smart Media platform providers, and TEN Connected has been able to work diplomatically with each of them, specifically (but not exclusively) with the following:

Past Technology Partnerships Description	Experience and Value Add
Eaton/Cooper Lighting	(Harrisburg Project) LED cobra heads and decorative streetlights
GE, CREE, Holophane, Philips	(Shortlisted fixtures for the Cities of Harrisburg, Bethlehem, and Scranton)
TELENSA Controls	(Harrisburg Project)
Truly Green Lighting	(Harrisburg & Scranton Projects)
Philips Lighting	(Bethlehem Project)
City Touch Controls	(Bethlehem Project)
CIMCON Controls	(Scranton Project)
Leotek Lighting	(Baltimore Project)
Intellistreets	(Smart Lighting Platform/Rev Generation Vendor)
Smart City Media, LLC	(Smart Media Platform proposed for Scranton/Harrisburg Projects)

C. Key Personnel

TEN Connected's team below consists of industry veterans that have up to 25 years of experience in the energy services industry. Our company was created to offer energy efficiency under an altogether different price level and with economic terms to create unmatched value for our clients. It is important to note again that, although TEN's name might not be familiar in Maine, TEN's key personnel (and some who are directly assigned to this project) have worked for leading energy services companies such as TEN, Constellation An Exelon Company, NORESCO, Johnson Controls, Siemens, Opterra, Chevron and others. Additionally, members of our street lighting team have successfully completed parking facility upgrades for cities and large universities such as, most recently, Pennsylvania State University and Temple University. **Individual experience and resumes for TEN Connected's Street Lighting Team may be found in Attachment 1: Key Personnel Detailed Resumes/CVs.**

When it comes time for installation, TEN Connected's dedicated project delivery staff of experienced project and construction managers specialize in delivering guaranteed, efficient technology solutions as planned on budget and on time. After TEN Connected has competitively procured all luminaires, other materials, and control system components (approved by the City during the design phase), the installation can begin. TEN Connected's project management is key to a quality installation, and we guarantee that there will be accountable TEN Connected employees assigned to this project throughout the installation, as follows:

Patrick Regan, Esquire – VP, Business Development

Patrick leads the TEN Connected Solutions business development team. Patrick has spent almost a decade as a pioneer in helping visionary governments design, finance and implement energy efficiency and connected street lighting solutions and Smart Cities technology projects. Patrick is TEN's primary contact person responsible for coordinating all of TEN's resources, as well as contract negotiations. Patrick has a valuable combination of skills and experience, including being a licensed attorney, which enables him to understand and discuss customer contractual needs and requirements, as well as extensive hands-on experience in recognizing customer financing strategy and needs, including presentation and analysis of various project funding options to determine those best suited for a customer's project. Over the past several years, Patrick has had the direct responsibility for coordinating the delivery of over $60 million in energy efficiency measures, including thousands of LED street lights. Patrick received a BA from Boston College and his JD from Duquesne University School of Law.

Olivia Benson - Program Manager, Street Lighting / Smart Cities Technology Solutions

Olivia has worked in City government and understands the importance of meeting stakeholder goals at each step of the way. Olivia will assist in the overall development and management of the project and will manage project-related communications to ensure effective coordination and ultimately is responsible for the City's overall satisfaction with the project. After graduating from Carnegie-Mellon University, Olivia served as a policy director for the City of Pittsburgh where she managed and designed community-focused programming for city-wide implementation and led public affairs outreach strategies and education initiatives, while at the same time obtaining two master's degrees – an MS in Public Policy from the University of Pennsylvania and an MBA from Point Park University. As it relates to street lighting, Olivia is the Program Manager for TEN's conversion of over 6,000 streetlights to LED in the City of Harrisburg, PA, over 6,000 streetlights to LED in the City of Scranton, PA, and 900 streetlights in the Borough of Middletown, PA, including the integration of meaningful outreach strategies to support and exceed customer expectations.

Mike Schneider, LC, CLEP, CPM – Director of Design

Mike researches, designs, and oversees for TEN Connected the testing and installation of high-quality, cost-effective lighting projects along with various other energy saving and capital improvement projects. His extensive

field experience allows him to apply and revise designs in order to best meet all unique situations. Having worked with nearly 60 lighting manufacturers, Mike knows the lighting products, how they work, and the best applications for each option. Mike currently serves as an advisory member on the Illuminating Engineering Society of North America's (IESNA) Energy Management Committee and Industrial Lighting Committee. In addition, Mike is a Lighting Certified Professional (LC) by the National Council of Qualifications for the Lighting Professions, and a Certified Lighting Efficiency Professional (CLEP) by the Association of Energy Engineers. Mike was directly responsible for assisting the Cities of Bethlehem, Baltimore, Harrisburg, and Scranton in analyzing the efficiency and characteristics of several world-class LED fixtures for possible selection, and Mike will serve in this same lead design role for the City of Portland. In addition, Mike has extensive experience researching, designing and overseeing the installation of parking garage and concourse lighting projects, including most recently LED lighting conversions at Penn State University's Beaver Stadium, and two parking garages at Temple University.

Joseph Statler - Director of Installation

Joe has a 13-year record of success overseeing all phases of multimillion-dollar construction, infrastructure, efficiency, street lighting and environmental projects for government, public housing and private-sector clients. Joe is an outstanding professional who has extensive experience in supervising and managing energy efficiency programs and policy planning initiatives. Joe is directly responsible for the success of TEN's conversion of 5,400 street light fixtures to LED in the City of Bethlehem, PA and Joe's TEN Connected team currently is managing TEN's LED street lighting upgrade projects in the cities of Baltimore, Harrisburg and Scranton, and will oversee project management for this project. In addition to a successful track record converting thousands of city streetlights to LED, Joe also has overseen and has been responsible for installation of millions of dollars of parking garage lighting upgrades, particularly for hospitals and colleges.

Bobby Hall - Project Manager

Bobby is responsible for all onsite project management and subcontractor supervision during construction. He will ensure the worksite is safe and supervised in an effective and efficient manner. He will be the field supervisor during the lighting upgrade and as needed for the length of the project.

Greg Lok, PE, CEM – VP, Technology and Engineering

Greg is an energy management, technology and controls specialist developing individual projects, managing customer expectations with respect to technology selections, and making sure that engineering development meets the specific needs outlined by the customer. Greg is responsible for the lighting controls integration for the Cities of Bethlehem, Harrisburg and Scranton LED conversions, and will have primary responsibility for the City of Portland's controls integration, as well as performance monitoring (Measurement & Verification). Greg is a licensed Professional Engineer.

All project plans go through a final approval process with TEN Connected's executive team:

Troy Geanopulos - CEO, The Efficiency Network, Inc. (TEN) & TEN Connected Solutions

Troy has founded and co-founded several energy efficiency companies over the past 25 years, including TEN and TEN Connected Solutions. The foundation for each of these companies has been respect for customer and partner relationships and the ability to recognize and adjust to market trends. For Troy, perhaps the most exciting aspect is the TEN ability to bring new technologies to the table in a way that will help customers improve their organizations. By doing so, he expects TEN to stimulate local economies worldwide and make a lasting positive impact on the environment. Troy has a BA from Dickinson College and has participated in the Entrepreneurial Leadership Forum through the Tepper School of Business at Carnegie Mellon University. He is very active in the Pittsburgh community, currently serving or having served on several non-profit boards.

Rob Campbell, PE, MBA - President, The Efficiency Network, Inc. (TEN) & EVP, TEN Connected Solutions

Rob is an energy efficiency expert, a proven-effective team leader with more than 25 years of industry experience. At TEN Connected, Rob is responsible for all internal operations, systems, and processes. He provides oversight to the financial, engineering, information technology and construction teams. Before co-founding TEN, Rob was the Vice President of Constellation New Energy's Projects and Services Group. Rob is a licensed Professional Engineer and holds a BS in Mechanical Engineering from the University of Toronto and an MBA from Tepper School of Business at Carnegie Mellon University.

Following is a comprehensive list of all services that TEN Connected performs in-house with our own employees.

- Street Light System Inventory Audit
- Utility Bill Auditing & Analysis
- Utility Overcharges Analysis
- Street Lighting System Procurement Financial Analysis
- Street Lighting and Roadway Engineering & Design
- Competitive Procurement/Supply of Equipment from Vendors and Manufacturers
- Construction Management
- Monitoring and Verification (M&V)
- Guaranteed Energy Savings
- Project Opportunity Identification & Recommendation
- Energy Savings Calculations, including Payback Analysis
- Project Cost Estimating
- Subcontractor Bid Solicitation & Evaluation
- Contractor Site Supervision
- Commissioning
- Smart Cities Technology Evaluation & Integration
- Rebate & Incentive Application & Administration
- Project Financial Analysis
- Warranty/repair Administration

D. References

All projects listed below were completed by TEN Connected Solutions personnel. Detailed project descriptions are found later in this section.

Project Reference - City of Baltimore, MD LED Street Lighting Conversion

The **City of Baltimore** selected TEN to manage their latest street lighting conversion to LED, beginning with a Phase I asset inventory audit and conversion of approximately 7,000 fixtures to LED which are located in 17 high-crime zones designated by the City. Enhanced public safety/homeland security is the primary focus of Baltimore's Phase I project. So much so, that the City asked TEN to evaluate and recommend fixtures best suited to "overdrive them" in these areas to shine a light on potential criminal activity – with the added feature to be able to dim the LED in the future if necessary.

Baltimore Before – HPS Cobra Head Luminaires

Baltimore After – LED Cobra Head Luminaires

Contact Information:
Brent Hooper
Street Lighting Superintendent
City of Baltimore
Department of Transportation
(410) 396-1311 (office)
brent.hooper@baltimorecity.gov

In Baltimore, TEN is serving as project manager, designer, fixture evaluator, and primary point of contact between Baltimore and the local project installer and fixture manufacturer, as well as Baltimore's liaison with the local utility, Baltimore Gas & Electric (BGE). As part of the project, TEN completed and delivered an LED performance characteristics report to the City and, based on the report and consultation with TEN, Baltimore selected the fixture (manufactured by Leotek) that is currently being installed under TEN's supervision and project management.

Project Summary

Total Fixtures Replaced	**7,000+**
Total Dollar Value of Contract Cost	$3.5 million
Installation Subcontractor(s):	Baltimore Gas and Electric (BGE) Subcontractor
Annual Cost Savings (year 1)	$160,000
Annual Electric Savings	584,000 kWh
Tons of CO_2 Saved Annually	906,000

Project Reference - City of Bethlehem, PA LED Street Lighting Conversion

The **City of Bethlehem** selected TEN to replace 5,400 of the City's existing High Pressure Sodium street lamp fixtures with 60% more efficient LED fixtures. At the time, this project represented the largest and most comprehensive city-wide LED street light conversion project completed to date in Pennsylvania, including pilot projects already completed in Philadelphia and Pittsburgh. It is now the second largest and most comprehensive LED streetlight conversion project in Pennsylvania, after TEN's Harrisburg, PA project. TEN acted as project manager, designer and primary point of contact between Bethlehem and TEN's local subcontractor and the fixture manufacturer. Bethlehem chose Philips fixtures as the result of a highly competitive bid process facilitated by TEN.

Contact Information:
Michael Alkhal, P.E.
City of Bethlehem
Director of Public Works, & City Engineer
610-865-7050
malkhal@bethlehem-pa-gov

Project Summary

Total Fixtures Replaced	**5,400+**
Funding Source	PNC (tax-exempt lease)
Installed Cost	$3,804,093
Annual Cost Savings (year1)	$472,579
Annual Electric Savings	2,042,262 kWh
Tons of CO_2 Saved Annually	2,822,000 Pounds
Payback after Incentive (yrs.)	7.6 years
Contract Term (length of guarantee)	10 years
Rebate Secured for the City	$224,000 (Act 129 PPL Electric Utilities)
Procurement Vehicle	PA Guaranteed Energy Savings Act (Act 39)

TEN requested a reference from the City of Bethlehem and here is what Mike Alkhal, P.E., Director of Public Works and City Engineer for the City of Bethlehem, had to say:

"TEN has played a significant role in implementing our City of Bethlehem lighting project with skill, professionalism, and energy. The professionalism in gaining an understanding of the requirements of the project, follow-up, and the coordination of existing contractors was outstanding."

"Their professional approach to project management, responsiveness, coordination and communication along with the timeliness of output ensured that I would recommend TEN's projects team. It has been a pleasure working with them at all levels. Deadlines were met and communication, with the appropriate people, in both verbal and written form, was of high quality."

"The project diligently addressed our community member's concerns and emphasized public safety to the highest level. The aesthetic appearance of the Historic District was a high priority and TEN conscientiously worked with the historic district's non-profit organization and the City to meet their needs, not only to meet their visual goals but to stay within the confines of the project budget."

Michael Alkhal, P.E., City of Bethlehem

Project Reference - City of Harrisburg, PA LED Street Lighting Conversion

TEN was selected by the **City of Harrisburg** over 10 other companies (including a shortlist of Johnson Controls, Siemens, and Honeywell) to convert the City's street lighting system to state-of-the-art LEDs. Now substantially complete except for LED lighting being installed on 2 bridges, the project encompasses well over 6,200 fixtures, and took about 6 months to install and commission the cobra heads and decorative fixtures.

TEN delivered to Harrisburg as part of the project a comprehensive asset inventory audit of the entire street lighting system, loaded onto Harrisburg's GIS system. By the end of this year, all the roadway and street lighting in Pennsylvania's state capital owned by the city, including bridge lighting, will be illuminated with LEDs, including a controls system capable of, at a minimum, dimming fixtures, troubleshooting maintenance, locating each fixture by GPS, and monitoring energy usage from a centralized location.

Contact Information:
Wayne Martin, P.E.
City Engineer
City of Harrisburg
717-315-4255
wsmartin@cityofhbg.com

Project Summary

Total Fixtures Replaced	**6,000+**
Funding Source	M&T Bank (tax-exempt lease)
Initial Cost Estimate	$2.8 million
Installed Cost	$3.6 million
Annual Cost Savings (year.1)	$510,333.00
Tons of CO_2 Saved	5,736,872 Pounds
Simple Payback	7 years
Estimated Rebate Incentive	$277,374
Procurement Vehicle	PA Guaranteed Energy Savings Act (Act 39)
Date Started	2015
Date Completed	To be Fully Completed & Commissioned December 2016

As part of TEN's audit in Harrisburg, the following data was collected in preparation of the conversion:

TEN Asset Inventory Audit Data Set for Harrisburg, Pennsylvania LED Street Lighting

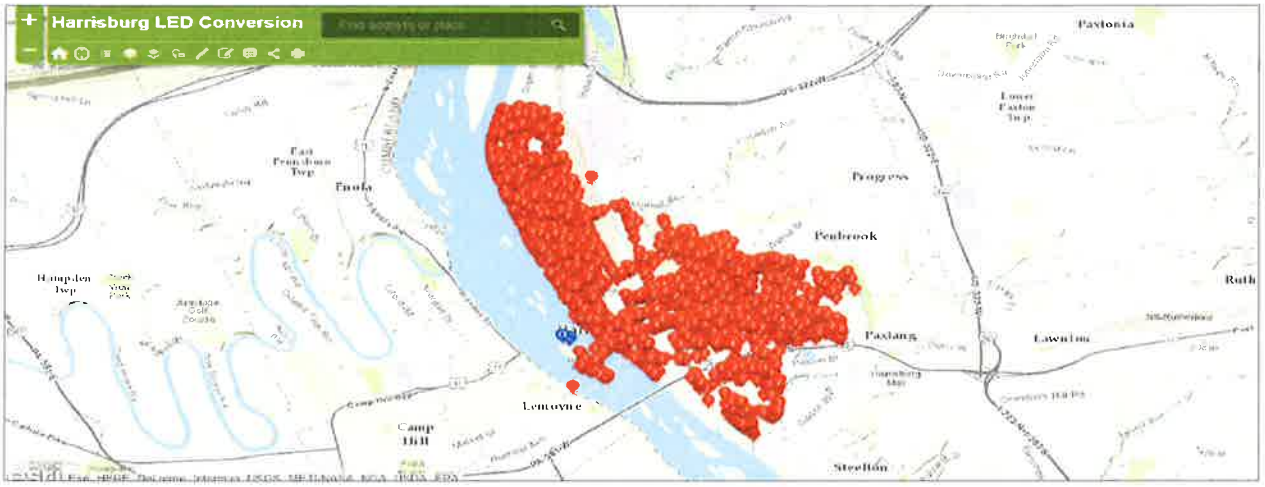
1. All current streetlight fixtures
2. Luminaire styles and types
3. Wattages for all luminaires
4. Actual sample lighting levels of each luminaire type and of each roadway type (access road, two-lane, etc.)
5. GPS/GIS pole location of each asset
6. Current condition of pole and mast arms

7. Infrastructure issues related to poles and wiring
8. Infrastructure issues such as tree/limb obstruction or interference
9. Compliance with PennDOT lighting requirements
10. Values and averages for lighting levels and uniformity; and comparison to current lighting standards, IES recommendations and other City requirements

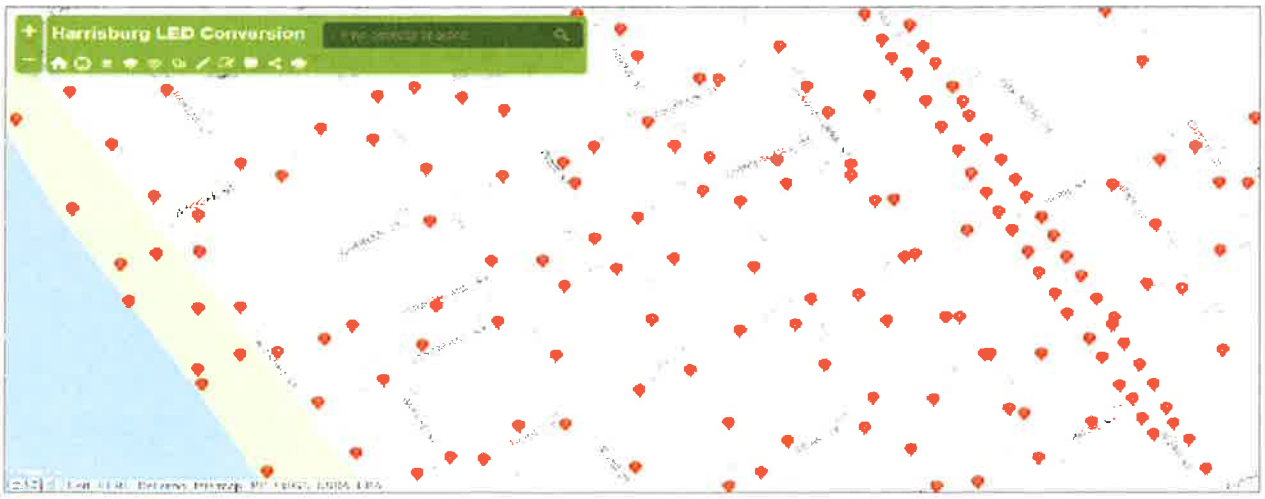
In Harrisburg, in addition to the Asset Inventory Audit, TEN is also undertaking an extensive historical analysis of utility billing for the streetlight system to determine any overcharges paid by Harrisburg to PPL Electric Utilities – known as TEN's Overcharge Audit. To the extent that any overcharges are revealed, TEN will facilitate return of those payments to Harrisburg for as many years as permitted under applicable law.

