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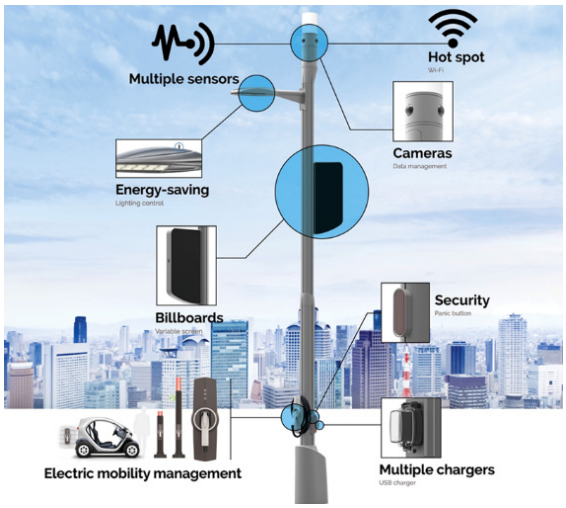
Smart City Pole Demonstration



Smart cities offer many potential new product and service opportunities, such as:

- Real-time weather and traffic data
- Electronic signage
- Emergency beacon
- Wi-Fi/cellular network extension
- Gunshot detection
- EV charging station
- Smart meter integration
- Asset tracking
- Security cameras
- Parking management

Background Objectives and New Learning

Street lighting has historically been a vital utility asset due to its ability to improve safety and deliver community benefit. Many utilities own street lights and light poles, or they maintain street lighting assets for the municipalities they serve. Today, with LED street lighting becoming more common, there is potential for expanding street lighting to deliver new services and benefits via smart city poles.

These services may also represent new revenue opportunities for utilities, municipalities, and the customers they serve. This project will explore these and other possibilities for utilities to consider, including various business models that may be, or already are being adopted. In addition, the project aims to test and report on operational performance of the individual technologies required.

EPRI has been following the development of LED street lighting for several years. These efforts have included lab and field testing of LED street lighting, solar LED street lighting research, and serving on ANSI's C136 street and area lighting standards committee. EPRI's lighting research has also included evaluating the additional services and opportunities that can be offered via connected/smart LED based street lighting through P170's base lighting project and conference reports in recent years.

This proposed project builds on past EPRI research related to LED street lighting and involves conducting a field demonstration of various smart city pole technologies including evaluation of the new, non-lighting features that can be connected through LED street lighting. The primary focus of this project is to perform energy and power evaluations, and analysis of generated data and product offerings/market survey efforts. Based on the learning from this project a future phase of the project may include telecommunications and cyber security requirements but are not included in this phase.

Results of this project would achieve the following:

- Determine potential use-cases and service opportunities for smart city poles within project partner service territories
- Document the market availability of smart city pole features and functionalities
- Evaluate the economics of these systems, including research related to how the data and functionality of these systems may possibly offer new revenue opportunities for utilities
- Define and evaluate customer and societal benefits including reduced transit time via parking assistance, improved perception of safety via emergency beacons, and/or gunshot detection
- Determine the complexity of installation, commissioning, control, and monitoring of smart city pole technologies
- Assess the quality and accuracy of data that can be collected by smart city poles

Benefits

This collaborative research effort will educate project partners on the operational nature, market status, energy consumption, and new business opportunities associated with smart pole technologies. Partners will gain in-depth knowledge of this emerging market and will gain understanding about how these technologies will potentially impact utility and municipality street lighting and smart city efforts in the future.

Benefits include:

- Identification of industry participants, offered features, and deployable technologies
- Technology/feature-specific energy consumption and operational power data
- Comparison of vendor data and revenue grade metering
- Insight on future trends and offerings
- Information to guide business plan and rate development.

Project Approach and Summary

This project will utilize market surveys and field monitoring to understand the smart pole market and associated technologies. To achieve this, it is proposed that the project consist of the following tasks:

1. Survey and Identification of Smart City Vendors and Manufacturers - Market survey and feature survey
2. Support of Host Site(s) and Product(s) Selection – guidance related to site criteria, available product options and technologies
3. Field Site Monitoring/Data Collection – installation of revenue grade field monitoring system, including data collection and gathering
4. Data Gathering – collection of smart pole vendor data – if applicable – to compare with data collected in Task 3
5. Data Analysis – analysis of collected data to determine the broader potential of smart city systems. This task also intends to include calculation of utility cost tests and evaluation of non-energy benefits
6. Future Technology Assessment – research, evaluation, and report on future smart city services
7. Reporting – conference calls, PowerPoint on each host site findings/learnings, and report.

Two Project Options

Option 1 – Host: includes all project tasks, including support of demonstration site(s)/product selection, site monitoring, data collection and comparison, and comprehensive report

Option 2 – Collaborator: includes four project tasks. These tasks are numbers: 1 (Survey), 5 (Data Analysis), 6 (Future Technology Assessment), and 7 (Summary Report)

Deliverables

- Project conference calls
- Marketplace survey
- Summary PowerPoint of each host demo
- Final Report (comprehensive or summary-level, based on level of participation)

The non-proprietary results of this work will be incorporated into EPRI R&D Program 170, and made available to the public, for purchase or otherwise.

Price of Project

This project is TC/SDF compatible; it intends to have two options and funding can be split over multiple years.

Option 1: Host – this option intends to include all seven (7) of the aforementioned tasks. This will include a market survey, support of demonstration site(s) and product(s) selection, installation of a monitoring package, data collection, and gathering of vendor data – if applicable, data analysis, future market survey and reporting and will result in a total project cost of $165,000.

Option 2: Collaborator – this option will include four (4) aforementioned tasks: Task 1 (market survey), Task 5 (data analysis), Task 6 (future technology assessment), and Task 7 (reporting), and will result in a total project cost of $75,000. Collaborators will be able to participate in all conference calls and provide input to technology selections.

Project Status and Schedule

There is no limit to the maximum number of Host and Collaborator partners in this project; however, work on this project will not begin until four host members are under contract. The period of performance for this project is expected to be approximately 24 months after project launch. Projects beginning after initial project launch will still take approximately 24 months to complete, but will receive all project results and findings from the collaboration, and will have their project findings included in collaborative updates, that will occur when their project is completed.

Who Should Join

This project is appropriate for utilities interested in a better understanding of the market, features, drivers, energy usage, and future impact of smart pole systems. These systems are commonly utility or municipality owned and may offer a range of opportunities to benefit utilities and consumers.

Contact Information

For more information, contact the EPRI Customer Assistance Center at 800.313.3774 (askepri@epri.com).

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