

## PEDESTRIAN LIGHTING CITYWIDE PLAN









### Acknowledgements

#### Seattle Department of Transportation (SDOT)

Darby Watson - Project manager

Sara Zora - Lead planner

Chad Lynch - Data analysis and mapping

Ahmed Darrat - Engineering

Ron Borowski - Planner and research

Barbara Gray, Kevin O'Neill, and Tracy Krawczyk - Management oversight

#### Seattle City Light (SCL)

Streetlight Engineering Steve Crume Edward Smalley Vicki Marsten Emily Burns

2

## **Table of Contents**

Ι.	Introduction	4	
II.	Policy and Regulations	7	
III.	Planning & Design	15	
	a. Planning		
	b. Placement		
	c. Selection		
IV.	Funding	33	
V.	Conclusion	35	

## List of Maps

1	Pedestrian-scaled Street Lighting Inventory	16
2	Pedestrian Lighting High Priority Areas	18
3	Pedestrian Lighting Arterial Corridor Score	20

- 4 Pedestrian Lighting Intersection Score 22
- 5 Pedestrian Lighting Trail and Pathway Score 24

June 2012

City of Seattle - PEDESTRIAN LIGHTING CITYWIDE PLAN

## I. INTRODUCTION

Walking is the oldest and most efficient, affordable, and environmentally-friendly form of transportation—it's how transit riders eventually reach their destinations, how drivers get from the parking lot to the front door, and how cyclists get from the bike rack to the business.

And walking is about more than transportation. Walking helps to build strong communities and is the primary way that neighbors get to know one another. Walking is also great exercise and an easy way to improve your mental and physical health.

-Seattle Pedestrian Master Plan 2009

Lighting for pedestrians is an integral part of Seattle becoming the most walkable city in the nation. Pedestrian lighting has multiple purposes including:

- helping pedestrians to safely navigate sidewalks and pathways
- providing for visibility and security at all ٠ hours
- extending the hours that a business district is active
- encouraging walking as part of an active lifestyle
- improving access to transit and other services

This document provides a snapshot of the City's approach to pedestrian lighting within the right-of-way and puts in place a blueprint for outlining the needs and opportunities for pedestrian lighting citywide. This plan is a follow-up to help implement the Pedestrian Master Plan and is specific to pedestrian lighting located within the city-owned right-of-way. The plan also has implications for private lighting where noted.

The goals of this plan are two-fold:

- To provide a data-driven approach to placing pedestrian 1. lighting in the right-of-way for safety, security, economic development, active transportation, and access; and
- To improve how the City plans for, designs, and implements 2. pedestrian lighting.

Pedestrian lighting on 12th Ave E



For the purposes of this document, pedestrian lighting is defined as any lighting source that provides lighting for public pathways and gathering areas. This might include handrail lighting, bollards, wall mounted or pole mounted lights, display lighting and many other lighting design types, including overhead streetlights.

The City currently sets standards for light levels on arterial streets. These requirements are typically met through the use of high (25' or higher) overhead streetlights that place the light source over the roadway. This provides sufficient lighting for motorists and other users of the roadway to navigate and avoid obstacles, but is often insufficient for the specialized needs of pedestrians. The definition of pedestrian lighting is restricted to lighting sources that are, in addition to roadway lighting, specifically used to address pedestrian lighting needs. These are typically 20' or less (18' on non-arterials) from the surface to be lit.



From the Walking Preference Survey "With regard to pedestrian safety, unpleasant conditions, unpleasant people, and **LOW LIGHTING** were cited as issues that discourage people from walking, especially after dark. These issues were raised most frequently in the neighborhoods along Rainier Avenue and in the University District and Belltown/Downtown."



The City's approach to pedestrian lighting has been fragmented over the years. Pedestrian lighting does not fit neatly into a single department's work plan, nor has it been prioritized for planning and design at a citywide level. The primary departments invested in pedestrian lighting in the right-ofway are Seattle City Light (SCL) and Seattle Department of Transportation (SDOT). Recently, the Department of Parks and Recreation (Parks) has also played a role in lighting the public right-of-way as several Parks projects, such as Bell Street and 14th Ave NW, move forward. An objective of this plan is to foster better coordination and collaboration between departments and to provide a clear vision for the future of pedestrian lighting in Seattle. This plan will have a significant impact to funding for installation, operations, and maintenance. Recognizing that pedestrian lighting is a key element for the safety and security of pedestrians and is a principal tool to encourage walking as transportation, the operations and maintenance of pedestrian lighting should be fully funded through the City's General Fund.