Below is screen shot depicting TEN's GIS/GPS progress mapping of the asset inventory audit for Harrisburg. At the time of this screen shot of the GIS system was taken, approximately 90% of the asset inventory audit was complete (red sections had not been audited). It's now 100% complete and as the new street lighting system is being installed over the next several months, TEN will apply **real-time LIVE TRACKING** updates to its platform to inform all City stakeholders real-time as soon as a new LED is installed.

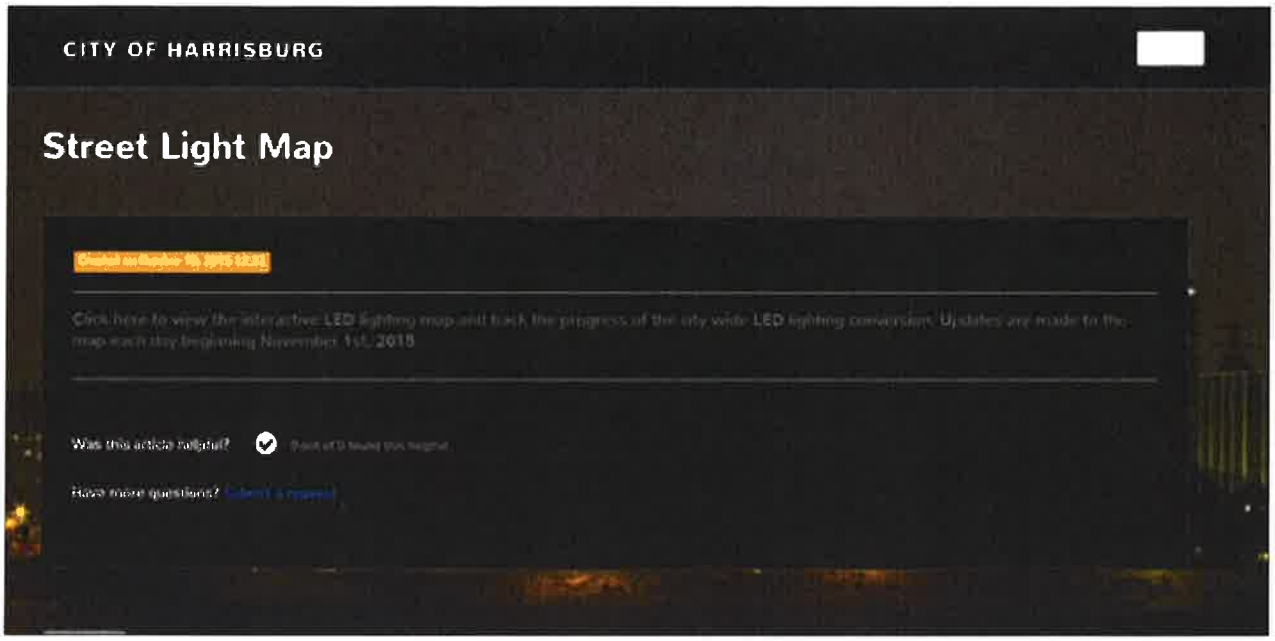
Progress Mapping – Installation LIVE TRACKING - 1



Progress Mapping – Installation LIVE TRACKING – 2 (ZOOMED IN)



LIVE TRACKING Provided on Customer's Website for the public to monitor progress



Project Reference - City of Scranton, PA LED Street Lighting Conversion

TEN Connected was recently selected by the **City of Scranton, PA** - over four other companies (Siemens, Johnson Controls, and SmartWatt) to conduct a technical energy audit and implement a guaranteed energy savings contract for the City's comprehensive LED street lighting initiative. TEN Connected's winning proposal included options for the City to replace fixtures, refinish and paint aging poles, the installation of lighting controls, and to incorporate revenue generating smart media technology throughout Scranton, known as the Electric City.

The project will include replacing more than 6,000 street lighting fixtures and is expected to save the City nearly $400,000 in annual electricity and lighting system maintenance costs. Also under consideration by Scranton is the integration of a Smart Media Grid similar to those installed in New York City and Kansas City that will include outdoor and indoor interactive media kiosks, possibly digital LED banners on decorative poles, and a dedicated mobile app to generate revenue to help pay down the costs associated with the street lighting infrastructure upgrades. The revenue expected to be generated for the City of Scranton is approximately $4 million over the first five years.

Contact Information:
David Bulzoni
City of Scranton, Business Administrator
(570) 348-4118
dbulzoni@scrantonpa.gov

Once complete, the City of Scranton will not only have a 100% accurate GIS/GPS street lighting inventory and integrated GIS streetlight map, the City will have a new, world-class LED street lighting system with intelligent wireless controls to dim fixtures, turn them on/off, and to troubleshoot usage and maintenance.

Project Summary

Projected Cost Savings	$400,000
Project Cost	$4,000,000
Annual Electric Energy Savings (year.1)	2,595,669 kWh
Estimated Simple Payback	5.0 years
5-yr Smart Cities Revenue Projection	$2+ million
Estimated Rebate Incentive	$236,853
Procurement Vehicle	PA Guaranteed Energy Savings Act (Act 39)
Date Started	December 2016
Date Completed	To be Fully Completed & Commissioned in 2017

Parking Garage & Non-streetlight LED Lighting Upgrade Experience

When reviewing TEN's project references, note that TEN's team members, who are also assigned to this project, have been extensively involved with non-streetlight LED lighting upgrade projects. One of these recent projects is described below. For the Penn State University Beaver Stadium Project, TEN's team members performed the auditing, engineering, project development, selection and procurement of material and subcontractors (through competitive bidding processes), contract negotiation, construction management (including onsite project management), commissioning, training customer staff, and delivering the measurement and verification of project performance.

Project Reference: Penn State University, Beaver Stadium LED Lighting Upgrade with Integrated Controls

The significant element of this project was the critical path timing. In order to be ready for the upcoming football season, TEN had to expedite delivery of materials and contractors' schedules. The Beaver Stadium project included the installation of a comprehensive LED lighting system upgrade with a wireless controls system - including exterior entry gates, concession walkway areas, loading docks, main concourses, ADA-accessible ramps, pedestrian ramps, and press stairways. All were completed in time for the first game of the season! And in fact, the fixture selected for the concession walkway areas, main concourses and pedestrian ramps **is a parking garage fixture (Cooper Top Tier) controlled by a sophisticated, but simple to use wireless controls front-end system.**

Contact Information:
Laura Miller, PE
Pennsylvania State University
814-867-4740
Lmi20@psu.edu

Total Fixtures	**1,000**
Installed Cost:	$768,610
Annual Electric Cost Savings:	$107,779
Total Annual Cost Savings:	$139,779
Annual Electric Savings:	1,481,090 kWh
Annual O&M Savings:	$32,000
Tons of CO2 Saved Annually:	1,021
Payback after Incentive (yrs):	4.9
Rebate Incentive:	$76,776
Procurement Vehicle	PA Guaranteed Energy Savings Act (Act 39)

Parking Garage and Surface Lot References

TEN Connected can bring this same level of experience to the City of Portland's parking garages, where the City has ownership interest and manages the facility or in the facilities managed by MHR Management. TEN has noted that the City may want to include the following facilities in the project and to upgrade them with all new LED lighting: Elm St. Parking Garage (managed by the City of Portland Parking Division), Spring St. Parking Garage (managed by the City of Portland Parking Division), Casco Bay Garage (managed by MHR Management), and Temple Street Garage (managed by MHR Management).

TEN will leverage its significant parking garage experience, references and best practices to offer to the City of Portland economically sound options for upgrading all of the lighting in its parking garages to LED, with daylight harvesting, and controls to maximize energy savings and the fixture life cycle.

Below is a partial list of TEN's team experience with upgrading parking garage and surface lot lighting, as well as details on TEN's most recent parking garage LED upgrades installed at Temple University. References are available upon request.

Project Reference: Temple University: Liacouras Parking Garage

Total Fixtures Replaced	537
Funding Source	Customer funded
Installed Cost	$453,029
Annual Cost Savings (year1) energy and O&M	$74,315
Annual Electric Savings	752155 kWh
Tons of CO_2 Saved Annually	428.4
Payback after Incentive (yrs.)	5.6 years
Contract Term	5.6 years of M&V post construction
Rebate Secured for the Customer	$36,404 (Act 129 PPL Electric Utilities)
Procurement Vehicle	Self-Initiated by Temple

Project Reference: Temple University: Carlisle West Garage

Total Fixtures Replaced	417
Funding Source	Customer funded
Installed Cost	$324,445
Annual Cost Savings (year1) energy and O&M	$54,563
Annual Electric Savings	525,339 kWh
Tons of CO_2 Saved Annually	299
Payback after Incentive (yrs.)	5.5 years
Contract Term	5.5 year M&V post construction
Rebate Secured for the Customer	$24,239 (Act 129 PPL Electric Utilities)
Procurement Vehicle	Self-Initiated by Temple

Additional Parking Garage/Lot Project Experience

Customer Name and Location	Work Performed
5th Avenue Place, PA	Lightings Upgrade for Large Multi-Tier Facility Parking Garage
American Beverage Corp-Papercraft, PA	LED Lighting Upgrade for Facility Parking Lot
Altoona Parking Authority, PA	LED Lighting Upgrade for Lot 16, Lot 17, Lot 20, and Parking Garage
Bellaire School District, OH	LED Lighting Upgrade for Parking Lots
The Bradley Center, PA	LED Lighting Upgrade for Facility Parking Lot
Carnegie Museums, PA	Lighting Upgrade for various Parking Lots & Multi-Tiered Parking Garage
City of New Kensington, PA	LED Lighting Upgrade for various Parking Lots
City of Morgantown, WV	Lighting Upgrade for various Parking Lots
Eastern Gateway Community College, OH	LED Lighting Upgrade for various Parking Lots
Pennsylvania State Capital (Harrisburg), PA	LED Lighting Upgrades for Capital Parking Complex
Housing Authority of Lawrence County, PA	LED Lighting Upgrade for various Parking Lots
Martins Ferry School District, OH	LED Lighting Upgrade for various Parking Lots
Neshannock School District, PA	LED Lighting Upgrade for Facility Parking Lot
Penn State University, PA	LED Lighting Upgrade for Medlar Field and various Parking Lots
Sardello Inc., PA	LED Lighting Upgrade for Facility Parking Lot
Temple University, PA	LED Lighting Upgrades for University Carlisle Garage, with controls
Temple University, PA	LED Lighting Upgrades for University Liacouras Garage Lighting, with controls
The Trimont Condominium Complex, PA	LED Lighting Upgrade for Facility Parking Garage
UPMC, PA – Magee Hospital, St. Margaret Hospital, Presbyterian Hospital, and Shadyside Hospital	Lighting Upgrade for 4 (four) Multi-Tiered Parking Hospital Parking Garages
Washington College, MD	LED Lighting Upgrade for D-Parking Lot, Kent Crossing Parking Lot, and other various Parking Lots.

E. Approach

TEN Connected's Approach

Designing a smart street lighting system for an entire city is no easy task. The City of Portland will require a high level of coordination, expertise, specialization, and experience to deliver the desired result of new street lights (equipped with technology that will enable the installation of a controls system if desired), possible infrastructure improvements, and positioning the City for any current and future smart city technology integration. TEN Connected will utilize proven methods, tools, and techniques to deliver a project that meets and even exceeds the City's expectations.

TEN Connected has been a first mover nationally, helping cities of various sizes upgrade their street lighting systems. The team at TEN Connected has done everything from developing a street lighting design to helping facilitate the procurement of materials to ensuring that all ideas are communicated with installation sub-contractors so that our customers receive the absolute best prices in the marketplace. Because of TEN Connected's turn-key role on numerous projects, **including the direct purchase of millions of dollars of street lighting and related lighting materials from the likes of Philips, Eaton/Cooper, GE, Leotek, Holophane (AEL), and CREE,** TEN has established substantial (and diplomatic) manufacturer relationships resulting in TEN's ability to analyze for our customers and then to deliver to them the highest quality commercialized lighting and smart city technologies, at the absolute lowest possible cost.

To meet the needs of the City, any contractor or manufacturer will require significant experience serving a city as well as being well versed in the latest smart lighting technologies. TEN Connected is intimately familiar with the significant coordination needs of a street lighting project and TEN Connected will design, develop and deliver to the City the best possible project at the lowest cost – **by driving down the costs of each project component – specifically including labor and material - at every level.**

General Scope Understanding, Project Goals, and Objectives

TEN Connected believes that clear communication and meeting the City's expectations every step of the way from the initial audit through the construction process, and training the City on new technologies and reporting results are all key components to successful project coordination and implementation. TEN Connected will work with closely with Portland to help prioritize and to ensure that the project is implemented on-schedule, as budgeted, and that the benefits of the project survive for the long term.

TEN Connected will work with Portland to meet all goals related to design, product procurement, and installation, and TEN Connected is committed to working with the City to meet and exceed project goals:

- For the City: TEN Connected will produce a final design plan that maximizes energy and cost savings, that improves standardization while reducing the variety needed for inventory, and that matches communicated needs and improves overall public safety.

- For the City: TEN Connected will produce an Inventory Audit Report that will provide the desired information to secure funding and/or to provide further economic justification for remaining project-related costs, including locating each new asset by its GPS location – with 100% accuracy - rather than a 10-15 feet margin of error.

- For the City: TEN Connected's Inventory Audit Report will be **reconciled against CMP's current street lighting system data** to accurately confirm system inventories, and then to facilitate negotiation

surrounding the acquisition of the system from Central Maine Power under the newly established Maine legislation and Maine Public Utilities Commission regulations.

1. Audit

Methodology, Tools, and Techniques

TEN Connected will conduct a city-wide sample photometric field survey and audit, at street-level, delivered to the City of Portland sortable by asset, street, neighborhood, district, and by roadway type (access road, two-lane, etc.). The audit will verify compliance with existing regulations and lighting standards, address any deficiencies in the current street lighting systems, and will address any over-lit or under-lit areas of Portland.

Data collected concerning over-lit areas and discrepancies in lighting uniformity or irregularities in lighting levels will be used in preparation for reducing installed wattages to optimize energy savings to benefit the economics and payback of the project, while at the same time delivering recommended light level standards. Additionally, this data will be given to the City in an electronic file that can be seemlessly used with the City's existing GIS software, like ESRI ArcMAP, and in Microsoft Excel format.

The data associated with under-lit areas will be utilized to improve lighting levels in some areas to ensure greater public safety, security and proper visibility. For this purpose, TEN Connected has a fully-engineered process and dedicated audit team (equipped with the latest photometric measuring equipment) to inventory the existing lighting levels; the result of which are accurate street-level field measurements. In addition to photometric results, TEN Connected's inventory audit also gathers additional details and characteristics of the entire system.

TEN Connected's analysis not only will completely and accurately identify and inventory all assets of the street lighting system, but also will be cross-checked against the latest inventory data (to the extent available and from actual bills) provided by the City of Portland and uploaded onto TEN Connected's audit platform, to reveal any discrepancies. This will allow TEN Connected and the City of Portland to correct the data at the field level, at the time it is discovered.

TEN Connected's city-wide asset inventory audit, designed to facilitate a seamless transition to TEN Connected's project lighting design and installation, can, where the City finds value, capture electronically, each of the following:

Variables to Be Collected - Base Survey Information, including verification and GIS level mapping

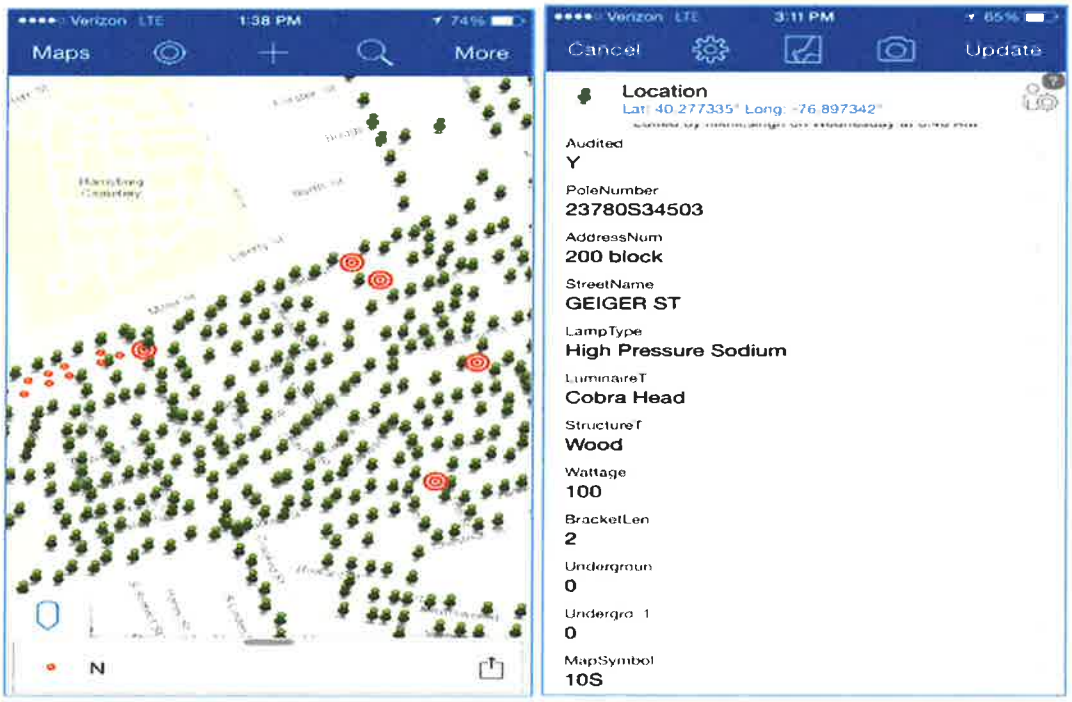
1. All current streetlight fixtures;
2. Luminaire styles and types;
3. Wattages for all luminaires;
4. Actual lighting levels of each luminaire type;
5. Establish each pole's GPS location (with 100% accurate GPS location technology);
6. Cross reference with the City's existing asset inventory and lighting level and wattage information to identify inconsistencies in lamp type and wattage uniformity;
7. Current condition of pole and mast arms and;
8. Notation (comments and/or photos) of visual infrastructure issues related to poles and wiring or tree/limb obstruction or interference;
9. Confirmation of ownership and maintenance for each luminaire and pole;
10. Compliance with state roadway lighting requirements (where necessary);

Optional Audit Information:

11. Roadway widths;
12. Discrepancies or irregularities in lighting levels;
13. Pole height of each asset;
14. Values and averages for lighting levels and uniformity; and compare them to current lighting standards, IES recommendations and any other specific City requirements.

TEN Connected will collaborate with the City of Portland through a final scoping analysis of the audit. Additionally, weekly (and sometimes daily) status reports will be made available through TEN's **GIS LIVE TRACK** system for each location to track the progress of the audits. Using our mobile-based inventory audit program, Portland officials will be able to access audit updates on the progress of the inventory assessment.

Following is a sample depiction of the system that would be used to collect data and to report to the City of Portland (daily or weekly) updates to the audit provided through TEN Connected's mobile-based audit platform.

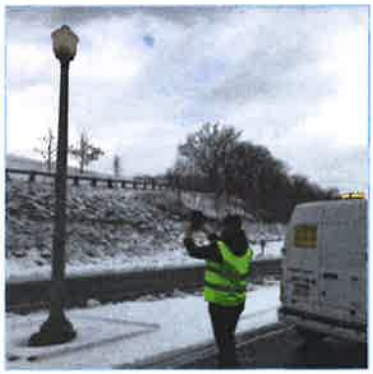


Below is screen shot depicting TEN Connected's GIS/GPS progress mapping taken during the asset inventory audit for Harrisburg, PA. At the time this screen shot of the GIS system was taken, approximately 90% of the asset inventory audit was complete (red sections had not been audited). As TEN Connected completed the conversion of the street lighting system, TEN Connected also supplied **real-time LIVE TRACKING** updates to the City's platform to inform all stakeholders, real-time, as each new LED is installed.

