

Public Engagement for LED Streetlight Projects

LED street lighting has numerous characteristics that set it apart from incumbent streetlight technology. When properly executed, streetlight upgrades can enhance safety, improve visual quality and lower costs.

Many municipalities upgrade streetlights without a formal public engagement process. In many cases municipalities that have done so have found that residents either do not notice the change or feedback is extremely limited. This is particularly true when the deployment is in commercial neighborhoods or when the fixtures and light quality are relatively similar to the previous fixtures.

1. Why Engage the Public?

However, many municipalities choose to engage the public through a formal process. The public can play a key role in streetlight upgrade efforts. Public feedback can help to:

- Educate public on the benefits of LEDs
- Increase public acceptance of changes
- Inform project development and deployment
- Facilitate vendor and fixture selection
- Detect unforeseen issues in fixture and system design
- Identify unanticipated barriers to installation

2. Key Considerations

Before beginning any public engagement process, cities should identify and analyze the following items¹:

1. **Municipal objectives:** The methods used for public engagement should take overall objectives into account. Reasons for cities to engage the public on street lighting projects include: to preemptively address publics' concerns and/or stem possible negative response, and/or to obtain public input to help make a decision on vendors or fixture types.¹
2. **Time to Execute:** A public process will introduce additional time in the deployment efforts. In addition to resources associated with designing the process, identifying and deploying fixtures, doing outreach, and other elements, the municipality will forgo savings that a faster deployment may yield.
3. **Stakeholders:** Lighting is essential for pedestrians, bicyclists and drivers. Beyond the users of the roadway, stakeholders include law enforcement, business owners, residents, etc.¹

¹ Public Policy Center, University of Nebraska. 2010. Public Input for Municipal Policymaking: Engagement Methods and Their Impact on Trust and Confidence
<http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1009&context=publicpolicyfacpub>

4. **Community needs and preferences:** The perceived value of various changes from new street lighting depends on the importance communities place project attributes like safety, aesthetics, energy and carbon savings (greenness), and possible light pollution impact on wildlife or night sky.
5. **Land use:** Public expectations and lighting needs can vary depending on the type of urban environment. For example, stakeholders may be more sensitive to changes to streetlights in residential areas (e.g. may react negatively to light trespass affecting sleep, or appreciate the improved visual acuity in areas where children play). In commercial and industrial areas, business owners may be more concerned about streetlights' impact on traffic flows, or ability of security cameras to capture reliable footage at night.
6. **Length of day:** The time of year that a demonstration is implemented can affect how much the public will notice and be exposed to new streetlights. If the public is being asked for feedback on various lighting options, winter may be an ideal season to implement a public demonstration, as there are more accessible hours of darkness in which the public can observe and give input on streetlights. If a city is simply looking to install streetlights with limited public impact, summer's longer days and later nightfall may be ideal time for the public which may be less likely to notice the change.

2.1 Light Quality Factors Influencing Public Acceptance

Improper design or deployment of LED streetlights may result in aesthetic and other light quality issues that can detract from positive results. The most common public concerns related to LED streetlights are:

1. **Glare and light trespass:** The increased efficacy and directionality of LEDs can intensify the glare and trespass from LED streetlights. While BUG ratings help with assessing and limiting problems, these issues are difficult to anticipate until streetlights are deployed in the field, because glare is not easily measured in photometric evaluations and, like trespass, can result from a myriad of system or fixture design flaws. Public feedback and other stakeholder input can be used to assess these qualitative characteristics to spot issues prior to full-scale deployment, and can even be used to help cities to select a fixture that minimizes these issues. Light trespass may be addressable with simple shielding on the fixture. Rebates should be secured prior to any modifications of the fixtures, as certain modifications prevent fixtures from qualifying for PG&E rebates.²
2. **Color temperature:** LED streetlights are often favored because they are whiter and improve color rendering. Public opinion tends to favor warmer color temperatures for LEDs (4100°K to 4500°K), while cooler temperatures (5500°K to 6000°K) are often seen as less welcoming.^{3,4} Light efficiency is greater

² City of Pittsburgh. 2011 LED Street Light Research Project
www.cmu.edu/rci/images/projects/led-updated-web-report.pdf

³ DOE. 2012. Demonstration Assessment of LED Roadway Lighting
http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/2012_gateway_cully.pdf

⁴ City of Seattle. 2009. LED Streetlight Application Assessment Project Pilot Study in Seattle, WA
<http://www.seattle.gov/light/streetlight/led/docs/SCL%20LED%20Consultant%20Report.pdf>

with the cooler temperatures but public opinion on color temperature should be considered prior to any major upgrades— particularly in more sensitive residential areas.⁵

3. Methods of Public Engagement

There are several options for agencies considering a public engagement element as part of an overall streetlight upgrade process. The ideal method of public engagement may differ from city to city, depending on goals, concerns and resources available. The most common approaches include:

3.1 Pilot and Demonstration Projects

Real installations present opportunities to gather feedback, test the latest products and bring visibility to an upgrade effort. Cities typically use discounted fixtures from manufacturers for demonstrations. The scale and structure of a demonstration project depend on the needs and objectives of the agency. Varieties include:

1. **Single installation:** One type of fixture is installed in a conspicuous location to provide a visual depiction for key stakeholders to compare to incumbent technology.
2. **Comparisons:** A variety of street lighting types are installed to enable comparison and facilitate selection of the most appropriate option. Comparisons could consider:
 - Varying street-lighting intensities, to identify preferred light levels
 - Technology types (e.g. LED v. induction), to determine which is favored
 - Comparable fixtures from multiple manufacturers, to enable rankings and facilitate selection for a larger purchase

It is important to note that public input will be subjective. The subjective input may be most helpful for some issues such as color temperature aesthetics or glare but less informative on matters such as visual acuity from improved color rendering or overall benefit. The subjective measures may inform where certain additional evaluation may be required such as photometric analysis or can complement such analysis.

3. **Full pilot:** Public demonstrations are often completed as part of a larger scale pilot program with objectives extending beyond public outreach, to include economic and photometric evaluation. Measurements taken in these pilots should include lighting levels as well as luminance and glare, which are strong determinants of use preference.

3.2 Other Methods

1. **Leveraging Existing Demonstrations:** While public demonstrations are helpful for cities that are considering a major streetlight project, they may not always be feasible or necessary. Many cities in the Bay Area have already upgraded HPS fixtures to LED. Through contacting other cities and organizing tours, cities can obtain feedback on streetlight deployments without having to install their own fixtures. San Francisco, Palo Alto, and Hayward are among the many cities that have conducted pilot projects in the past. While there are cost considerations when transporting community members to and from

⁵ City of Seattle. 2009. LED Streetlight Application Assessment Project Pilot Study in Seattle, WA <http://www.seattle.gov/light/streetlight/led/docs/SCL%20LED%20Consultant%20Report.pdf>

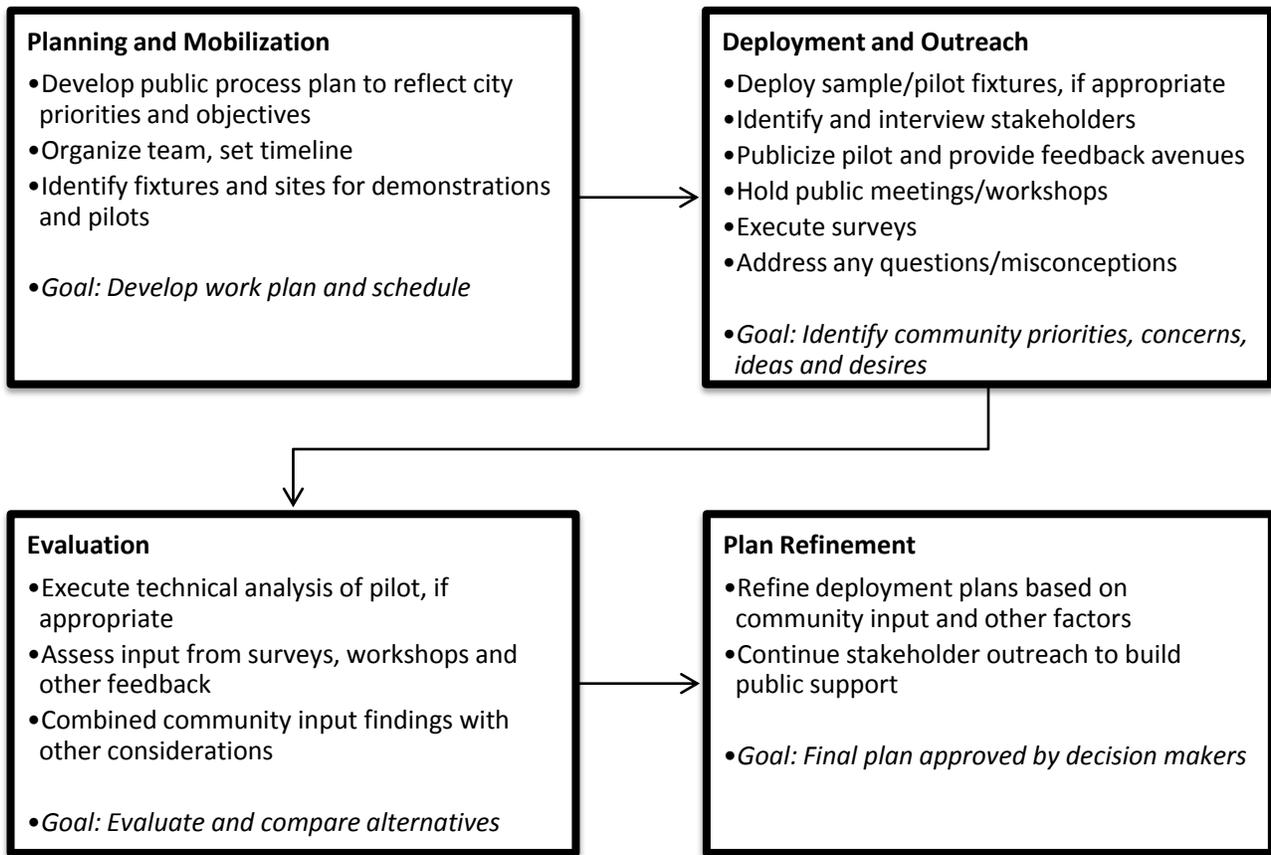
demonstrations, the expediency and low cost relative to deploying a full-scale pilot are a consideration.⁶