This plan is an initial step in a citywide effort to support walkable neighborhoods. Implementation of the plan will require additional investment and attention to realize the full benefits of pedestrian lighting.

This plan is specific to pedestrian lighting located in city right-of-way (ROW) and on structures owned and operated by the city. Note that there is significant pedestrian lighting placed in city parks and will not be addressed in this plan.



Central Business District Lighting 1931 - Seattle Municipal Archives

## **II. POLICY & REGULATIONS**

The range of existing policies and regulations that apply to both street and pedestrian-scaled lighting is vast. There are many dynamics at play in the role of policy and pedestrian lighting not

least of which is the apparent conflict between the need to light the rightof-way to support safety and security and the need to conserve energy. Pedestrian lighting rarely displaces the need for street lighting, so from the perspective of conserving energy, pedestrian lighting is not an attractive option. The need for well lit public spaces, including streets, continues to develop as our city grows; areas become more dense and citizens look to the right-of-way and other public areas to provide for community functions. This plan provides recommendations that recognize the importance of multiple policy goals, and provides decisionmaking criteria that is responsive to the City's complex needs.

Many of the recommended policies are organized around departmental responsibilities and are integral to creating an environment where lighting decisions are based on good information and a clear delineation of roles.



Lights, trees, and transit on 3rd Avenue in downtown Seattle

#### **Roles and Responsibilities**

Many departments at the City play a role in pedestrian lighting. Key to planning, implementation, and maintenance are Seattle City Light (SCL) and Seattle Department of Transportation (SDOT). There is currently an interdepartmental memorandum of understanding between SCL and SDOT that defines roles and responsibilities when it comes to street lighting, including pedestrian-scaled lights. The City sets the light levels and quality requirements for safety within the public right-of-way. Partnership and collaboration is needed for street and pedestrian lighting systems to be efficient and effective. June 2012

#### Definition

The City defines pedestrian lighting as any lighting source that provides lighting for public pathways and gathering areas. This document seeks to address pedestrian lighting that is installed in the City of Seattle public rights-of-way to specifically light sidewalks, pedestrian crossings, stairs, and trails. This is with the full understanding that other lights, like street lighting and lights on private property, provide lighting for pedestrian areas, often with an adequate lighting level.

Pedestrians move at a slower pace than vehicles, and can thus react in a more timely manner to navigate stationary obstacles. While motorists are most concerned with avoiding obstacles, pedestrians are more concerned with the ability to dicern details about surface materials and texture so that they can avoid uneven or slippery surfaces and to improve the ability to perceive threats to personal safety.

#### Pedestrian Lighting Requirements and Recommendations

Pedestrian-scaled lighting has been installed in city rights-of-way (ROW) through a variety of mechanisms. Due to the range of approaches to location and installation, pedestrian lighting is spread across the City and its neighborhoods in very different patterns.

The following is an overview of the most common processes used to install pedestrian lighting in the ROW:

- Neighborhood Plans and Urban Design Guidelines
- Street Design Concept Plans Implementation
- Capital Improvement Projects (CIP)
- Major Projects
- Street Improvement Permits (SIP)
- Streetlight Districts
- Pedestrian Lighting Program
- Local Improvement Districts (LID)

8

#### **Neighborhood Plans and Urban Design Guidelines**

Seattle does not have pedestrian lighting requirements citywide. Neighborhoods that have adopted plans and urban design guidelines often recommend pedestrian lighting when properties are redeveloped, but the recommendations are vague with regards to type and style of light or corridor-specific lighting needs. The City encourages the use of approved fixtures for ease of maintenance. The majority of the recommended policies are for Urban Centers and Villages or are associated with multi-family and commercial developments. The lighting recommendations that have the greatest specificity are most likely to be implemented. It is key that private developers know the expectations of the community beforehand and the more specific these recommendations are, the stronger the possibility of a positive outcome. These lighting recommendations are part of the Design Review Process through the Department of Planning and Development (DPD) and the Street Improvement Permit (SIP) process through SDOT.