For the Asset Inventory Audit, TEN Connected's highly trained project manager and lighting auditors will work with locally sourced and hired audit team members (and provide rigorous training on TEN Connected's developed platform) to complete the inventory assessment for the City of Portland.

For example, in Harrisburg, TEN hired local Harrisburg residents, who received extensive training on TEN's auditing platform – to work alongside our team to complete the audit of the lighting system and to assist in the final lighting design to be installed – resulting in a very successful locally-supported accurate audit. TEN Connected believes a similar approach would be ideal for the City of Portland. This is just one of the many ways TEN Connected creates local economic development opportunities through its projects.

Procedure to Develop an Audit Report



TEN Connected will review any inventory audit Excel spreadsheet and Central Maine Power account billing summaries (actual bills) supplied by the City of Portland to perform a utility bill analysis to determine the existing quantities on which the City is being billed, and the estimated wattage used to determine monthly costs to develop a baseline. The utility bill provides an explanation of terms and charges related to the supplier rate, generation and transmission rate in addition to noting the rate that Central Maine Power charges under the LED street lighting tariff.

TEN Connected used the City of Portland's breakdown of approximately 6,700 lights to develop the costs to deliver the audit reports, inventory assessment with utility bill reconciliation, financing assistance, system design, onsite project management, installation, and 24-hour maintenance utilizing a City of Portland & Central Maine Power pre-approved local electrical contractor.

Referencing the hours per year that Central Maine Power uses and the estimated wattage for each luminaire, TEN Connected then can determine the total yearly consumption. This analysis forms the basis for baseline energy consumption. In terms of design, relying on TEN Connected's past street lighting project experience, we know what the post wattages for each existing lamp type should be - therefore an estimate for costs (and eventually savings when TEN Connected is in receipt of Portland's comprehensive billing

information) is completed with an extremely high degree of confidence and certainty. Knowing the existing yearly consumption and estimated savings, TEN Connected then performs an energy balance reconciliation to determine and ensure our savings projections are correct.

The City will then see, as a result of completing this project, a kWh reduction and a reduction in monthly utility bills.

Once the verification and finalization of TEN Connected's Asset Inventory Audit (with Utility Bill Reconciliation) is completed city-wide, TEN Connected will have an extremely accurate depiction of existing quantities, wattages, conditions, and what will be required to finalize the design and installation plan. With a completed audit, TEN Connected can obtain accurate material and labor costs as well as post retrofit wattages – keeping in mind that the City may be currently paying for some street lights that no longer exist. The audit will facilitate accurate billing moving forward which will also represent some direct utility cost reduction without the need for any corresponding retrofit costs. After installation, and after all other utility negotiations are complete, TEN Connected will also advocate for reimbursement of previous billing inaccuracies that are documented through this process.

Approach to the Project and Establishing the Amount to be Financed

TEN Connected believes it to be prudent to use the City's current inventory audit spreadsheet (to the extent one is available) in finalizing the preliminary project size knowing (as is always the case with audits) that they have a certain level of accuracy. Therefore, the final project size will then be represented and TEN Connected will indicate the final amount of project funding, and that it may vary "slightly" as the project costs are refined and completed.

RAPID IMPLEMENTATION – Recommended Alternative✓

TEN's "Best Process" Implementation Approach for the City of Portland

Instead of conducting the inventory audit/survey prior to installation, TEN is proposing to undertake the verification survey/audit (and 100% accurate GIS level mapping) simultaneous with installation of the streetlight fixtures themselves.

As part of this recommended **RAPID IMPLEMENTATION**, TEN Connected then also recommends using a fully cost disclosed "add" / "deduct" unitized pricing approach in the contract to ensure and inform Portland of any discrepancies experienced in the audit as installations and upgrades are actively being completed. What this means is that Portland will only be charged for the exact number of fixtures converted to LED, and not some projected amount.

This approach has multiple benefits:

i) Reduces the redundant cost of providing a second audit (if one already exists);

ii) Shortens the delivery time of the project by months and allows TEN Connected to begin installing significant scopes of the project to capture savings for Portland more immediately;

iii) Protects Portland from the concern of incurring unnecessary costs knowing "upfront" what the costs are for any changes encountered during construction; and,

iv) Provides for a way to reconcile, exactly, for any discrepancies in an audit through fully disclosed unit pricing.

If the City requires an asset inventory audit prior to installation, based on TEN Connected's significant experience and technical expertise, TEN Connected will deliver to the City a customized Asset Inventory Audit report **accurately identifying costs, savings and payback** (both simple and with any rebates or incentives included) for the LED streetlight retrofit. Again, there are few, if any, energy and utility situations TEN Connected has not already encountered and successfully addressed for other street lighting clients - specifically including: i) successfully applying for and maximizing available rebates, ii) applying for, and obtaining confirmation of corrected billing (tariff adjustment) for newly installed wattages from the utility, and iii) obtaining refunds for overcharges related to street lights that no longer exist.

2. Financial Stability and Capability

TEN Connected is financially well qualified to provide the City of Portland with custom financing options for funding 100% of the project. Because the economic and financial structure of each project is just as important as the technical outcomes, the proven financial capabilities of our team will result in the lowest possible cost financing options available at the time of financing.

Our team's experience in creating project financing for municipal customers over the past several decades will enable TEN Connected to assist Portland in meeting its internal financial requirements. Financing structures can vary based upon the types of equipment and systems to be installed, the available savings to be leveraged, and the type of accounting recognition and treatment requested by Portland. TEN Connected will customize the terms of our contract for the City of Portland to ensure that the City receives the absolute lowest cost financing.

TEN Connected is significantly experienced with managing, quickly and efficiently (within days), an internal RFP process for our customers to "open the financing up to competition" so that our customers receive the absolute most competitive rates and terms possible. This process often invites the City's current local financial institution to bid on the project financing. This is another way TEN Connected creates local economic development opportunities strengthening communities.

TEN Connected does not have any monetary interest in financing the project, nor will TEN Connected receive any commissions related to a financed project should TEN introduce the City to an eventual funding source.

Tax-Exempt Lease Purchase Option (Recommended)

A third-party funded, tax-exempt lease is a common method of funding LED street lighting conversion projects. The tax-exempt lease structure generally offers the advantage of quick availability of funding, low issuance costs and flexible payment terms that can match up to the savings cash flow, thereby always assuring the City borrowing the funds is cash flow positive, or at the very least, neutral.

"Shared Savings" / "Sale Leaseback" and Power Purchase Agreement (PPA) Models
(Not Recommended)

TEN Connected does not recommend that the City of Portland enter a system acquisition agreement whereby an independent third party (not the City) purchases the street lighting system from the City or on behalf of the City and then leases the system back to the City of Portland. This "Shared Savings" funding model, in most cases, is unnecessarily costly and is generally reserved for non-government organizations that do not have access to extremely low-cost, tax-exempt funding sources.

The shared savings model is materially flawed (and has been out of favor for many years) because the City of Portland can obtain financing dollars to invest in the project much cheaper than a third party (with higher investment thresholds to meet) can loan it to them. In some cases, these "solutions" come with a hefty 10% or more cost of capital interest rate built to support the internal rate of return (IRR) requirements of the "lender" – making it necessary for that lender to "share" the savings with the City to cover the higher costs. Additionally, with current and historically low tax-exempt interest rates available, the City should not share the energy savings dollars with a third party when the most economically prudent course of action should be for the City to retain all of the energy savings to support the conversion – resulting in more scope for the available savings when compared to the shared savings model.

3. Design

There are important aesthetic, performance, operational, and ethical decisions that must be made when deciding on the street lighting package and installation configuration. These include determining the lighting levels required to accomplish the objectives; balancing the cost, energy efficiency, public safety, maintenance regime, and life cycle of the product chosen; choosing a fixture and pole style; addressing sky glow and light trespass through cut-off options; consideration of control systems; deciding on a light curfew (if appropriate); deciding on pole height and spacing; and evaluating the effect of lighting on nearby ecological habitats, such as parks, greenways, and riparian corridors. We discuss a few of these items for consideration in detail within this section, because important design decisions are informed by these considerations and the quality of the field audit.

The main goal of a TEN Connected-converted streetlight system is to ensure that safety, security and visibility are maintained throughout the City of Portland by ensuring appropriate lighting levels. At the same time, the volatility of electricity markets, how electricity is priced into the market and, the seemingly inevitable rise in electricity prices, require TEN Connected to focus directly on reducing excess energy consumption wherever possible to offset all costs of the project.

In addition to the goal of improving safety, security and visibility for residents, motorists, cyclists and pedestrians, TEN Connected's design will detail and verify lighting levels and discrepancies in uniformity of existing installations, and will identify any areas requiring corrective action to ensure that, municipality-wide, the lighting system, designed and installed by TEN Connected, will be consistent with nationally recommended lighting level standards post-conversion.

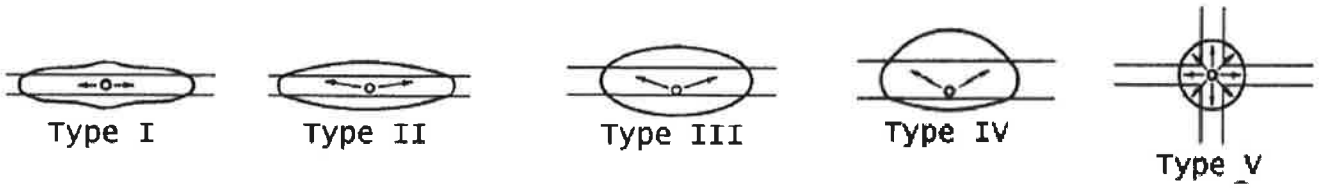
Importantly, TEN Connected shares the City's perspective that, although IES RP-8-14 recommends adequate light levels for the safety of pedestrians, cyclists, and vehicles, existing pole placements limit the degree to which IES standards can be met. Therefore, TEN Connected has independently developed design methodologies that will best deliver adequate lighting for the City for the expected product life cycle while at the same time supporting Portland's specific goals for the project. And therefore, IES standards may not be the standard selected by the City of Portland.

For example, enhanced public safety/homeland security is the primary focus of the City of Baltimore's Phase I LED conversion project. So much so, that the City asked TEN to evaluate fixtures best suited to "overdrive them" in high crime areas to shine a light on potential criminal activity – with the added feature to be able to dim the LED in the future if necessary to preserve its life cycle. TEN's customized design methodologies (based on life cycle costs and fixture performance analyses), after having been fully understood by Baltimore, were used by Baltimore to make its final selection on fixtures.

Appropriate Lighting – Pedestrian/Vehicle and Bicycle/Vehicle Crash Data, Light Levels/Spacing, Localized Land Uses, Volumes of Bicycle Activity, and Unique Neighborhood Activities.

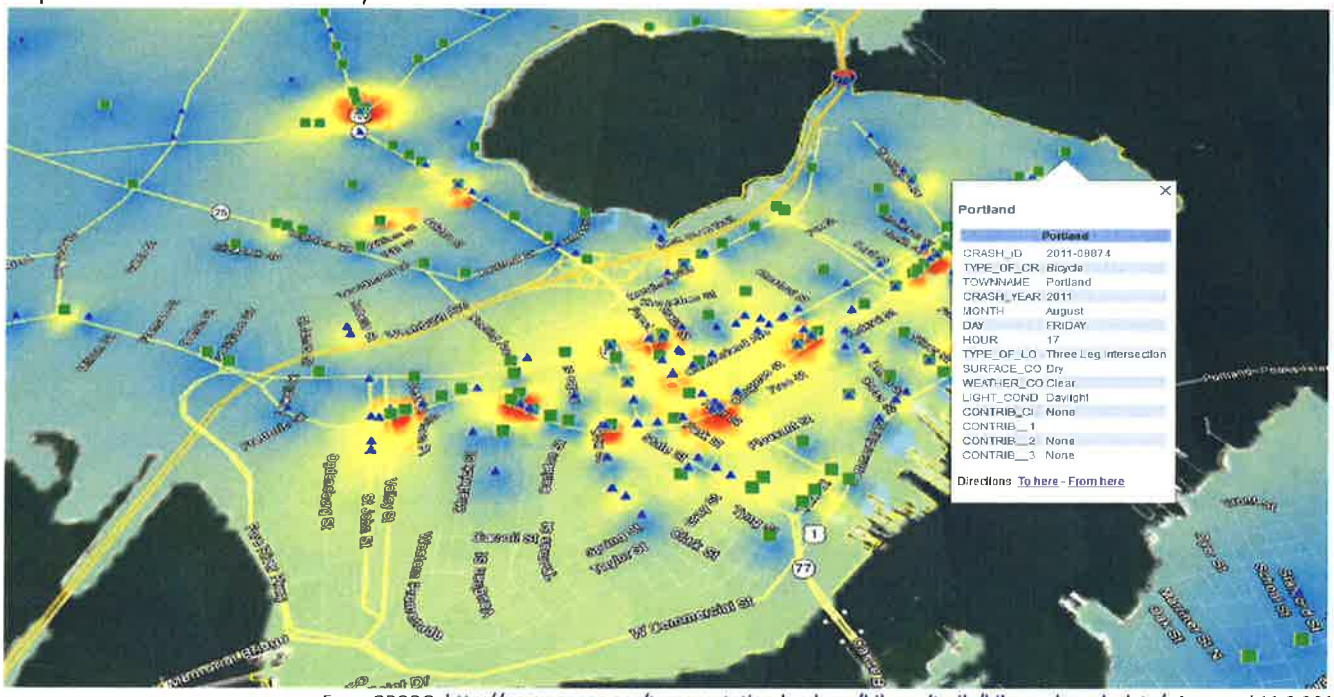
In the City of Harrisburg, PA, TEN was also asked to identify areas where lighting could be increased – public safety corridors, parking enforcement zones, and high crime locations, and then to recommend the most appropriate light levels and technology to meet those specific goals. TEN's design methodologies and recommendations were used by Harrisburg to inform their final fixture selection decision.

Different luminaire types can produce different lighting distribution. TEN Connected will work with the City of Portland to incorporate an appropriate analysis of important data points that can be used when developing the final lighting retrofit design. For example, this may include using a specific distribution footprint and light output for bicycle paths and high traffic locations coupled with pedestrian proximity, as well as analysis of the specific lighting distribution types, as follows:



Additionally, by utilizing data from the Maine DOT, the Greater Portland Council of Governments, and the City's Bicycle Coordinator, TEN Connected will utilize the specific and most recent pedestrian/vehicle and bicycle/vehicle crash data from the City of Portland, and our team will evaluate options available to the City and TEN Connected will make recommendations regarding appropriate changes to light levels in specific locations throughout the City.

TEN Connected Solutions would make recommendations to address lighting levels in the areas highlighted below to promote safer streets for cyclists and vehicle users:



From GPCOG, http://www.gpcog.org/transportation-land-use/bikepedtrails/bike-ped-crash-data/, Accessed 11.2.2016

Addressing Localized Land Uses

TEN Connected Solutions has experience working with cities to address lighting in areas like parks and waterfronts or where cultural facilities or public safety buildings require specialized lighting design. For example, TEN Connected has received positive feedback from Fire officials in the City of Harrisburg regarding the new LED street lights. Both firemen and local residents of Harrisburg feel the new lighting is an asset to the area and that it encourages better community engagement.

Addressing Placemaking, Wayfinding, and Unique Neighborhood Characteristics

When it comes to street lighting specifically, there are many opportunities for contributing to the aesthetic quality of a street. Using intelligent luminaires with a controls system, the intensity of street lights can be adjusted to not only save energy but also to highlight certain streets and provide cues to people that a particular street is residential (less bright) or commercial (brighter). Intensity of light can also be moderated to indicate activity during

special events. A further use of intensity is to provide illumination for direction during emergency or evacuation situations.

It is also important to limit the amount of light that trespasses onto adjacent buildings for a number of reasons. Light trespass can be a serious annoyance for residents whose interior space is affected by street lights with insufficient cut-off. Light trespassing on a building may also interfere with a property owner's attempts to control the nighttime aesthetics of their building via their own architectural lighting scheme.

Another factor is the surrounding reflective value of materials, such as sidewalks, and weather conditions, particularly rain and snow. Reflective surfaces impact luminance, increasing available light by up to three times. When sensors and control systems are in place, lights can be dimmed accordingly to optimize performance and minimize the cost of operation.

When glare and light trespass are due to fixture design, they can be solved using reflectors and shields on luminaire heads to shield or diffuse excess light. In general, when considering LEDs, a color temperature of 4,100K or warmer is recommended by TEN Connected.

Addressing Safety – Benefits Residents, Visitors, Public Safety Officials, and Businesses

A major task of street lighting is to increase safety for motorists, pedestrians and bicyclists, particularly at intersections where pedestrians/bicyclists may be crossing. A consistent concern is that high-mast streetlights, particularly those garnished with High Pressure Sodium (HPS) bulbs, do not adequately provide contrast between the pedestrian/ bicyclists and the background.

Metal halide fixtures have long been used at intersections because their better color rendering allows for better visibility and contrast. LEDs provide a similar benefit in this application. Street lighting also has an impact on the ability of emergency and utility personnel to perform their work at night. Emergency personnel report having a hard time seeing color properly under HPS lighting. This is an issue when work crews must identify colored electrical wires, for example.

LED lighting, with its potential for bright light and glare, needs to be designed to be compatible with camera performance. In some cases, cameras may also need to be repositioned for enhanced views. Safety officials generally prefer uniform light along the street, believing that uniform light eliminates shadows and adds to clarity. And LEDs improve the results of facial recognition technology.

Nighttime lighting also provides psychological comfort for society's more vulnerable members. When designed properly, lighting can be an effective tool in promoting outdoor safety. Crime Prevention Through Environmental Design (CPTED) researchers recommend that outdoor lighting be used to help with "natural surveillance" and "natural territorial enforcement" strategies.

Specific tactics include:

- Avoid poorly placed lights that create blind-spots for potential observers and miss critical areas
- Ensure potential problem areas, such as stairs, entrances and exits, ATMs, bus stops, dumpster and recycling areas, are well-lit (but not overly lit)
- Use shielded or cut-off luminaires to control glare
- In pedestrian areas, place lighting at heights that will illuminate the faces of the people
- Use lighting to identify property ownership and define public, private, and semi-private space

Addressing Energy Use – Benefits Residents, Visitors, Environment, and Businesses

LED technology's low-energy profile can further be enhanced using control systems and sensor programs that allow for user-control of street lights in certain contexts. Luminaire light output may also be reduced when there is sufficient natural ambient light.

LED lighting is increasingly emerging to capture energy efficiency savings around the world. There are more than 131 million street lights in the United States alone, producing 128 million metric tons of carbon dioxide pollution annually. Ninety percent of these lights are HPS or older technologies. Approximately ten percent are LEDs.

A comparative life cycle assessment of available street light technologies by the University of Pittsburgh's Mascaro Center for Sustainable Innovation noted the following:

- 22% of all energy generated in the U.S. is used for lighting, with 8% of that used for public outdoor lighting.
- A significant portion of the power used for current (not yet converted) street light bulbs produce heat, not light.
- LEDs are the most efficient, durable, long lasting and environmentally clean lighting source to date.
- LEDs last upwards of 20 years, significantly reducing maintenance costs, waste and environmental impact.