2. **Workshops and other engagements:** Public meetings workshops and other in-person meetings with key stakeholders may be done without a deployment of lights. Such meetings provide an opportunity for education, possibly with photographs of other deployments and even live sample lights, and enable stakeholder feedback.

4. The Public Engagement Process

The following diagram outlines a public engagement process. Note that publicity and stakeholder outreach is ubiquitous throughout the entire process.

4.1 Step by Step Process



4.2 Elements of successful public engagement

1. **Publicity:** To ensure the success of a public engagement process, components that require public involvement must be effectively publicized. Successful publicity may include: Press releases (sent to

⁷ Faga, Barbara. 2006. Designing public consensus: the civic theater of community participation for architects, landscape architects, planners, and urban designers. Hoboken, N.J.: John Wiley.

web, television and print media), project websites, mailers, message boards. Before determining a publicity strategy, project managers should determine the key messages they are seeking to communicate (e.g. soliciting feedback, providing notice of changes, etc.)

2. **Government Accessibility:** Public engagement processes in which residents have access to governmental officials are superior for increasing public trust and confidence. This ideally involves face-to-face contact. At minimum, municipalities should provide contact info for the appropriate city staff and elected officials so questions, complaints and other feedback can be directed appropriately.⁸
3. **Post-installation responsive communications:** Accessibility to public officials is most effective when municipalities are responsive to stakeholders in the post-installation phase of a project. Addressing any questions, complaints or issues from residence in a responsive and timely manner helps to ensure the success of a streetlight deployment.
4. **Visual comparisons:** Photographs can be attached to web pages, which can provide the opportunity for public feedback through surveys, comment sections, or discussion boards. To depict differences in lighting conditions, nighttime photographs of a street illuminated by the existing lighting system can be compared next to a shot of the same street lit by LEDs⁹.
5. **Survey design:** To ensure the value of survey-based feedback, cities should implement the following guidelines¹⁰:
 - As opinion-based research has little predictive value, surveys should seek respondent's assessment of the 'street scene' overall under various lighting conditions, not their opinions of the fixtures directly.
 - If asked to rank multiple fixtures, rankings should be based on semantics that describe important positive and negative feelings when on the streets at night.
 - Nothing should be shared with the public that may affect their perception of the light (e.g. information about bias for LED, about 'old vs. new' lighting, etc.)
 - When assessing survey data, it is important to remember that the pedestrian viewpoint is different from that of the driver or cyclist. Lighting for each of these public right-of-way users should be assessed individually.

Bay Area examples of Public Engagement Tactics

Surveys

- El Cerrito Pilot Survey: http://www.surveymonkey.com/s.aspx?sm=4Jw8NYCET4jv5Vc3BHVnHQ_3d_3d
- Novato Pilot Survey: <http://www.surveymonkey.com/s/R66KMS7>

⁸ Public Policy Center, University of Nebraska. 2010. Public Input for Municipal Policymaking: Engagement Methods and Their Impact on Trust and Confidence
<http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1009&context=publicpolicyfacpub>

⁹To allow for a true comparison of 'before' and 'after' photographs: Use spray paint or chalk to mark the precise location on the street where "before" photographs are captured. After LEDs are installed, take the "after" photographs from the same position.

¹⁰ City of Pittsburg. 2011 LED Street Light Research Project; www.cmu.edu/rci/images/projects/led-updated-web-report.pdf

Online News & Commentary

- Albany: <http://albany.patch.com/articles/share-your-thoughts-solano-avenue-streetlights>
- Livermore: <http://livermore.patch.com/articles/led>

Project Pages

- Menlo Park: <http://www.menlopark.org/projects/streetlights.htm>
- San Jose: <http://www.sanjoseca.gov/index.aspx?NID=1898>
- Oakland: <http://www2.oaklandnet.com/Government/o/PWA/o/IO/s/SL/index.htm>

Press Releases

- Menlo Park: http://service.govdelivery.com/docs/CAMENLO/CAMENLO_1/CAMENLO_1_20110120_en.pdf
- Novato: <http://www.cityofnovato.org/Modules/ShowDocument.aspx?documentid=6625>

Videos

- **Brisbane:** <http://www.ci.brisbane.ca.us/node/504>; <http://vimeo.com/16263693#>

5. Citations

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