#### **Recommendations:**

a. Utilize Pedestrian Lighting High Priority Areas (see map 2) to prioritize and include pedestrian lighting and approved fixtures when neighborhood plans and guidelines are updated.

b. Provide training and materials to the Design Review Boards and applicants on the importance of including pedestrian lighting.

#### **Street Design Concept Plans**

Street Design Concept Plans are conceptual designs for specific streets that are amended by joint DPD/SDOT Director's Rule to the Right-of-Way Improvement Manual (ROWIM). These concepts provide guidance to project proponents for streetscape elements including trees, landscaping, furniture, surface materials, and pedestrian lighting. The plans are based on recommendations that have been endorsed by both the community and SDOT, and though they are voluntary, they are generally complied with because of the assurance of conceptual approval and community acceptance.



9

However, using design recommendations as a process for installing pedestrian lighting has several drawbacks. Because pedestrian lighting is only installed as properties redevelop, gaps can be left in the area or corridor for years before every frontage is redeveloped. This does not provide for good distribution and, over time, can lead to problems with maintaining consistent design when a fixture is discontinued or maintenance when different fixtures are installed along the same corridor. The best locations for implementation through concept plans are where high levels of redevelopment are anticipated such as South Lake Union or the Denny Triangle.

#### **Recommendation:**

c. Provide guidance in the ROWIM to include pedestrian lighting when appropriate in Street Design Concept Plans using approved fixtures.

#### **Capital Improvement Projects (CIP)**

The City creates an extensive list of potential CIP projects each year. These projects are then judged based on a set of predetermined criteria that include safety, livability, mobility, feasibility, and maintenance. Some of these projects include pedestrian lighting, but due to the lack of prioritization or an understanding of need, pedestrian lighting is not a consideration within the criteria, nor is it generally included at the out-set of

the project description. Because pedestrian lighting can be a costly item, adding it in after initial cost estimates is not a practical approach.

#### **Recommendations:**

d. Include pedestrian lighting needs in CIP evaluation criteria.

e. Analyze the need for pedestrian lighting for all CIP candidates and include in initial project descriptions and budgets.

#### **Major Projects**

Major Projects are large, multi-agency, multi-year projects that require dedicated staffing within the City. Because these projects typically develop significant corridors (arterials) they often include pedestrian lighting. These projects should be clear about asset management, including ownership and maintenance.



I-5 overpass near Capitol Hill

10

#### **Recommendations:**

f. The Pedestrian Lighting program should provide support to Major Projects especially with regard to fixture selection.

g. Actively pursue local and grant funding for pedestrian lighting at the conceptual design phase of a major project.

#### **Streetlight Districts**

Streetlight Districts are geographical areas established by a community in partnership with SCL that identifies specific lighting fixtures for that area. These are formed by a community, neighborhood group, business group, or association often with the assistance of the Department of Neighborhoods. The community group works with the city to define a district and select a specific fixture and make decisions about locations within the right-of-way.



Port-side Trail, Seattle waterfront

These areas are sometimes created along with the under-grounding of power lines.

Streetlight Districts are a preferred method for installing pedestrian lighting. The lights are typically installed as part of the same project, so there is consistency in style and ease of maintenance. Though the up front costs can sometimes be higher, due to initial investment, the long-term financial savings in maintenance and overall consistency is significant.

Streetlight Districts are also one of the most common ways that pedestrian-scaled lights are installed. This program could benefit from additional marketing and public information as well as a check-back with existing lighting districts to see if it may be appropriate to expand boundaries or make changes to fixtures such as up-grading to more efficient technologies, though the city does not have funding to move forward with these efforts at this time.

#### **SCL Horizon Plan**

SCL has created a Ten-Year Streetlight Horizon Plan in order to develop a long-term road map to increase reliability of the aging street light system, that in many areas has reached the end of its design life. By investing in new capital improvements for the replacement of existing failing street light systems, the city will increase systems reliability, maintainability, and improve service for the citizens of Seattle. SCL is mapping the Streetlight Districts as part of the Horizon Plan and has evaluated the systems for needed replacements. 11

#### **Recommendations:**

h. Integrate the SCL Streetlight Horizon Plan into planning for capital improvement projects and major projects

i. Provide City departments and neighborhoods with the Pedestrian Lighting High Priority Areas (see map 2) to help shape pedestrian lighting locations

j. Provide additional information including a Client Assistance Memo to provide guidance on participation in streetlight districts

*k. Limit fixture selections to the city approved fixtures* 



LED Streetlights on 10th Ave E

#### **Pedestrian Lighting Program**

Seattle Department of Transportation's Pedestrian Lighting Program provides funding for specific projects selected by SDOT's Lighting Program. This program has been funded to only support one or two projects per year. This program currently operates using criteria to prioritize projects and opportunities to leverage funds. While the efficient use of funds is important, the lack of information to guide the geographical focus of pedestrian lighting diminishes the citywide effectiveness of the projects.