According to the US Department of Energy, in the next 20 years rapid adoption of LED lighting in the U.S. can:

- Reduce electricity demand for lighting by one-third
- Eliminate 258 million metric tons of carbon emissions
- Avoid building 40 new power plants
- Create financial savings that exceed $200 billion

Post Field Survey Efforts:

Generally, Post Field Survey Efforts produce the following data which TEN would analyze, review and provide to the City: (1) Manufacturer Selection, (2) Final Design, (3) Installation Plan Base on Field Survey, and (4) Energy Analysis.

Addressing Monitoring – Benefits Residents, Visitors, Public Safety Officials, and Businesses

Since LED lighting is electronic, it can be remotely controlled or addressed on an individual fixture basis, on a series basis such as a particular street, on a City-wide basis, or any combination. Control methods include sending electronic signals by radio frequency (RF), internet (Wi-Fi), cellular, or simply by hard wiring. Safety officials feel the control possibilities of LED street lighting offer a variety of communication methods to alert fire and police. For example, the fixture closest to a 911 incident may flash on-and-off. Light intensity can also be increased to provide additional light when needed. Controls can be used to identify each street light's location to measure power usage on an individual basis, to signal when replacement is needed, to identify burned out or damaged fixtures, or to adjust color temperatures to accentuate warmer or cooler hues.

Addressing Durability – Benefits Local Government

AASHTO provides standards for the durability of luminaires in general. As a solid-state (SSL) technology, LED arrays are more able to hold up to shocks and vibrations.

Addressing Reliability – Benefits Local Government

Storm events knock out street lights and traffic signals, requiring Public Safety to assign police officers to critical intersections on a 24/7 basis for at least 24 hours and occasionally longer to direct traffic. At critical locations, backup batteries can be used for LED fixtures.

Addressing Light Output – Benefits Residents, Visitors, Public Safety Officials, and Businesses

Emergency responders require street lighting to be bright enough for emergency situations. While street lighting will need to meet minimum Lighting Ordinance footcandle standards, the amount of light may not be enough under certain emergency circumstances. The ability to increase LED light output at intersections via addressable controls is an advantage of the technology.

Addressing Light Pollution – Benefits Residents, Visitors, and Businesses

Light pollution is possibly the easiest form of pollution to prevent since it is easily controlled through proper fixture design. Additionally, much of it, such as streetlights, is directly under the control of the public sector or is subject to regulations.

4. Project Management

More detailed information about TEN Connected's Project Team can be found in **Attachment 1.**

TEN Connected Solutions' team has managed LED conversion projects of nearly identical size and complexity to the City of Portland in Harrisburg, Bethlehem, Baltimore, and most recently Scranton. TEN Connected's experienced in-house project managers will utilize our automated platform to update the City on project success, in addition to regularly scheduled in-person progress meetings. Starting in the design phase, and continuing through the implementation phase, TEN Connected will develop our partnership approach with Portland to identify the personnel required to efficiently execute the project.

TEN Connected believes that clear communication and meeting (or exceeding) the City's expectations every step of the way through the construction process is key to successful project coordination and implementation and garnering an excellent project reference from the City. TEN Connected will partner with the City to help prioritize and to ensure that the project is implemented on-schedule, as budgeted and that the benefits of this program survive for the long term.

When TEN Connected is invited to assist in optimizing equipment selection and system design, our team goal is purely to serve the City with a high-quality project implementation which saves operating costs (energy and maintenance) while delivering a street lighting system providing optimal comfort and safety, and other required environmental needs. TEN Connected's team researches, designs, and oversees field installations and testing of the high-quality, cost-effective lighting conversion project. TEN Connected will assist the City in analyzing the efficiency and other characteristics of several world-class LED fixtures for possible selection. TEN Connected's independence from any manufacturer enables us to provide the City of Portland with the most appropriate lighting solutions that efficiently address specific needs – further enhancing your results. TEN Connected's engineers and lighting designers have been able to diplomatically work with product manufacturers and suppliers on a national level to help in the selection of equipment and systems that can deliver a lower life cycle cost and better controls functionality.

Our team has experience project managing multiple projects simultaneously – from LED street lighting upgrades to smart city technology implementations to parking garage upgrades and more – and TEN Connected Solutions will bring that same level of expertise, experience, and coordination to the City of Portland.

Implementation

The major general steps of a TEN Connected construction implementation plan are as follows:

Initial Project Startup

Immediately upon award of the project, TEN Connected will further develop the partnership strategy with the City and identify all of the personnel required to efficiently execute this project. Once all the members of the project team are identified, the expectations for the project and its implementation will be clearly outlined. The project's implementation milestones will be established in the contract and in more detail in the project's regular construction meetings. These milestones will be confirmed regularly through clear lines of communication which have been established to facilitate a successful project implementation.

Procurement

As each project submittal is approved by the City, purchase orders will be issued for materials and subcontracts entered into for installation. TEN Connected will carefully evaluate the pre-identified subcontractors to determine the most appropriate fit for the project scope. TEN Connected's independence from any particular subcontractor or manufacturer ensures that it is able to provide the most appropriate solutions that efficiently address the City's

needs. As a result, TEN Connected can develop an objective and unbiased partnership with the City by implementing the lighting equipment and system upgrades that generate maximum returns often times through local community resources.

FOUR CRITICAL STEPS that TEN Connected has identified in the project implementation phase, that require precise record-keeping, and that are handled directly by TEN Connected's Project Manager are as follows:

1. MONTHLY Utility Notification of work complete - Allows savings to be "activated" on a monthly basis
2. MONTHLY Rebate Notification of work complete - Keeps a steady rebate cash flow returning to customer
3. MONTHLY Customer Invoicing of work complete - Systematically spaces project costs to customer
4. MONTHLY Subcontractor Invoicing of work complete - Provides cash flow for equipment and miscellaneous costs

Construction

Regular meetings will be held with the City to establish construction guidelines and TEN Connected will also work with the City to minimize the impact to the City's operation of the construction activities. Standard project management tools, such as a Gantt chart and detailed meeting minutes will be used to track progress. TEN prides itself on a proven track record of successful project implementations in varied settings which include everything from installations in offices, classrooms, gymnasiums and major sports stadiums, to special access situations in correctional and medical facilities – and certainly street lighting projects where traffic and pedestrian safety is of critical importance.

Construction services will be sourced through mutually agreed upon specialty electrical and controls subcontractors. All subcontractors perform their work under the direction of our in-house construction project management. TEN Connected's construction project managers will collaborate with our internal engineering team on specific design issues which are certain to arise. TEN Connected's internal project management team also will be responsible for training, preparing custom Operations & Maintenance (O&M) manuals, overseeing project commissioning, and ensuring the proper deployment of the control system (if included) to the satisfaction of the City.

Inspections & Reporting

As part of our Quality Control program, continuous inspections during construction are performed to ensure compliance with the scope of work and any City of Portland requirements. TEN Connected's project managers and engineers along with the City's representatives will inspect the construction of the project. Progress will be tracked on a daily and bi-weekly basis, and the results shared with the City and the Project Team.

Project Commissioning Plan

In the street lighting industry, the term "commissioning" is often applied to lighting control system activation, and applies to the entire City and its energy-using systems, including luminaires and controls. System activation and functional testing are steps within a larger process of ensuring all installed systems satisfy the design intent and owner requirements.

Commissioning answers the question, "Does the lighting system perform according to what the owner wanted and the designer intended?"

Using a Global Positioning System ("GPS") and a GPS functional control node embedded into each fixture, TEN Connected installs and activates the new street lights to be able to identify themselves and network instantly ("real time"). This approach reduces the cost of programming each fixture and eliminates on-site commissioning.

If the City's street lighting configuration resides on its own Geographic Information System ("GIS"), various types of lights including traffic signals, decorative, park lights, and various types of decorative lighting can be combined with the existing street lights ("layered GIS"). TEN Connected has (for other cities) and, will for Portland, integrate the LED converted street lights into Portland's GIS as the City sees necessary to do so.

Measurement and Verification (M&V) Approach

Energy savings for an LED street lighting upgrade project is determined by comparing annual energy use before and after the installation of the upgraded technology. The objectives of the M&V process are to document the annual energy savings achieved by the project. Energy use patterns are studied before and after the installation, and the annual energy savings are calculated as the difference between energy use before and after implementation (base-year and post-retrofit energy use). The calculation of energy savings may require adjustments to hours of operation if adjustments are permitted by the City's utility to optimize savings.

TEN Connected will provide a guaranteed savings program to Portland based upon sound and proven engineering design principles that: 1) isolate the energy efficiency criteria for which TEN Connected is responsible, and 2) specify those other parameters which are beyond TEN Connected's control.

TEN Connected will provide a customized M&V plan designed with the International Performance Measurement Verification Protocol (IPMVP) in mind. Our lengthy experience with all IPMVP options (A, B, C and D) enables us to delineate the cost and benefits of the approach needed to ensure the optimal structure of the M&V plan for Portland. As a means of equipment verification, the selected control system can act as a check and balance to verify the upgraded equipment is performing as TEN's Designer and the manufacturer intended.

Project Acceptance

TEN Connected's Project Manager will work in conjunction with the City's assigned project representative(s) and other personnel to make sure all systems, fixtures and equipment are performing as designed. Any deficiencies will be identified as punch list items and will be used to track and correct the deficiencies. Once the City and Project Manager have signed off on the completion of the Project, it is turned over to the City of Portland's street lighting operations personnel.

The Project Acceptance date marks the start of the material workmanship warranties from the manufacturer, and the savings measurement period.

In addition, a functional customized Operations and Maintenance (O&M) Manual will be provided to help optimize operation to provide significant energy savings and other lighting upgrade-related benefits. TEN views its O&M Manual as a risk reduction strategy, which will help systems run efficiently, function properly, and deliver its full life expectancy of value.

Operation & Maintenance Plan

TEN Connected's partnership approach continues throughout the contract term after the project's implementation to ensure that the savings guarantee (if applicable) and equipment operating parameters are realized. The warranties will be well-documented in the project-specific operating manuals and TEN Connected stands ready to assist Portland on any warranty issues throughout the warranty period. TEN Connected's approach to cost-effective maintenance of the project is to train City staff whenever possible, to understand and address operation and maintenance issues before the completion of the project.

In order to guarantee efficient functioning of all installed equipment, and the energy management goals of the City, a customized preventive operations and maintenance plan (POM Plan) will be delivered by TEN Connected after project completion.

The POM Plan would consist of a checklist of tasks that are performed at manufacturer-recommended intervals (usually measured in hours of equipment run time). This checklist will be kept in the form of a log and updated manually when tasks are performed. The POM Plan would include the following fundamental information, gathered during the audit:

- Installed Equipment;
- Manufacturer's name;
- Vendor's name and contact information;
- Date installed;
- Warranty information;
- Recommended parts lists;
- Vendor maintenance;
- City of Portland maintenance required;
- Maintenance checklist;
- Training;
- City-wide lighting and lighting controls layouts and as built lighting and lighting controls layouts.

In general, a comprehensive maintenance program should include:

- Fail alert system details
- Luminaire cleaning plan (Less heat is generated on lenses by LEDs than HID lamps so less dust normally adheres and fuses to the lens than historically with outdoor luminaires)
- Unit, power supply and photocontrol replacement plans (Note that today's power supplies are rated for 100,000 hour life and the expectation is that replacements will be very rare (<1%).

Training

Training is an important aspect of TEN Connected's offering. City personnel need to understand the objectives of the energy savings program and equipment operation to meet those objectives and to have them sustained over time. To that end, TEN Connected prefers to conduct comprehensive training on-site, during the construction phase to familiarize the City staff with the new systems. The majority of training is focused on familiarizing personnel with the new lighting and controls equipment being installed, equipment / system operation and regular maintenance. Most of the training will take place during start-up of the equipment and during the commissioning process, and some at project completion. All training is coordinated by TEN Connected project managers and the operations representatives from the City.

Integration with the City's GIS System, if available

Unique to our offering, we believe, is our ability to provide the City with electronic GIS shapefile format files that we create through our integrated, mobile-application driven auditing process and commissioning during our structured installation process. This enables the City to integrate all the new street lighting information (i.e. technology, inventory, wattages, GPS locations, etc.) into their existing Global Information System (GIS) at the time of installation. This is incredibly helpful, we believe, to the City of Portland in managing its street lighting system, providing analytics, and ensuring quick response times to outages.

When difficult and complicated challenges arise, TEN Connected's broad expertise and street lighting specialization will enable studying the problem, exploring all possible solutions, and supplying clearly defined options along with a recommended course of action.

Quality Control

TEN Connected Solutions believes that quality control starts in the development stage and continues all the way through construction, commissioning, and measurement and verification. An effective energy savings program requires a delicate balance between engineering and construction management. We establish this balance by involving the construction team during the development phase of the project to ensure the "constructability" of the lighting and lighting controls solutions we propose. The ultimate success of any energy savings project is measured by the ability of the installed systems to achieve the projected savings targets and to meet environmental expectations, while the success of a brilliant design is also predicated by its ability to be constructed. TEN Connected takes a comprehensive approach to development and engineering to establish this critical balance. This approach is made possible through TEN Connected's in-house design, engineering and construction management personnel.

Our design, engineering and construction teams work closely with each other to develop the scopes of work that are competitively bid to the City of Portland's approved vendors and subcontractors to ensure that the design intent is met, the project/system can be installed properly and maintained, and the construction team is very familiar with the project before installation begins. This seamless and transparent hand-off to construction ensures quality control. TEN Connected's team is also open to our subcontractors' input when it improves the design and/or lowers the cost to provide a better solution for the City.

Reporting to TEN Connected's Director of Installation, the on-site, 30-hour OSHA Certified Project Manager is accountable for the management of all assigned project construction activities taking place. The Project Manager (PM), through their on-site management, will ensure that the worksite is safe, supervised and managed in an effective and efficient manner for the City of Portland. Maintaining and managing daily communications with and directing the activities of all subcontractors is key to the success of the project. Our project managers utilize TEN Connected's proprietary cTEN application to quickly and efficiently report worksite progress, concerns and work scheduled to be performed the following day. This communication is shared with both our Director of Installation and designated personnel of the City as another procedure to monitor quality control.

Warranty and Maintenance

A comprehensive, 10-year material warranty will be included with TEN Connected's project offering for the City of Portland. The manufacturer's warranty will pass through TEN Connected directly to Portland to ensure that the City will have direct access to the full value of the manufacturers' warranty over the term of the contract. Specifics of this warranty will be negotiated to the best terms for the City and detailed in writing through the final engineering process with the selected manufacturer(s).

5. Technology Procurement

a. Fixtures

TEN Connected Solutions appreciates the desire to upgrade street lighting throughout the City of Portland to achieve the maximum benefits of LED technology while also maintaining a high level of value using quality products and careful installation. TEN Connected's unique approach to street lighting solutions will aid the City in determining the best lighting fixture(s) to meet their needs. On a weekly basis, TEN Connected is working with the worlds' leading exterior LED streetlight and decorative fixture luminaire manufacturers and distributors, and incorporating their technologies into our projects. This position allows TEN Connected to be an early evaluator of these technologies, and to come to conclusions regarding the efficiency, design, light output, quality and characteristics of the various technologies for and on behalf of our customers.

There are important aesthetic, performance, operational, and ethical decisions that must be made when deciding on the street lighting package and installation configuration. These include determining the lighting levels required to accomplish the objectives; balancing the cost, energy efficiency, public safety, maintenance regime, and life cycle of the product chosen; choosing a fixture and maybe a pole style; addressing sky glow and light trespass through cut-off options; consideration of control systems node or photocell; deciding on a light curfew (if appropriate); deciding on pole height and spacing; and evaluating the effect of lighting on nearby ecological habitats, such as parks, greenways, and riparian corridors.

The main goal of a TEN Connected-converted streetlight system is to ensure that safety, security and visibility are maintained throughout the City of Portland by ensuring appropriate lighting levels. At the same time, the volatility of electricity markets, how electricity is priced into the market and, the seemingly inevitable rise in electricity prices, require TEN Connected to focus directly on reducing excess energy consumption wherever possible.

As part of TEN Connected's competitive evaluation process on behalf of the City, TEN Connected Solutions will provide the City with a customized **LED Fixture Performance Characteristics Matrix** to facilitate discussions between TEN and the City with the end goal of assisting in the internal evaluation and final fixture selection.

Following is a depiction of the Performance Characteristics Matrix that was created by TEN (TEN Connected) for the City of Harrisburg prior to fixture selection. This matrix served as the foundation for TEN (TEN Connected Solutions), on behalf of Harrisburg, to request (in this case) cobra head fixture pricing – as well as to offer recommendations to Harrisburg regarding final selection.

Harrisburg Street Lighting

Manufacture	GE	LEOTEK ELECTRONICS USA LLC	CREE	Cooper	HOLOPHANE / AEL
Part #	ERS10B3E1140AGRAYB DT	GCM1-30F-MV-NW-3-GY-1A-PCR7	BXSPCHT2MEE40K-ULSVN-SPX	VERD-A02-D-U-T3-4N7-10K-4B-AP	ATBM E MVOLT R3 4B MP AO
Watts	117	105	101	92	115
Color Temp	4000k	4000k	4000K	4000k	4000k
CRI	70 CRI	70	70	>70	70+
Distribution	TYPE III	3	II LONG, II OR III	T3	R3
Lumens	9300	9,192	8,407	9,099	13,600
mA	1050mA	1000	375mA/4	1.6ma	950ma
lm/W	79	88	83	99	118
IP Rating	IP66	66	IP66	IP66	IP66
Life Rating	50,000	100,000	100,000	>254,000	100,000 system
EPA R2	0.5	0.44	0.7	0.5	.70
BUG Rating	B1-U0-G1	B2 U0 G2	B1 U0 G1	B2 U0 G2	B2 U0 G3
DLC (Y or N)	Y	Y	Y	Y	Pending
Weight #	20 lbs	10 lbs	<18LBS	20 lbs	21
7 pin NEMA PCR	7 pin included	Y	7 pin included	7 pin included	7 pin included
Lead time	2-4 weeks	2-3 weeks typical	4-6 WEEKS	2-4 weeks	3-5 WEEKS
Dimming	0-10V driver included	0-10V driver included	0-10 driver included	0-10 driver included	AO MANUAL OPTION or ROAM smart controls
Warranty	5yr std/10yr option	10 years complete	10 YEARS	10 Years	10 years
LEDs	Included	Included	10 YEARS CREE	10 Years	ABL Comm. Warranty
Drivers	Included	Included	10 YEARS CREE	10 Years	"
Finish	Included	Included	10 YEAR GRAY	10 Years	"
Fixture	Included	Included	XSP1C SERIES	10 Years	"
Labor Allowance	N/A	N/A	NA	N/A	N/A
Comments	Internal Bubble Level D = Dimming Driver; T = 10kV/5kA Surge Protection	3-level dimming standard Rubber seal around arm standard Mounting bubble standard 4-bolt option for mounting N/C Reversible mounting plate for different pipe OD Parts MADE IN Malaysia, assembled in CA (meets BAA)	Multi-level dimming standard	Bird Guard Mounting bubble	Multi-level dimming standard Mounting bubble standard

Sampling to Facilitate Final Fixture Selection

Using TEN Connected's Performance Characteristics Matrix, we worked with the City of Harrisburg and various national manufacturers to identify a prominent area for the street lighting samples to be installed. Upon installation, the City then invited residents, public works officials, and public safety professionals to vote for (or weigh in on) their favorite fixture using such variables as light output, design, ease of operation, insect guard availability, and several others. Two (2) samples of each manufacturers' LED cobra head were installed for purposes of determining ease of installation and maintenance, and one (sample) of each was "table-topped" in City Hall so that city personnel and the public could view and inspect the options for selection.

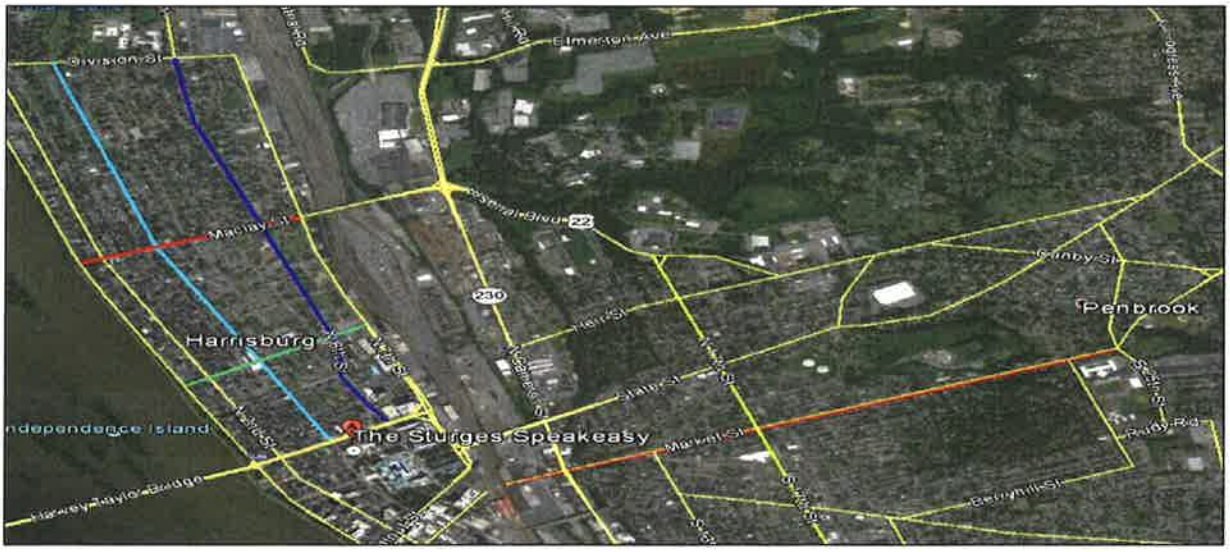
After residents weighed in on the fixtures installed and displayed in City Hall for public view and inspection, and, with consideration given to TEN's professional recommendations, the City made a final selection (Eaton/Cooper) of the cobra head fixture they believed best met the needs of the City of Harrisburg after considering all the variables.

Picture of samples "table-topped" in Harrisburg City Hall for Inspection and public input

TEN Will Deliver World-Class Options for Portland

TEN Connected Solutions will work with the City to determine if incorporating a pilot would help in the education of the new technologies available and in the final selection of a new LED street lighting fixture. As a feature of TEN Connected's approach to lighting design and street lighting, if the City decides to engage in a pilot process, this process will not result in any additional installation costs. TEN Connected will work with the lighting manufacturers and the distributors to negotiate free samples.

Using a similar matrix to those that have been prepared in our other street lighting projects, TEN Connected will also work with Portland to obtain products for comparison that detail each characteristic – everything from color temperature to ease of installation to length of manufacturer's warranty – and that are appropriate for various locations throughout the City. Special consideration will be given to areas where Portland may want increased or decreased lighting. Again, in Baltimore and in Harrisburg, TEN TEN Connected developed a lighting design that allowed City officials to improve light levels in target communities and safety corridors.



Depiction of pre-design mapping work for City of Harrisburg's Emergency Evacuation Routes

Finally, TEN will deliver to the City a new update to the City's GIS system that identifies the characteristics of the new LED street lighting system, an accurate inventory of all new products purchased, and all expected costs, savings, financial paybacks, and potential incentives for the new street lighting system.

b. Smart Controls, IoT, and other Smart City Solutions

TEN Connected Solutions develops projects that integrate Information Communications Technology (ICT), Connectivity-Related Devices and customized Smart Cities technology applications (e.g. security services, neighborhood services, media, etc.). While there are a number of products and software services available, TEN Connected would seek to incorporate commercially ready technologies that would meet the City of Portland's goals.

Advanced Wireless Controls

Installing advanced wireless controls enables the City to have more control over new LED street lights, increase overall luminaire lamp life, provide dimming capabilities (where applicable) for increased electric energy savings, and to reduce maintenance costs associated with the street lighting system.

When the full life-cycle of an advanced wireless controls system is considered, the technology (with the 7-pin NEMA connector) has been found to provide more control for the street lighting system and to "future-proof" the street light, and to enable additional technologies to be integrated at a later date. Any TEN Connected recommended and/or installed control system will have open Application Program Interface that will allow the city to ensure functionality and expand the system in the future if so desired.

Other Value-Add Systems Available through TEN Connected

LED STREET LIGHTING & SMART CITIES

- **Procurement.** Established municipal procurement method facilities delivering LED street lighting and technologies to cities
- **Installation.** TEN, through its technical and construction teams, install LED street lighting city-wide
- **Financing.** Energy and maintenance savings from LED streetlights help to pay for the deployment of other smart cities technology
- **Equipment/Technology Deployment.** LED Luminaires and mast arms themselves provide physical platform to deploy smart city applications
- **Revenue Generation.** Installed equipment/technologies platform serves as revenue generation apparatus for cities

ENERGY & MAINTENANCE	UTILITY	VEHICLE	TRANSIT	PUBLIC SAFETY	INFRASTRUCTURE
• Utility grade metering	• Water metering	• Smart parking	• Fleet management	• Video surveillance	• Sensors
• Usage monitoring	• Gas metering	• Parking enforcement	• Asset tracking	• Remote security monitoring	• Antennas
• Remote outage notification	• Equipment monitoring/control	• Vehicle detection	• Mobile payments	• Emergency response	• Wireless connections
• Utility rebate optimization	• Hazardous materials emergency response	• Mobile payments	• Smart roads	• Mass notifications	• Small cells
		• EV charging			• Charging platforms

More specifically and by way of example, here are some smart city solutions offered by TEN Connected:

1. Public Wi-Fi, by REDZONE Wireless (TEN Connected Partner)

Redzone Wireless, LLC is a leading Maine-based wireless internet service provider. The company has deployed a combination of wireless broadband technologies to provide broadband network access to ~220,000 Households, and 30,000 Businesses in Maine.

The company deploys transmission equipment on fiber optic-connected telecommunications towers, delivering competitive broadband services for residential, commercial, enterprise and municipal applications. Redzone's networks operate on both FCC-licensed and open spectrum bands. Redzone's 4G LTE Advanced fixed wireless network operates on 2.5GHz EBS spectrum, secured through a long term exclusive lease agreement with the University of Maine System. Redzone is a certified Pine Tree Zone company, and has received a portion of it's financing through a loan program administered by The Finance Authority of Maine (FAME).

TEN Connected, in partnership with Redzone Wireless, proposes to investigate and propose the construction and activation of a city-wide high speed 100 Mbps public Wi-Fi network and infrared camera system in Portland. The system proposed would include installations of ~ 600 Wi-Fi Access points (APs), and ~600 Infrared cameras, and would be constructed during the installation of LED lighting upgrades.

The City of Portland is spread across 22 square miles of land area, and is lighted by approximately 6,600 light poles/fixtures. Preliminary engineering suggests that approximately 600 Wi-Fi APs would provide network coverage across the entire city.

Managed Wi-Fi Network

As part of the Wi-Fi network, TEN and Redzone will provide a large scale wireless mesh solution for Portland public & municipal use. We will provide a completely turnkey solution, from network design and RF planning to deployment and on-going network maintenance and support. TEN and Redzone will coordinate the installation of wireless broadband internet connections, configure all wireless access points and Redzone will provide Portland with ongoing monitoring, user technical support, and management of all equipment.

Redzone's Customer Service Center located in Maine provides live one-on-one support, 24 hours a day, 7 days a week, 365 days a year. We feel that superior customer service is one of the foundations of our network services.

Benefits of Managed Wi-Fi

- Consulting and Network Analysis
- Complete Turnkey Solution – Hands Off and Worry Free
- Proactive Network Monitoring and Maintenance
- 24 x 7 x 365 Customer Support

Managed IP Video Surveillance

TEN and Redzone also propose a managed IP video surveillance system as a means of protecting the community, as well as public and private property. TEN and Redzone propose a complete turnkey solution including camera/surveillance network design, installation, and on-going network maintenance and support.

Video Surveillance System Features

- Wireless Surveillance Cameras Are Installed on the Same Wireless Network Used for Wi-Fi
- Network Owners Can View and Control Versatile Pan/Tilt/Zoom Cameras from Anywhere via the Internet**
- Day and Night Vision
- Megapixel Resolution
- Weather Proof
- Vandal Resistant

The wireless connectivity will be supplied through Redzone's existing wireless network infrastructure currently deployed throughout the Portland metro area. The public Wi-Fi network will provide a defined period of free daily broadband access to users accessing connections through a custom Portland community portal. The Portland Wi-Fi portal will also provide direct access to local information & community services.

The 100 Mbps Free Public Wi-Fi network will distinguish Portland, Maine among the most connected American cities, bridging the digital divide among economically challenged segments of the population; assisting students with free access to broadband for homework and educational purposes; supporting job seeks with the tools to access and apply for available employment opportunities; and to support tourism by providing visitors to Portland with high value ubiquitous connectivity.

The infrared camera system will provide day & night visibility throughout the city at up to 600 locations to be determined including schools, parks, high traffic areas, intersections, downtown business & entertainment districts, public buildings, parking lots & municipal structures, etc. The system would provide digital recording capabilities and system administration through a cloud-based video control system. The system will allow multiple users in law enforcement, public safety, planning

TEN and Redzone already have established preliminary cost estimates to deliver this service to Portland, and look forward to sharing our vision with the City through this process.

Revenue Sharing

At the conclusion of the daily free Wi-Fi service period (projected to be 60 minutes), Public Wi-Fi network users will be presented the option to purchase access for additional time periods, generally offered in increments of 1 hr, 1 day, 1 week or 1 month. Based on mutual agreement to the specific terms and pricing, TEN Connected and Redzone would be willing to negotiate a revenue sharing arrangement with City of up to 20%. The agreement could enable the Portland to recover its monthly network operating expenses and potentially recapture the original capital investment based on usage.

2. Smart City Media (TEN partner) – Revenue Generation

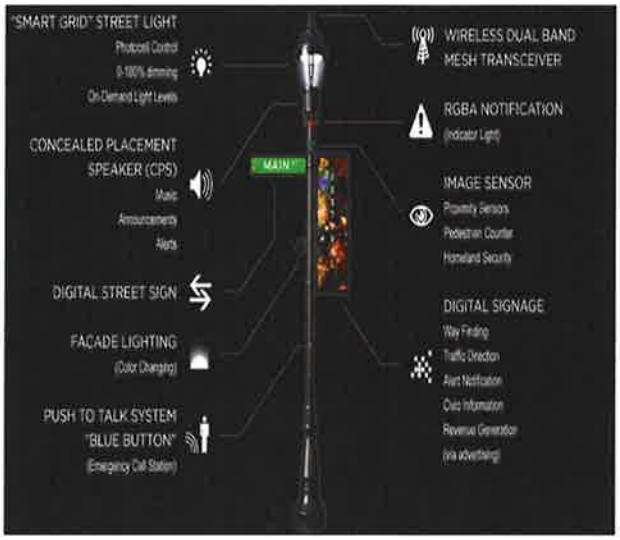
A Smart City Media LLC, smart media grid enables communities like Portland to be better connected. In fact, the platform uses information kiosks to create a better connected community, where citizens can easily discover events, programs, deals and other relevant and important information as they walk down the street. The system also allows public safety and homeland security officials to not only see and assess emergency situations but also to broadcast alerts and provide mobile updates to residents in targeted locations.

This platform also serves as a significant revenue generation opportunity. Advertisers can develop targeted content and pay premium fees to broadcast their individual content. This revenue opportunity can net up to several hundreds of thousands of dollars for Portland to be used to pay for light grid infrastructure improvements, public services, or reinvested into the smart street lighting system.

TEN and Smart City Media already have established preliminary cost estimates to deliver this service to Portland, and look forward to sharing our vision with the City through this process. **Original estimates indicate that a smart media platform could generate $850,000 for Portland in the first 5 years without Portland having to invest any capital in the project.**

a. Intellistreets, by Illuminating Concepts (TEN partner) – Revenue Generation

In addition to generating revenue and providing public safety and homeland security officials with critical information, smart city technologies can also be used to broadcast audio messages to residents, serve as a mechanism to update residents on traffic closures, and use colors and lights to alert individuals to an emergency situation.



Intellistreets has designed, patented and manufactured electronic modules (EM) that may be embedded or attached to almost any form of structure or luminaire. The system uses wireless technology – not Wi-Fi (and therefore potentially less "hackable") – to communicate with individual luminaires. Using wireless eliminates the high construction costs of wiring, cabling, and conduit and allows for integration within virtually any modern architectural control system for synchronization of any feature within and around the Intellistreets system.

Finally, the system can be used for entertainment purposes and allow the City to use of radio broadcast from playlists while a wide range of additional sensors can be utilized for exciting pedestrian user interaction.

b. Public Safety - Gun Shot Detectors

Recently, a national manufacturer partnered with a technology based company to fit microphones to LED street lighting systems. The microphones can detect gun shots and give approximate locations to local public safety officials who are then able to better to determine the number of gun shots and potentially the number of shooters.

6. Installation & Maintenance

Description of Work
TEN Connected will provide and Investment Grade Audit to the City of Portland, detailing the scope of work to be completed. Additionally, once construction begins, TEN Connected will manage and maintain daily progress information and track quantities, contractor payments, and change orders. We will prepare and recommend for approval, periodic installation quantities satisfactory to the City.

Installation Schedule
TEN Connected will develop, monitor and maintain a master project schedule for the entire project to integrate and coordinate the activities of the various ongoing design and construction activities and contracts.

TEN Connected will adhere to the required installation schedule unless otherwise agreed upon by the City and TEN Connected to change the timeframe for installation based on the number of fixtures and smart cities technologies to be installed.

A project schedule can be found in **Section H: Project Schedule.**

Reference Standards
There are important aesthetic, performance, operational, and ethical decisions that must be made when deciding on the street lighting package and installation configuration. These include determining the lighting levels required to accomplish the objectives; balancing the cost, energy efficiency, public safety, maintenance regime, and life cycle of the product chosen; choosing a fixture and pole style; addressing sky glow and light trespass through cut-off options; consideration of control systems; deciding on a light curfew (if appropriate); deciding on pole height and spacing; and evaluating the effect of lighting on nearby ecological habitats, such as parks, greenways, and riparian corridors.

The main goal of a TEN Connected-converted streetlight system is to ensure that safety, security and visibility are maintained throughout the City of Portland by ensuring appropriate lighting levels. At the same time, the volatility of electricity markets, how electricity is priced into the market and, the seemingly inevitable rise in electricity prices, require TEN Connected to focus directly on reducing excess energy consumption wherever possible to offset all costs of the project.

In addition to the goal of improving safety, security and visibility for residents, motorists, cyclists and pedestrians, TEN Connected's design will detail and verify lighting levels and discrepancies in uniformity of existing installations, and will identify any areas requiring corrective action to ensure that, municipality-wide, the lighting system, designed and installed by TEN Connected, will be consistent with nationally recommended lighting level standards post-conversion.

Importantly, TEN Connected shares the City's perspective that, although IES RP-8-14 recommends adequate light levels for the safety of pedestrians, cyclists, and vehicles, existing pole placements limit the degree to which IES standards can be met. Therefore, TEN Connected has independently developed design methodologies that will best deliver adequate lighting for the City for the expected product life cycle while at the same time supporting Portland's specific goals for the project. And therefore, IES standards may not be the standard selected by the City of Portland.

For example, enhanced public safety/homeland security is the primary focus of the City of Baltimore's Phase I LED conversion project. So much so, that the City asked TEN to evaluate fixtures best suited to "overdrive them" in

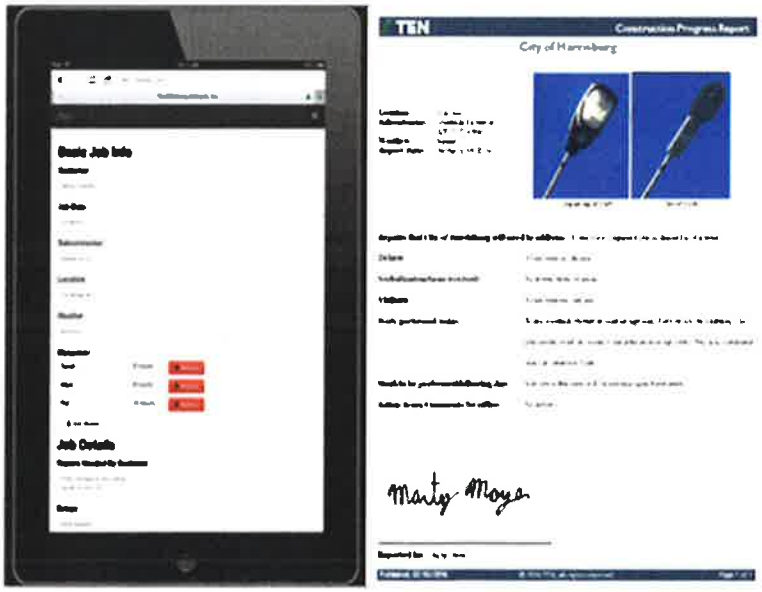
high crime areas to shine a light on potential criminal activity – with the added feature to be able to dim the LED in the future if necessary to preserve its life cycle. TEN's customized design methodologies (based on life cycle costs and fixture performance analyses), after having been fully understood by Baltimore, were used by Baltimore to make its final selection on fixtures.

Submittals

TEN believes that quality control starts in the development stage and continues all the way through construction and measurement and verification. An effective energy savings program requires a delicate balance between engineering and construction management. We establish this balance by involving the construction team during the development phase of the project to ensure the constructability of the lighting and lighting controls solutions we propose. The ultimate success of any energy savings project is measured by the ability of the installed systems to achieve the projected savings targets and to meet environmental expectations, while the success of a brilliant design is predicated by its ability to be constructed. TEN takes a comprehensive approach to development and engineering to establish this critical balance. This approach is possible because TEN utilizes in-house design, engineering and construction management.

Our design, engineering and construction teams work closely with each other to develop the scopes of work that are competitively bid to the City's qualified vendors and contractors to ensure that the design intent is met, the project/system can be installed properly and maintained, and the construction team is very familiar with the project before installation begins. This seamless and transparent hand-off to construction ensures quality control. TEN's team is also open to our subcontractors' input when it improves the design and/or lowers the cost to provide a better solution for the City.

Reporting to TEN's Director of Construction, the on-site 30-hour OSHA Certified Project Manager is accountable for the management of all assigned project construction activities taking place. The Project Manager, through their on-site management, will ensure that the worksite is safe, supervised and managed in an effective and efficient manner for the City. Maintaining and managing daily communications with and directing the activities of all subcontractors is key to the success of the project. Our project managers utilize TEN's proprietary cTEN application to quickly and efficiently report worksite progress, concerns and work scheduled to be performed the following day. *This communication (depicted below) is shared with both our Director of Construction and designated personnel of the City as another procedure to monitor quality control.*



Quality Assurance and Warranty

TEN Connected will conduct spot inspections, a final inspection, and semi-final inspection if directed, and generate a punch list of work to be completed for each contract. TEN Connected will monitor the punch list until it is complete. TEN Connected will provide written notice to the City when all project work is complete and recommend project acceptance.