#### Recommendation:

*I.* Use the Pedestrian Lighting High Priority Areas (see map 2) to guide investment in the pedestrian lighting program.

#### Setting Light Levels in the Right-of-Way

The City sets the approved lighting levels for all new construction in the city's right-of-way. Currently, light level guidelines are limited to the vehicular travel lanes as it is assumed that if the street is lit to a specific level, then the distribution of the existing standard luminaires will light the adjacent sidewalks to an appropriate level. This is standard industry practice. Street lights are typically designed to provide the needed foot candles at street level with the fewest number of fixtures. This often

12

results in fewer fixtures with brighter light sources placed at higher elevations from the street. Though this may be a

lower initial cost approach it results in a lack of uniformity over the sidewalk (brighter pools of light while other areas may be under lit) and high energy costs in order to light larger areas from a greater height. This approach is problematic in that is does not take into account the gaps between lights, and dark areas created where healthy tree canopy blocks lights that are located too high to light the sidewalks given the trees or other obstacles. These standard approaches to setting light levels need to be evaluated with regard to new technologies that necessitate different requirements.

Arterial lighting levels are currently above the guidelines provided by the Illuminating Engineering Society (IES). Pedestrian-scaled lighting level criteria needs to be developed to address pedestrian and non-motorized specific lighting needs (such as greater measures of uniformity) especially in transit zones. The ROWIM and IES currently recommend 2.0 foot candle (average) for pedestrian walkways not adjacent to a street but do not include a uniformity ratio.

Lighting levels may also need to be adjusted to reflect new technologies such as Light Emitting Diodes (LED)

that offer a better color rendition than High Pressure Sodium (HPS) but can have greater glare impacts and create more focused light.

In addition, light trespass from private properties is not considered in calculating right of way lighting levels as these sources are not under the City's control. There is no current way to ensure that these private lights are consistently lit. Unfortunately, this can sometimes result in over-lit spaces and wasted resources that could be better spent elsewhere.

#### **Recommendations:**

Propose recommended quantitative lighting levels т. and uniformity ratios for walkways and sidewalks to be included in the ROWIM based on the Pedestrian Lighting High Priority Areas (see Map 2).

Continue to evaluate new light levels as LED and other n. new technology is introduced and create flexible guidelines are a relatively old technology (1970s) that has advanced from use in numeric displays and indicator lights to a range of new and potential new applications, including exit signs, accent lights, task lights, traffic lights (signals), signage, cove lighting, wall sconces, outdoor lighting and downlighting. -Lighting Design Lab, "Introduction to LED's"





Globe lights on Pine Street at Westlake

13

that are adaptable to new products.

О. Develop criteria that allows the inclusion of privately owned lighting to calculate effective sidewalk light levels to reduce over-lighting.

Engage with private property owners to emphasize the р. importance of maintaining privately owned building, canopy and pedestrian lights.

Work with DPD to solve policy conflicts between public q. and private lighting goals.

r. Develop lighting levels and uniformity ratios specific to transit stops to be included in the ROWIM.

Include tree canopy goals as a factor in prioritizing s. pedestrian lights.

## decreased visibility at night, and energy waste. -International Dark Sky Association

Light Pollution: any adverse

effect of artificial light including sky glow, glare,

*light trespass, light clutter,* 

#### **Night-Sky Light Pollution**

Light pollution is a significant urban problem influencing many elements -from astronomy to wildlife- and one that Seattle does not specifically address through codes or ordinance. Though there are existing requirements for flat lens luminaires and other minor adjustments that can limit light pollution, there is not a requirement for significant elements such as full cutoff fixtures, or quantitative restrictions on light trespass on adjacent properties. Restrictions Light Pollution - Joe Mabel may also be placed on lumens that are above 90

degrees as a percentage of total lumens that can limit overall light levels. Currently, the City is reviewing requirements for cutoff fixtures as well as implementing quantitative restrictions on light trespass onto private property.