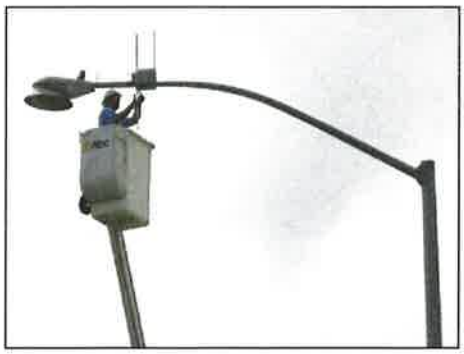
TEN Connected will provide an individual experienced with safety programs in construction to serve as the City's agent and representative in matters of construction safety, specifically one with experience which directly relates to state and local safety laws, including statutes, rules, regulations, and ordinances. Tasks will include the following: a) Review the timeliness of safety and accident prevention procedures on the project and review and accept Contractor Safety Programs; b) In the event certain individuals are found to be in violation of safety requirements, direct the subcontractor to remove the individual employee, or to invoke any other contractual remedy deemed appropriate; c) Observe and monitor subcontractor compliance with OSHA, the City, and local and state laws and regulations; d) Periodically attend Foremen's 'tool box" safety meetings and evaluate effectiveness; e) Review and accept subcontractor emergency and safety plans and procedures; f) Organize and participate in monthly site inspections and report on findings; g) Continually coordinate the City's general and specific safety concerns with the Project; h) TEN's involvement in the Safety of the project shall in no way relieve or decrease the Contractor's obligation for safety.

Installation

TEN Connected will conduct bi-weekly on-site job progress meetings for the project with Project Management representation in attendance as needed. We will attend/facilitate pre-job and preconstruction conferences and all job related meetings. TEN Connected will discuss issues and actions to be taken with all responsible parties, and dates when issues are to be resolved. TEN Connected will review and negotiate costs for additional extra work. TEN Connected's team can provide detailed engineer's cost estimates, and our project managers will document the contractor's work force for any extra work that may be required or requested.

Field Quality Control

TEN Connected will provide daily management while the project is on-going. TEN Connected's project managers will be available to coordinate with contractors, utilities, and City of Portland operations personnel to evaluate progress and activity daily. TEN Connected's project managers will also provide regular emailed progress reports and updates from our proprietary cTEN construction management program.



Adjusting and Cleaning

For each of its customers, TEN delivers a custom Operations and Maintenance (O&M) manual for luminaires and controls systems. Minimal maintenance is required considering 20-year fixture life and extremely low failure rates of LEDs (i.e. less than 1% in TEN's experience). The development of the maintenance plan starts during the Audit phase of the project. TEN carefully evaluates operating procedures and characteristics so that the luminaires, controls, and ancillary equipment have the most appropriate maintenance plan. TEN's maintenance analysis process yields benefits because the systems can then be operated at the highest level of efficiency.

Disposal

TEN Connected will develop the strategy, identify vendors, and manage the overall process. Collected materials will be gathered including but not limited to capacitors, mercury containing devices, drums, bulbs, and ballasts

and placed in an accumulation area. For each project, accumulation sea containers will be stored at strategic locations for ease of disposal. These locations, when selected, will provide several advantages; most notably the fact that it is a covered and relatively sealed environment. Hazardous products will be kept in the original containers unless they are not re-sealable. The original material safety data sheets (MSDS's) will be retained and available for review by City of Portland. If surplus product must be disposed, disposal requirements set forth by the local, State, and Federal regulations will be followed as applicable. During the collection of materials, the selected recycling and disposal management vendor will ensure and certify that the integrity of the equipment or containers is sound. If the integrity is compromised, the vendor will immediately re-pack the containers or equipment. Temporary containment, if required, will be constructed of polyurethane sheeting and oil socks. The sheeting will be placed under the affected areas and oil socks will be placed around the perimeter of the sheeting.

7. Construction Administration

TEN Connected will work with the City to develop bidding documents for the installation of street lighting systems. Led by our Director of Installation and the Director of Design - TEN Connected will assist in the review of all bid documents to confirm that each specification is addressed and met by the respondents. TEN Connected Solutions offers a full commissioning of fixtures not simply a spot-check to determine if installation procedures are followed.

TEN Connected recommends maintenance on a time and materials basis due to the extremely low failure rate of LEDs (less than 1%) and the availability of "attic stock" to be provided by TEN Connected as part of the project. Alternatively, TEN Connected will offer to undertake a maintenance protocol which also provides a labor warranty directly to the City, and administers the materials warranty provided by the fixture manufacturer.

TEN Connected's specifications for Installation and Maintenance Contractors will include, but will not be limited to, the following:

- Description of Work;
- Required Installation Schedule;
- Order of Streets or Areas to be Converted;
- References;
- Submittals;
- Quality Assurance;
- Commissioning Assistance;
- Warranty;
- Installation Plan;
- Field Quality Control;
- Adjusting & Cleaning;
- Disposal;
- Availability of Maintenance Services; and,
- Safety Record

In addition to the language listed above, TEN Connected will also include language relating to platform training for TEN Connected's proprietary project management software (cTEN), fixture recycling, traffic control and flagging, obtaining permits, or any other goals required of the City, such as M/W/DBE participation goals.

After working with the City to determine the minimum requirements for installation and maintenance contractor(s), and after Invitations for Bids (IFB) have been issued by the City, TEN Connected will review each bid to confirm which vendors have met the minimum criteria, and will deliver to the City a concise summary of those bids for purposes of evaluating desired services and selecting and approving subcontractors.

All subcontractors will perform their work under the direction of TEN Connected's in-house construction project management and will be required to use TEN Connected's cTEN technology platform (for project progress reporting) that will enable the City, and the TEN Connected project team, to receive daily installation updates. Our project management team also will be responsible for training, preparing customized Operations & Maintenance (O&M) manuals, and overseeing project commissioning.

TEN Connected will conduct spot inspections in accordance with the RFP, a final inspection, and semi-final inspection if directed, and generate a punch list of work to be completed for each contract. TEN Connected will

monitor the punch list until it is complete. TEN Connected will provide written notice to the City when all project work is complete and recommend project acceptance.

For example, TEN Connected is currently installing LED street lights in the City of Baltimore. To keep the local community and city officials up-to-date on the progress of the project, TEN Connected coordinates weekly briefing documents. A sample bi-weekly report (TEN Connected prepared for the City of Baltimore) can be found in **Attachment 2: City of Baltimore Street Lighting Upgrades Bi-Weekly Report dated October 28, 2016.**

8. Acquisition of Street Lights

TEN Connected has been closely monitoring the case that has been proceeding in front of the Maine Public Utilities Commission. TEN Connected will assist the City in completing the acquisition of the street lighting system from Central Maine Power. The bulk of such negotiation of course is the Net Book Value (NBV) of the system, as well as the specific requirements (approved by the MPUC) for the City to take ownership of the system from CMP.

TEN Connected will specifically follow the guidelines and procedures currently being developed in strict conformity to that which is required – including whether fusing must be accomplished by CMP or it is legally permissible for someone else to install the required fusing.

Nevertheless, TEN Connected has dedicated staff on hand (who are former utility company executives), who are available to diplomatically negotiate and finalize the various acquisition documents between the City of Portland and CMP.

TEN Utility Billing Structure Experience

It is important to note that due to TEN Connected's contracts with the cities of Bethlehem and Harrisburg (both served by Pennsylvania Power and Light - PPL) and Baltimore (served by Baltimore Gas & Electric – BGE) for their LED streetlight conversion projects, TEN Connected has become intimately familiar with utility street light billing structures across these and other utility territories we are currently conducting business.

Furthermore, TEN Connected's work with the City of Baltimore required TEN Connected not only to design and project manage Baltimore's LED streetlight conversion project, but specifically includes the technical analysis of Baltimore's BGE utility billing structure, including utility bill reconciliation. TEN Connected is confident that we will be able to provide this same comprehensive level of understanding, experience, and successes to the City of Portland in preparing and submitting the information required by Central Maine Power to adjust to the new LED tariff rate.

Currently, TEN Connected is assisting the City of Harrisburg, PA in negotiating the acquisition of several hundred remaining street lights, which are the only remaining street lights in that city that are still owned by the local utility.

9. Rebate/Incentives

Prequalification Application – TEN Connected will repair and submit, on the City's behalf, a prequalification application with Central Maine Power to begin the rebate and incentive program process, and will follow through with such application until all amounts are received that are due to the City or Portland.

Rebate Program Submission – TEN Connected will establish and maintain necessary records for any products eligible for rebates, and will submit rebate applications per the program's instructions (as completed or at the end of construction) to the Central Maine Power. Upon receipt from the City, TEN Connected will submit itemized receipts or invoices with the manufacturer, model number, and purchase price of each qualifying product in addition to supplying manufacturers' specification sheets, as well as submitting any other documentation required by Central Maine Power to maximize available rebates.

The following information from Efficiency Maine would be used to determine rebate estimates and would be used in the program submission application.

New LED Fixtures

Measure Description	Incentive
Streetlight or Parking Fixture (Pole Mounted; utility pole mounted fixtures are ineligible)	$75-$175
Wall-Mounted and Area Fixture (Wallpack)	$100
Canopy or Parking Garage Fixtures	$50-$75
Flood and Spot Lights	$75-$175

Final Submission – TEN Connected will compare final project quantity and products with final rebate submission, and will communicate with Central Maine Power to confirm that final submission has been submitted for approval.

Receipt and Payment – TEN Connected will coordinate with the City of Portland and Central Maine Power to ensure that final submissions and payment of rebates and incentives have been completed.

For this initiative, TEN Connected will also seek any other rebates and financial incentives available for the City of Portland. For example, as part of TEN Connected's street lighting conversion for the City of Bethlehem (PA), TEN Connected obtained $224,000 in rebates directly paid to the city by the local utility. In the case of the City of Harrisburg, TEN Connected assisted in facilitating a $500,000 grant awarded to Harrisburg specifically intended for the purchase of equipment related to Harrisburg's LED street lighting conversion, as well as applying for and securing for Harrisburg in excess of $385,000 in direct-pay rebates to the city under Pennsylvania's Act 129 utility rebate program. As certain incentives are time and program sensitive, TEN Connected will undertake careful planning to optimize and obtain maximum value of all incentives available to the City of Portland.

F. Value Added Services

Compared to high-intensity discharge (HID) lamps, like HPS, LEDs provide the following benefits for the City of Portland:

Technology

Reduce Maintenance	Save Energy
- Fewer lamps to replace and dispose due to longer life, lack of parts to replace - Less associated lane closures	- High system efficacy - Less site wattage due to utilization - Controllable and dimmable
Improve Optical Control	**Improve Visibility**
- Reduce direct and reflected uplight - Less light trespass with reduced shielding - Reduce wasted light	- Better color rendering - More uniform lighting distributions - Eliminate dark areas between poles
Increase Safety	**Increase Environmental Care**
- Reduced fixture outage liability concerns - Broad spectrum lighting (white light)	- Reduce hazardous waste - Reduce energy consumption

Services

TEN Connected Solutions has the expertise and the national network available to guide the City during the implementation of all smart cities technologies, including but not limited to citywide Wi-Fi, smart traffic and parking management, interactive electronic communication, advanced lighting controls, environmental sensing, electronic vehicle charging, waste management technologies, and other opportunities. For example, early research and estimates by TEN Connected Solutions indicates that the City of Portland could potentially generate millions of dollars in revenue over the term of the contract. These projections are based on advertising revenue and converting the street lighting system to LED; however, revenue generated from installing meters, smart street lighting controls, Wi-Fi, and other technologies will allow the City to realize additional substantial revenues that can be used for operations and infrastructure improvements.

G. Additional Information

Please see **Attachment 3: City of Harrisburg Case Study and Attachment 4: Project Photo Gallery**

H. Project Schedule

Construction services will be sourced through mutually agreed upon specialty electrical and controls subcontractors. All subcontractors perform their work under the direction of TEN Connected's construction project management team. TEN Connected's local construction project managers will collaborate with our internal engineering team on specific design issues which are certain to arise. Our project management team will also be responsible for training, preparing custom Operations & Maintenance (O&M) manuals, and overseeing project commissioning.

Draft Project Schedule assumes street lighting inventory will be purchased from Central Maine Power (CMP) prior to contract signing.

Once the City of Portland approves the contract and secures any project funding necessary, the following is our expected installation schedule.

Draft Project Schedule:

Task Description	Duration (Calendar days)
City of Portland Work Order Contract Issued & Fully Endorsed	5 business days
TEN Prepares Final Design	10 business days
Material Procurement & Delivery Services	30 business days
Installation Services, Utility Conversion & Controls Commissioning	65 business days
Substantial Completion (Punch List Submitted and Completed)	15 business days
Final Completion (including final controls commissioning)	10 business days

TEN Connected Solutions

PRESENTED TO

CITY OF PORTLAND, MAINE

11/9/2016

ATTACHMENT 1:

TEAM RESUMES

TEN Maine
19 Yarmouth Road, Ste 301
New Gloucester ME 04260

TEN Philadelphia
40 West Evergreen Ave
Philadelphia PA 11918

TEN New England
51 Melcher Street
Boston MA 02210

TEN DC/Baltimore
9025 Maier Rd, Ste B
Laurel MD 20723

TEN Connected Solutions Headquarters 1501 Reedsdale St, Ste 401, Pittsburgh PA 15233

855.429.1010 | **tenconnected.com** | **info@tenconnected.com**

Street Lighting Team Individual Resumes

TEN Connected Solutions' Executive Team:
Troy Geanopulos - CEO
Rob Campbell, PE, MBA - EVP

TEN Connected Solutions' Street Lighting Team:
Patrick Regan – VP, Customer Solutions
Olivia Benson, MBA – Program Manager
Joseph Statler - Director of Installation
Mike Schneider, LC, CLEP, CPM – Director of Design
Greg Lok, PE, CEM – VP, Technology & Engineering

Troy Geanopulos
CEO

Total years of relevant energy-related experience: 20+ Years

Anticipated Role:
As TEN Connected's Chief Executive Officer, Mr. Geanopulos will be a main point of contact throughout the duration of the City's project, along with Patrick Regan, VP Customer Solutions. Troy will ensure proper coordination of TEN Connected's project team with Patrick Regan to ensure Portland's overall satisfaction.

Educational Background:
B.A – Dickinson College, Carlisle, Pennsylvania

Professional/Technical Professional affiliations:
Tepper School of Business – Entrepreneurial Leadership Forum
Member, U.S. Green Building Council
Member, Green Building Alliance

Experience
TEN and TEN Connected Solutions - Chief Executive Officer, 4 years
Mr. Geanopulos is responsible for guiding all of TEN Connected Solution' business development efforts and strategy to address client needs and objectives. He has a valuable combination of skills and experience, which enables him to understand and discuss customer contractual needs and requirements, and extensive hands-on experience in recognizing customer project strategies through decades of energy efficiency experience.

Constellation NewEnergy – Sr. Vice President of Sales, 2.5 years
As Sr. VP of Sales, Mr. Geanopulos was responsible for leading a national sales team for this Fortune 500 Company, developing marketing and business development strategies to position Constellation Energy (now an Exelon Company) as the nation's leading provider of energy efficiency solutions.

Five Year History of Energy Performance Contracting Project Experience
2015 - City of Harrisburg, PA (currently in construction)
Municipal Government Street Lighting, $3.6 million

2013 / 2014 - City of Bethlehem, Bethlehem PA
Municipal Government Street Lighting, $3.9 million

2013 / 2014 - United Steel Workers Building, Pittsburgh PA
Commercial Office Building, $3,510,136

2015 - Eastern Gateway Community College
College, $1,759,014

2014 - The Pennsylvania State University, Beaver Stadium
State University, Stadium Lighting, $763,274

Rob Campbell, PE, MBA
Executive Vice President

Total years of relevant energy-related experience: 26+ Years

Anticipated Role:
As TEN Connected's EVP, Mr. Campbell will oversee management of the customer's goal development and strategic planning. Mr. Campbell's primary responsibilities will involve coordination and assignment of resources and project personnel/subcontractors to ensure construction and engineering timelines are met.

Educational Background:
Master of Business Administration – Carnegie Mellon University, Pittsburgh, Pennsylvania
B.S. in Mechanical Engineering – University of Toronto, Toronto, Ontario

Professional/Technical Professional affiliations:
Professional Engineer – Association of Professional Engineers of Ontario

Experience
The Efficiency Network - President and Chief Operating Officer, 4 Years
Mr. Campbell is responsible for the day-to-day operations at TEN Connected Solutions and manages the strategic planning and development goals of the clients.

Constellation NewEnergy – Vice President for Business Operations and Project Management, 7 Years
As Vice President for Business Operations and Project Management, Mr. Campbell provided strategic guidance and support to Constellation's project portfolio.

Five Year History of Energy Performance Contracting Project Experience
2015 - City of Harrisburg, PA (currently in construction)
Municipal Government Street Lighting, $3.6 million

2013 / 2014 - City of Bethlehem, Bethlehem PA
Municipal Government Street Lighting, $3.9 million

2013 / 2014 - United Steel Workers Building, Pittsburgh PA
Commercial Office Building, $3,510,136

2015 - Eastern Gateway Community College
College, $1,759,014

2014 - The Pennsylvania State University, Beaver Stadium
State University, Stadium Lighting, $763,274

Patrick Regan, Esquire
VP, Customer Solutions

Total years of relevant energy-related experience: 7 Years

Anticipated Role:
As TEN Connected's VP of Customer Solutions, Mr. Regan will be the primary point of contact through the duration of the project. Working with the CEO, Troy Geanopulos, and EVP, Rob Campbell, Patrick will coordinate and deliver TEN Connected's project team to ensure overall customer satisfaction.

Educational Background:
J.D. – Duquesne University School of Law, Pittsburgh Pennsylvania
B.A – Boston College, Chestnut Hill, Massachusetts

Professional/Technical Professional affiliations:
Licensed Attorney in Pennsylvania
Member, National Energy Services Coalition (PA Chapter)

Experience
TEN Connected Solutions - VP, Customer Solutions, 2.5 Years
Mr. Regan is responsible for overseeing TEN Connected's sales efforts and strategy to address client needs and objectives. He has a valuable combination of skills and experience, including: a law degree, which enables him to understand and discuss customer contractual needs and requirements, as well as extensive hands-on experience in recognizing customer technology, operational, and financial strategy and needs, including presentation and analysis of various financial options and grant programs to determine those best suited for a customer's project.

Constellation, An Exelon Company – Senior Business Development Manager, 4 Years
As a senior business development manager, Mr. Regan managed Constellation's Pennsylvania energy efficiency teams from project evaluation through the Investment Grade Audit phase of development and served as the primary customer interface from scope definition through project implementation.

Five Year History of Energy Performance Contracting Project Experience
2015 - City of Harrisburg, PA
Municipal Government Street Lighting, $3.6 million

2014 - City of Bethlehem, Bethlehem PA
City Street Light Conversion, $3.8 million

2013 - Municipal Authority of Westmoreland County, PA
Municipal Water and Wastewater System, $8.4 million

2013 - Lancaster County, PA
County Buildings, $6.4 million

2012 - Fayette County, PA
County Buildings, $2.8 million

Olivia Benson
Program Manager

Total years of relevant energy-related experience: 2 Years

Anticipated Role:
As TEN Connected's Program Manager Street Lighting / Smart Cities Technology Solutions, Ms. Benson will assist in the overall development of the project and manage project-related communications to ensure effective coordination and customer satisfaction.