Night sky light pollution is significant in the Puget Sound region and as the largest municipality, Seattle should be the leader in working to increase efficiency and reduce light pollution.

#### Recommendation:

Review and evaluate all existing design standards and t. specifications to require night-sky-friendly fixtures.

u. Require quantitative limits on light trespass and other aspects of lighting to reduce light pollution while maintaining adequate light levels for safety and security.



2012 June

## III. PLANNING & DESIGN

## v. Restrict the use of uplighting, non-cutoff fixtures or any lighting that does not support night-sky principles.

Design and planning for pedestrian lighting falls into three main categories:

- A. Planning where pedestrian fixtures should go across the city
- B. Placement in the right-of-way in relationship to other elements
- C. Selection of appropriate lights (fixtures)

These three elements comprise the physical implementation of pedestrian lighting.

### A. Planning

Though pedestrian lighting is recommended through the Right-of-Way Improvements Manual (ROWIM), its application in the past has been based more readily on available funding as well as neighborhood and department interest than on the needs of pedestrians. For Regional, Commercial, and Local Connectors; the ROWIM recommends pedestrian lighting.

"Prioritize at pedestrian crossing locations, in transit zones, where there are concerns about personal security, and where adjacent land uses support pedestrian activity"

For Main Streets and Green Streets (both downtown and neighborhood types):

"Pedestrian scaled lighting lights the sidewalk and provides a consistent vertical design element to the streetscape. Prioritize at pedestrian crossing locations, in transit zones, where there are concerns about personal security, and in where adjacent land uses support pedestrian activity".

Pedestrian Lighting has traditionally been limited to neighborhood business districts. Where there are large scale installations of pedestrian lights in residential areas, they were typically funded through property owner contributions as part of under-grounding over-head utilities. With the adoption of the Pedestrian Master Plan (PMP) in 2010, the PMP High Priority Map provides the basis for the creation of a prioritized map for future investment in pedestrian lighting. By locating lighting where pedestrians need it most, the investment can leverage pedestrian access to transit, retail and services, schools, and other high demand pedestrian locations.

For more information on the PMP, please use this link: http://www. seattle.gov/transportation/pedestrian\_masterplan/

15



This plan provides prioritization criteria that will guide investment in pedestrian lighting where it will be most effective.

This plan has used a modified data set to determine the High Priority Areas in the Pedestrian Master Plan (PMP). The PMP set of data falls into three categories:

- 1. Pedestrian demand: based on land use as a generator or attractor for pedestrian use
- Socioeconomic analysis: using a variety of social and economic data to prioritize traditionally under-served populations and meet the intent of the City's race and social justice initiative
- 3. Street-type analysis: a characterization of each street segment based on how the City plans to utilize the street network.

Pedestrian lighting is different from other pedestrian improvements in that it is most effective during the night and evening hours and there is a strong correlation between appropriate lighting and crime deterrence. The best lighting for crime deterrence is lighting that allows others to see a crime taking place

and thus report it. Pedestrian lighting helps deter crime in two ways; by efficiently lighting areas that are visible to the public and encouraging more pedestrians who can see a crime and report it accurately.

The Seattle Police Department (SPD) has recently partnered with George Mason University to analyze and map crime data over many years. The analysis showed that 50% of Seattle's crime occurred on 4-5% of the city's block faces, these are called "hotspots". SPD developed "hotspot" data for SDOT that focuses on crimes that might be influenced by pedestrian lighting. This data was included as an additional factor in developing the map of high priority areas for pedestrian lighting.



17



The final step in creating the gap analysis was to overlay the street network that does not include pedestrian lighting and see where those gaps correspond to the high priority areas. The gap analysis showed multiple street segments in high priority areas that lacked pedestrian lighting. This is the starting point for prioritizing pedestrian lighting installation.

Pedestrian lighting is costly to develop as small projects. Typically it requires under grounding of electrical service. This represents a significant investment which in turn prioritizes larger projects that install lighting for a corridor as opposed to spot locations.