Educational Background:
M.S. – University of Pennsylvania, Philadelphia, Pennsylvania
M.B.A. – Point Park University, Pittsburgh, Pennsylvania
B.S. – Carnegie Mellon University, Pittsburgh, Pennsylvania

Professional/Technical Professional affiliations:
Experience
TEN Connected Solutions - Program Manager, 2 Years
Ms. Benson is responsible for identifying and developing opportunities to cultivate business relationships and to promote opportunities for TEN Connected Solutions. She assists in the development, award, and signing of contracts with clients and project support where needed in order to meet and exceed client expectations. Additionally, Olivia conducts legislative and industry research to provide clients with comprehensive information related to national street lighting projects and trends.

City of Pittsburgh – Youth Policy Director, 2 Years
As a policy director, Olivia managed and designed community-focused programming for city-wide implementation and led public affairs outreach strategies for youth and education initiatives.

Five Year History of Energy Performance Contracting Project Experience
2015 - City of Harrisburg, PA (currently in construction)
Municipal Government Street Lighting
$3.6 million

2015 – Middletown Borough, PA (currently in construction)
Municipal Government Street Lighting
$0.6 million

Joe Statler
Director of Installation

Total years of relevant energy-related experience: 15 Years

Anticipated Role:
As the Director of Installation, Mr. Statler will be the responsible for the development, installation and commissioning of all energy conservation measures.

Educational Background:
Associates Degree - Beaver County Community College, PA

Professional/Technical Professional affiliations:
PMP (Project Management Professional) training
OSHA 30 Hour Training
Certified Lift Operator
Competent Person/Scaffolding Erecting
CP/AED Certified
OSHA 10-hour Training

Experience
TEN Connected Solutions - Director of Installation, 3.5 Years
Mr. Statler is responsible for all aspects of project construction, including but not limited to cost-estimating, coordination of subcontractors, inspections and commissioning, quality assurance and quality control. He also manages relationships with supplier and contractor Network Partners.

Constellation – Director of Site Operations, 10 yrs.
As director of site operations, Mr. Statler was responsible for all aspects of project construction, including cost-estimating, coordination of subcontractors, inspections and commissioning.

Five Year History of Energy Performance Contracting Project Experience
2015 - City **of Harrisburg, PA** (currently in construction)
Municipal Government Street Lighting, $3.6 million

2013 / 2014 - City of Bethlehem, Bethlehem PA
Municipal Government Street Lighting, $3,924,843

2013 / 2014 - United Steelworkers Building, Pittsburgh PA
Commercial Office Building, $3,510,136

2015 - Eastern Gateway Community College
University, $1,759,014

2014 - The Pennsylvania State University, Beaver Stadium
State University, Stadium Lighting, $763,274

Mike Schneider, LC, CLEP, CPM
Director of Design

Total years of relevant energy-related experience: 17 yrs.

Anticipated Role:
Mr. Schneider will research, design, and oversee field installations and testing of high-quality, cost-effective lighting and water conservation measures. His extensive field experience allows him to improvise and revise designs in order to best meet all situations. Having worked with nearly 60 lighting manufacturers, he knows the products, how they work, and the best applications for each option.

Educational Background:
Project Management Certification Program – Xavier University
Community College of Allegheny County

Professional/Technical Professional affiliations:
CPM - Certified Project Manager
Member IESNA (Illuminating Engineering Society of North America)
Certified Lighting Efficiency Professional – AEE
LC - Lighting Certified – NCQLP (National Council Qualifications for the Lighting Professions)

Experience
TEN Connected Solutions – Director of Design, 3 Years
Mr. Schneider's responsibilities include researching, designing, and overseeing field installations and testing of high-quality, cost-effective lighting and water conservation measures

NORESCO - Lighting and Water Energy Engineer, Years
As a lighting and water energy engineer, Mr. Schneider was responsible for the auditing, design, procurement and installation of energy efficient lighting and water solutions.

Five Year History of Energy Performance Contracting Project Experience
2015 - City of Harrisburg, PA (currently in construction)
Municipal Government Street Lighting, $3.6 million

2013 / 2014 - City of Bethlehem, Bethlehem PA
Municipal Government Street Lighting, $3,638,379

2013 / 2014 - United Steelworkers Building, Pittsburgh PA
Commercial Office Building, $3,847,034

2014 - The Pennsylvania State University, Beaver Stadium
State University, Stadium Lighting, $763,274

2015 - Eastern Gateway Community College
University, $1,759,014

Greg Lok, PE, CEM
VP, Technology

Total years of relevant energy-related experience: 19 Years

Anticipated Role:
As TEN Connected's Vice President, Technology, Mr. Lok will be reviewing engineering design and structuring projects so that each customer receives the best possible economic and environmental terms.

Educational Background:
B.S Mechanical Engineering. – Queen's University; Kingston, Ontario, Canada

Professional/Technical Professional affiliations:
Professional Engineer (PE) in Pennsylvania, Ohio, West Virginia, Delaware, Virginia, New Mexico and Ontario
Certified Energy Manager (CEM)
Certified Project Manager (CPM)
Member, Association of Energy Engineers (AEE)

Experience
TEN Connected Solutions – VP, Technology, 2.5 Years
Mr. Lok is an energy management specialist that oversees the engineering development of projects, manages internal and external customer expectations, and makes sure that engineering development team meets the needs outlined by the customer. On the R&D side of the business, Greg is responsible for integrating the physical aspects of the energy services business into TEN Connected's software automation platform. He continuously looks for additional applications that can expand TEN Connected's offering and help customers create smart buildings.

Constellation – Executive Director of Product Development, 7 Years
As Executive Director of Project Development, Mr. Lok managed Constellation's MUSH (Municipal Governments, Universities, Schools, Hospitals) Energy Services team with over 35 professional designers and engineers encompassing projects from coast to coast.

Five Year History of Energy Performance Contracting Project Experience
2015 - Temple University, Philadelphia, PA
Higher Education, $2.6 Million

2015 - Eastern Gateway Community College, Steubenville, OH
College, $1,759,014

2015 - Community College of Allegheny County, Pittsburgh, PA
College – South Campus, $3,755,230

2015 - City of Harrisburg, Harrisburg, PA (currently in construction)
Street Light LED Retrofit, $3,600,000

Phase 1 – 2007; Phase 2 – 2009; Phase 3 – 2012 - Westmoreland County Housing Authority, Greensburg PA
Public Housing, $12,000,000

TEN Connected Solutions

PRESENTED TO

CITY OF PORTLAND, MAINE

11/9/2016

ATTACHMENT 2:

CITY OF BALTIMORE, MD BI-WEEKLY REPORT SUBMITTED TO CITY OCTOBER 28, 2016

TEN Maine
19 Yarmouth Road, Ste 301
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Boston MA 02210

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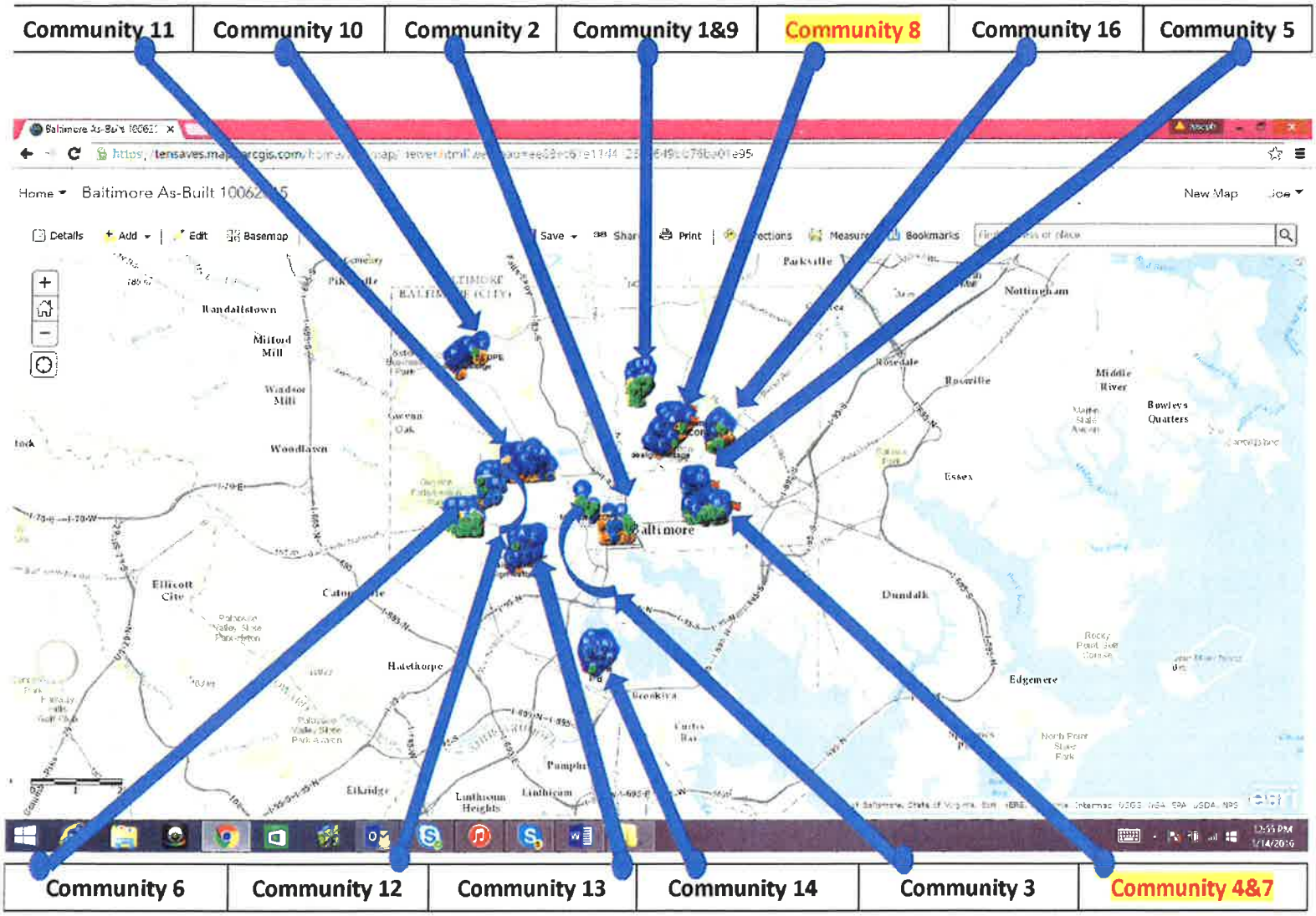
City of Baltimore Street Lighting Upgrades

October 28th, 2016

Overview of work:

- **Communities highlighted have varying degrees of updates from the 10/14/2016 update**



DOT Owned/BGE Maintained = 2142 Pendants Complete (located in fifteen communities)

677 PMAs Complete (currently working in community 8)

278 Acorns retrofitted (located in seven communities, 10, 3, 5, 2, 16, 4&7), No Status Change)

DOT Owned/DOT Maintained = 132 Pendants Complete (currently working in community 3, 1 & 9)

163 PMAs Complete (currently working in communities 4&7)

BGE Owned/BGE Maintained = 1,947 Pendants Complete (located in fifteen communities), ALS back on DOT owned work

6 PMAs Complete (completed PMAs in communities 13 and 6)

	Total complete	Total in project	
Pendant Only	4222	4260	99.11%
PMA (PT) Only	846	1721	49.16%
Acorn (PT3/PT4) Only	278	281	98.93%
Original Overall % Complete	5346	6262	85.37%
Adjusted % Complete (scope deducts)	5346	6244	85.62%

Summary of work:

Community 16 - no change since 10/14/2016

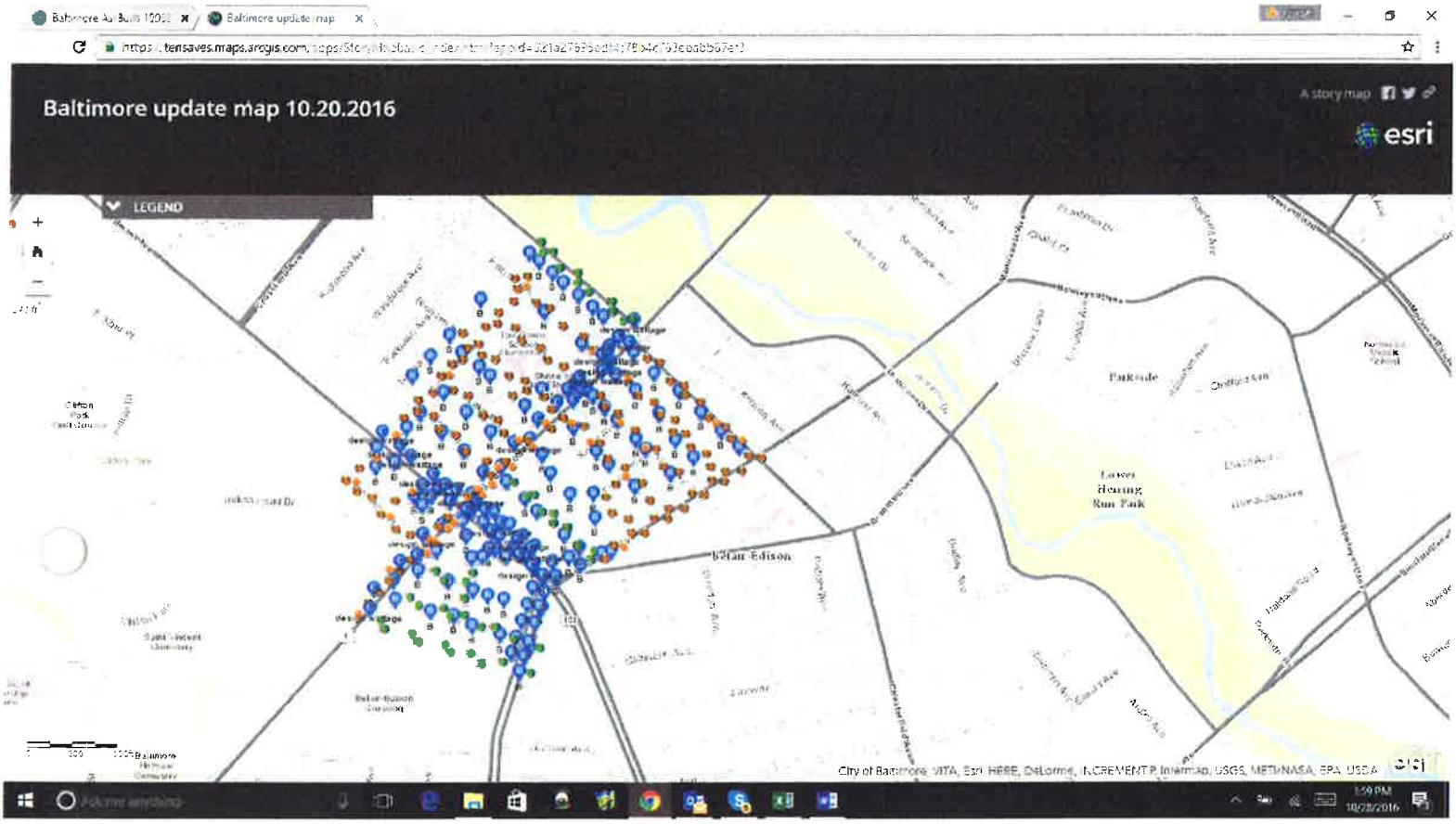
DOT Owned/BGE Maintained = ~29 Pendants Complete 11/11 (indicated by a "Blue C")

~0 PMAs Complete of 150

~17 Acorns retrofitted Complete 4/8 (indicated by a "Blue C")

DOT Owned/DOT Maintained = ~0 Pendants in scope

BGE Owned/BGE Maintained = ~114 Pendants Complete 7/20 (indicated by a "Blue B")



Summary of work:

Community 4 & 7

DOT Owned/BGE Maintained =

~220 Pendants Complete 12/3 (indicated by a "Blue C")

~90 PMAs Complete of 90, thru 4/8 progress

~14 Acorns Complete of 14, thru 4/8 progress

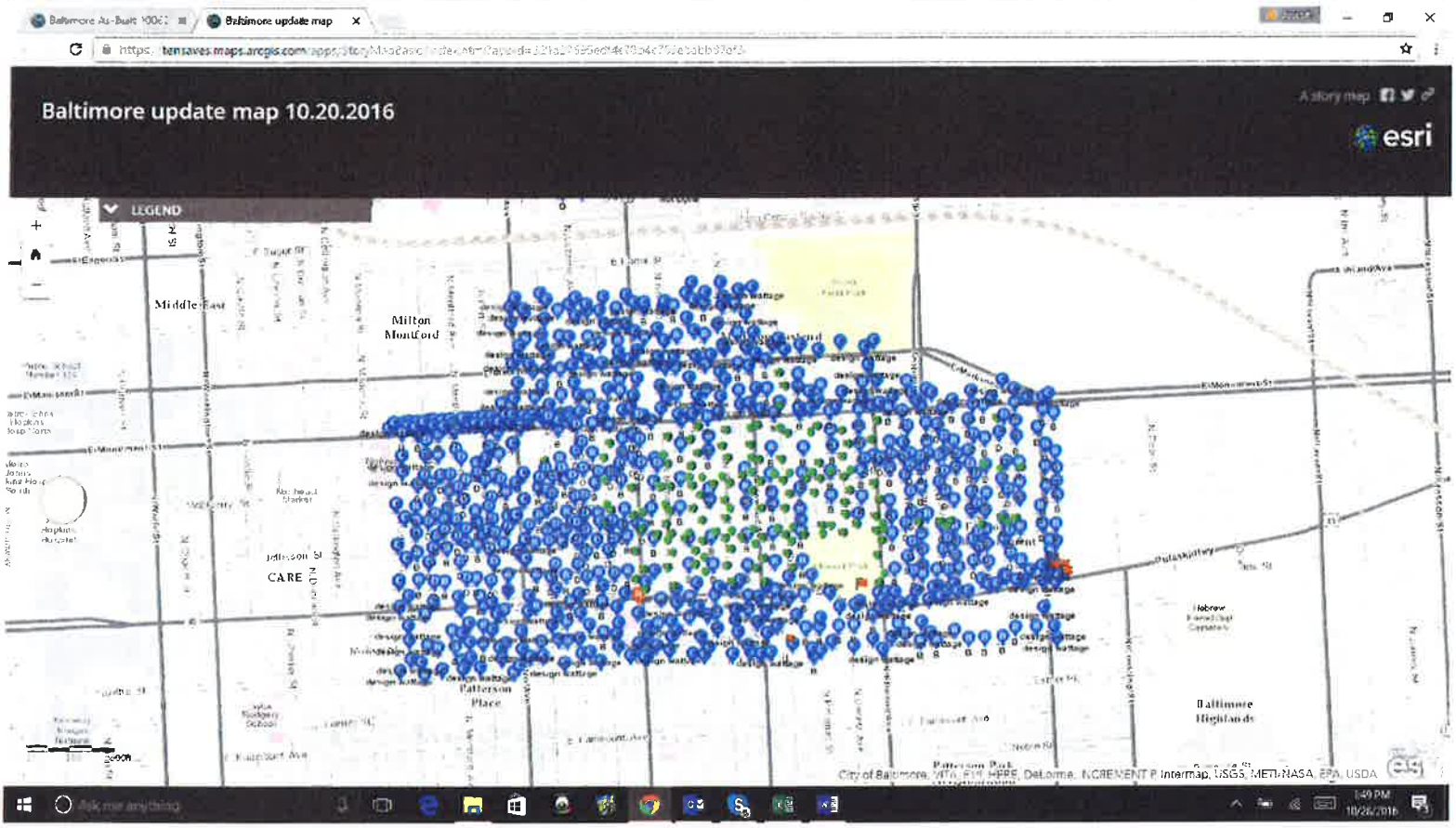
DOT Owned/DOT Maintained =

~16 Pendants of 16 Complete 3/25 (indicated by a "Blue D")

~98 of the 292 PMA fixtures, thru 10/28 progress

BGE Owned/BGE Maintained =

~247 Pendants Complete 2/26 (indicated by a "Blue B")



Summary of work:

Community 2 - no change since 10/14/2016

DOT Owned/BGE Maintained =

~463 Pendants of 466 Complete 4/8 (indicated by a "Blue C")

- In final stages of pendant scope verification and evaluating streets for completion

~NO PMAs to be done

~228 of 231 Acorns retrofitted Complete 3/25 (indicated by a "Blue C")

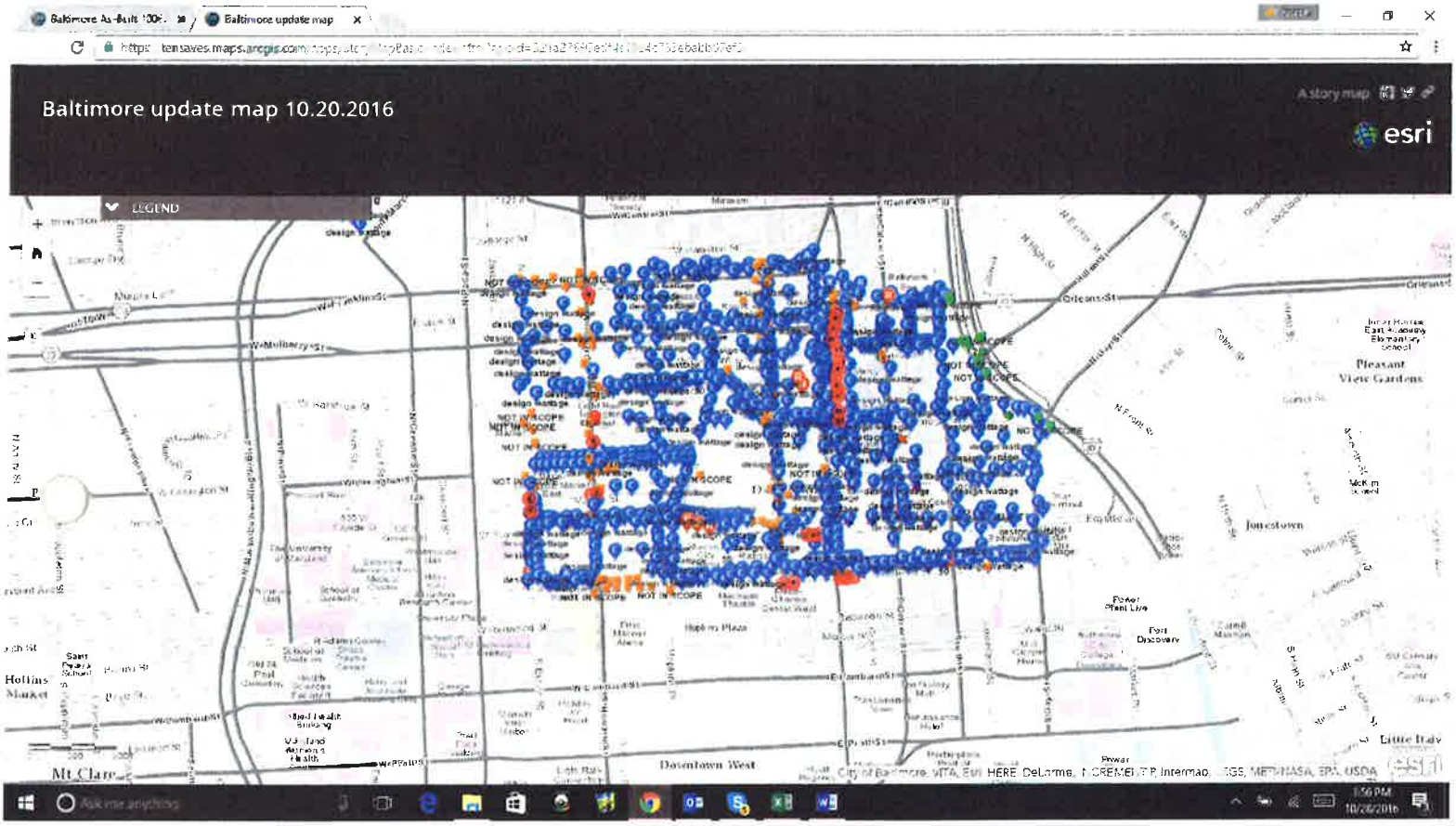
- In final stages of acorn scope verification and evaluating streets for completion

DOT Owned/DOT Maintained =

~2 Pendants in scope

BGE Owned/BGE Maintained =

~3 Pendants Complete 10/16 (indicated by a "Purple circle")



Summary of work:

Community 6 – no change since 10/14/2016

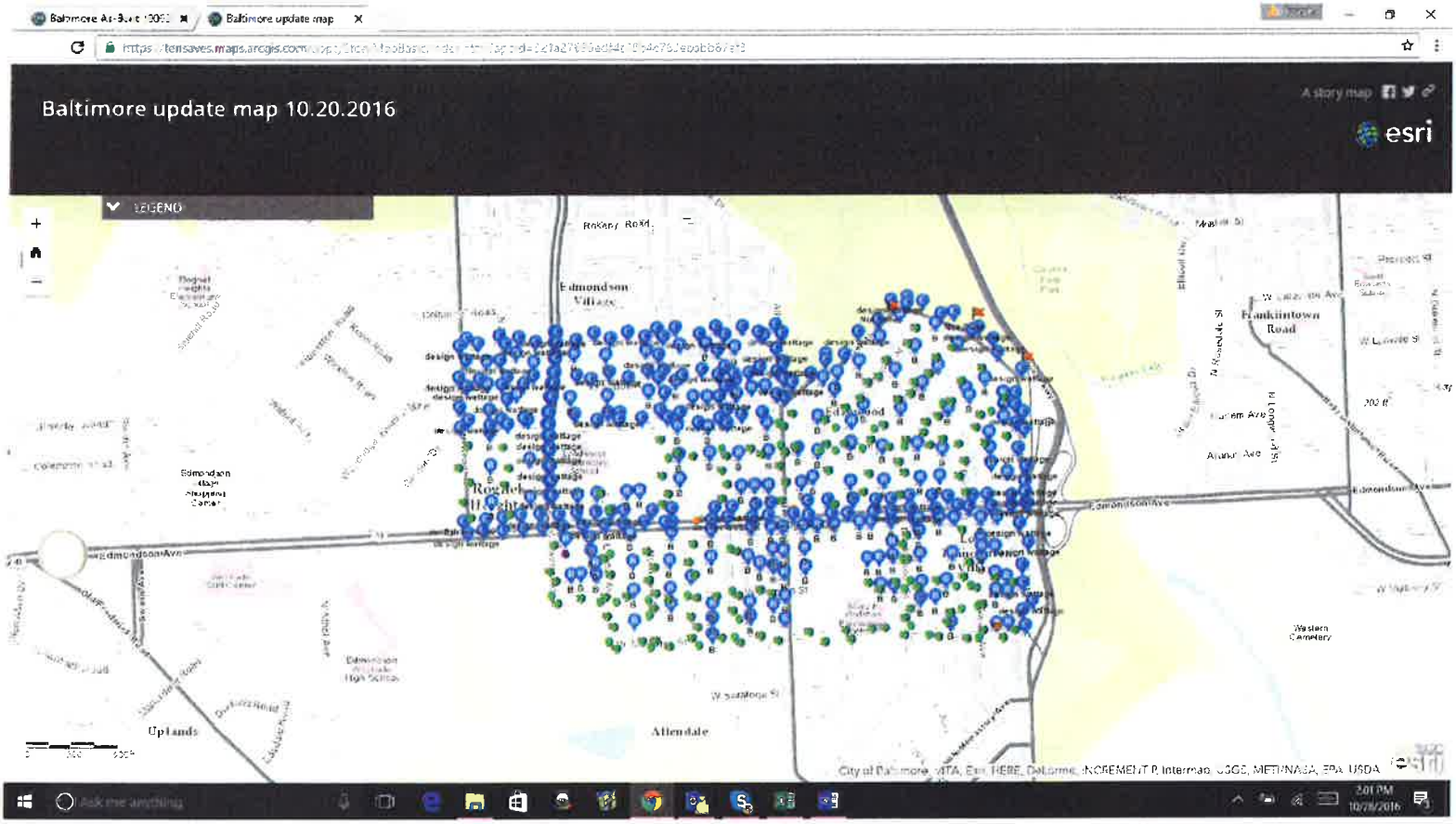
DOT Owned/BGE Maintained = ~81 Pendants Complete thru 2/24 (indicated by a "Blue C")

~126 PMAs Complete of 127, thru 9/29 progress

DOT Owned/DOT Maintained = ~0 Pendants in scope

~6 PMAs Complete of 6, thru 8/10 progress

BGE Owned/BGE Maintained = ~155 Pendants Complete 11/8 (indicated by a "Blue B")



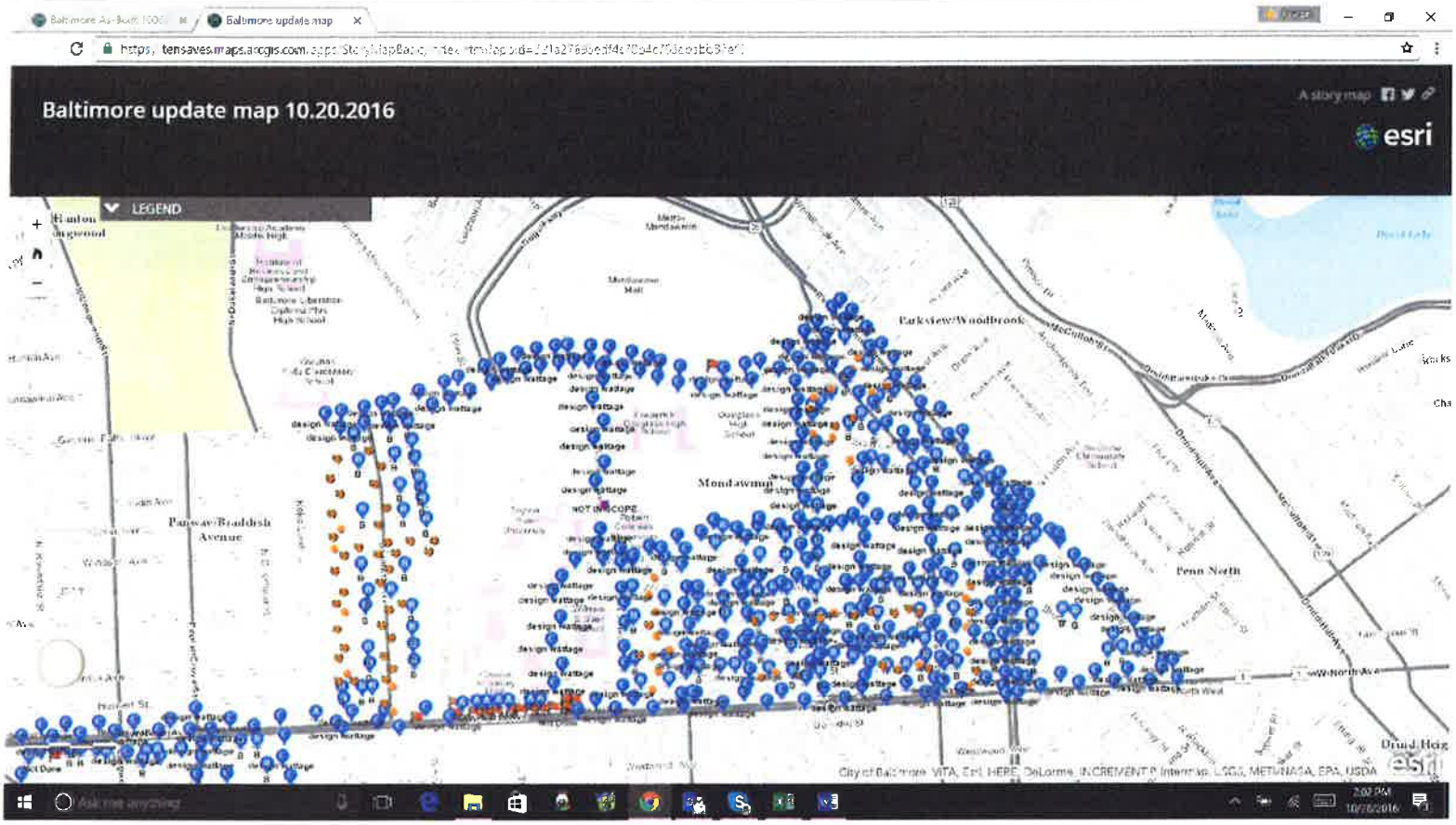
Summary of work:

Community 11 - no change since 10/14/2016

DOT Owned/BGE Maintained = ~312 Pendants Complete 1/15 (indicated by a "Blue C")

[illegible] Owned/DOT Maintained = ~0 Pendants in scope

BGE Owned/BGE Maintained = ~143 Pendants Complete 10/29 (indicated by a "Blue B")



Summary of work:

Community 13 - no change since 10/14/2016

DOT Owned/BGE Maintained = ~334 Pendants Complete 12/3 (indicated by a "Blue C")

~104 PMAs Complete of 119, thru 8/10 progress

~NO Acorns to be done

DOT Owned/DOT Maintained = ~5 Pendants in original scope, these are BGE poles and material was returned to storage

BGE Owned/BGE Maintained = ~180 Pendants Complete 11/21 (indicated by a "Blue B")

Project Images

Community 8 → East 31st Street

TEN Connected Solutions

PRESENTED TO
CITY OF PORTLAND, MAINE
11/9/2016

ATTACHMENT 3:

CITY OF HARRISBURG, PA CASE STUDY

TEN Maine
19 Yarmouth Road, Ste 301
New Gloucester ME 04260

TEN Philadelphia
40 West Evergreen Ave
Philadelphia PA 11918

TEN New England
51 Melcher Street
Boston MA 02210

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TEN Connected Solutions

CITY OF HARRISBURG, PA
CONNECTED STREET LIGHTING SOLUTIONS PROJECT

PROJECT SNAPSHOT

The City of Harrisburg's highly-competitive procurement process selected TEN Connected Solutions to analyze the City's street lighting system.

TEN Connected Solutions collaborated with City leaders to create an ambitious project plan, converting 6,200 streetlights to LED technology with guaranteed annual cost savings.

"The new LED lights are not only more energy efficient, but they are brighter than the old lighting," said Mayor Eric Papenfuse. ***"I am confident a brighter Harrisburg will mean a safer and more beautiful city for us all."***

TECHNICAL COMPONENTS

- Complete audit and asset inventory, including GIS/GPS street light mapping
- City-wide system design and installation of high-efficiency LED lighting
- Intelligent wireless controls integration
- Utility rebate application and administration

For more information on street lighting projects and Smart Cities technologies please go to **TENConnectedSolutions.com**

CUSTOMER PROFILE

The City of Harrisburg is the capital of Pennsylvania and the county seat of Dauphin County, the center of the Harrisburg-Carlisle MSA of over a half million residents. Harrisburg is a dynamic and diverse city, enjoying an economic, cultural and social revitalization.

FINANCIAL RESULTS

$3.6 Million
Project cost

$525,000
Annual guaranteed energy savings

$60,000
Annual operational savings

$285,000
Rebates applied for and secured

FINANCIAL RESULTS

Annual savings of:

3,900,000 kWh Electricity

3021 Tons CO_2 Reductions

TEN Headquarters
1501 Reedsdale St, Ste 401
Pittsburgh PA 15233

TEN DC/Baltimore
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Philadelphia PA 11918

TEN New England
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TEN Connected Solutions

PRESENTED TO
CITY OF PORTLAND, MAINE
11/9/2016

ATTACHMENT 4:

TEN CONNECTED SOLUTIONS GALLERY

TEN Maine
19 Yarmouth Road, Ste 301
New Gloucester ME 04260

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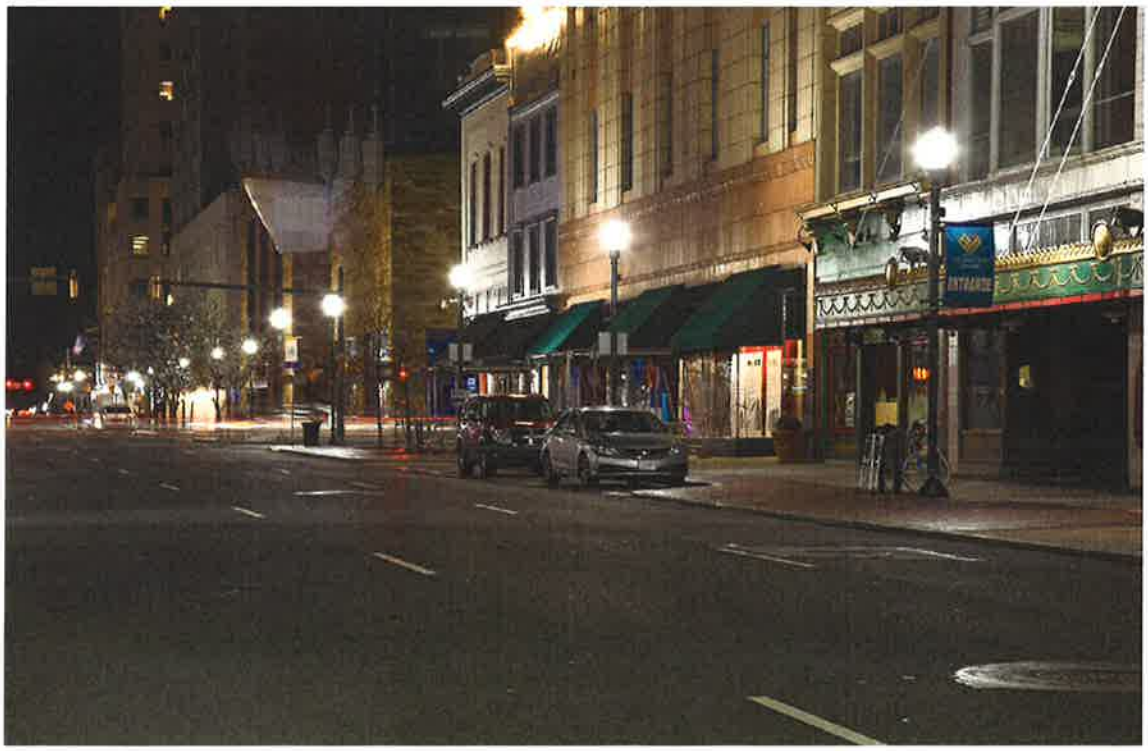
1. City of Harrisburg – Audit in Progress

2. City of Harrisburg – Tree Trimming Locations

3. City of Harrisburg – North 7th Street LED Street Lights (Truly Green and Eaton/Cooper)

4. City of Harrisburg – Market Street Truly Green Decorative LED Lighting



5. **City of Harrisburg – Italian Lake Truly Green Decorative LED Lighting**

6. **City of Harrisburg – Italian Lake Truly Green Decorative LED Lighting**

7. **City of Harrisburg – Eaton/Cooper LED Cobra Head Luminaire**

8. **City of Harrisburg – Eaton/Cooper LED Cobra Head Luminaire**

9. City of Baltimore – Focus Zones

10. City of Baltimore – LED Decorative Street Lighting Installation