19



20

The first step towards project development is to prioritize a set of corridors identified through the gap analysis. The top ten corridors identified through the gap analysis are:

Street	From	То
5TH AVE	Stewart St	Vine St
STEWART ST	1st Ave	John St
WALL ST	5th Ave	Denny Way
COLUMBIA ST	2nd Ave	4th Ave
3RD AVE	James St	University St
7TH AVE	Olive Way	Denny Way
DENNY WAY	Taylor Ave N	Fairview Ave
AURORA AVE N	Denny Way	Prospect St
6TH AVE	Denny Way	Olive Way
MARION ST	2nd Ave	4th Ave
6TH AVE S	Charles St	Lander
AIRPORT WAY S	Charles St	Lander
SENECA ST	2nd Ave	Union St

Note that all identified locations need to be reviewed and analyzed in the field to verify the neccessity of pedestrian lighting.



21



Even though spot improvements may be a less efficient use of funds, it is critical that problem locations identified in the gap analysis be included. Spot improvements specific to intersection locations were analyzed for this purpose due to their intrinsic relationship to pedestrian safety.

The top ten intersections identified in the gap analysis are:

#### Intersection

2ND AVE AND PIKE ST 4TH AVE AND PINE ST 3RD AVE AND LENORA ST RAINIER AVE S AND S CLOVERDALE ST 3RD AVE AND COLUMBIA ST 2ND AVE AND STEWART ST 2ND AVE AND STEWART ST 1ST AVE AND STEWART ST 48TH AVE S AND S HENDERSON ST AURORA AVE N AND BATTERY ST TUNNEL NB 4TH AVE AND OLIVE WAY 4TH AVE AND PIKE ST 4TH AVE AND JAMES ST 3RD AVE AND STEWART ST

Note that all identified locations need to be reviewed and analyzed in the field to verify the neccessity of pedestrian lighting.



23



The third type of pedestrian lighting that was selected out of the gap analysis concentrates on stairways and pathways not adjacent to a roadway. These locations are important connectors and there is a significant opportunity to leverage funds allocated to rebuild stairways (typically 4-6 per year).

The top ten trail and pathways are:

Pathway	From	То
WESTLAKE AVE	Pine St	4th Ave
JEFFERSON ST	3rd Ave	Yesler Way
POST AL	Virginia St	Stewart St
2ND AVE S	Yesler Way	2nd Ave Extension
JEFFERSON ST	3rd Ave	4th Ave
POST AL	Stewart St	Pine St
CEDAR ST	5th Ave	Cedar St
S WILDWOOD LN	Rainier Ave S	Seward Park Ave S
WESTLAKE AVE	Stewart St	Olive Way
52ND AVE S	S Henderson St	52nd Ave S

Note that all identified locations need to be reviewed and analyzed in the field to verify the neccessity of pedestrian lighting.

#### **Recommendations:**

a. Complete conceptual design for the top ten pedestrian lighting projects for each category and develop preliminary cost estimates for each project.

b. Evaluate the top ten pedestrian lighting projects for inclusion in the Capital Improvements Program.

25

#### B. Placement

Locating pedestrian lighting within the right-of-way needs to accommodate the 6' by 8' clear zone for pedestrians as determined by the Pedestrian Master Plan. The preferred location is within the landscape/furniture zone with careful attention to tree canopy, tree growth and root protection. As with all vertical elements in the ROW, pedestrian light poles need to be set back from the face of the curb by a minimum of three feet and set away from driveways and intersections. Most arterials in the City are lit using overhead street lights, pedestrian lights should be located in between street lights in order to provide better uniformity in concert with the street lights. In some locations pedestrian lights have been attached to existing street light poles. This practice is often inefficient in terms of the distribution of light and should not be encouraged.

The design and placement of pedestrian lighting should consider how the lighting will be affected by existing trees. Where a new street improvement project is planned, SDOT Urban Forestry department staff and those designing pedestrian lighting should work together during the design phase to ensure that

the planned trees and lighting are compatible in terms of spacing and the future branch development of the species in order to minimize future conflicts and ensure that the twin goals of improved pedestrian lighting and maximizing tree canopy are met.



26

The issue of trees must be addressed and can pose particular challenges to efficient and effective pedestrian lighting systems. In a best-case scenario, both street trees and pedestrian lighting would be installed simultaneously and could be coordinated to support the urban design features of both by providing enough room for trees to grow and spread and locate lighting fixtures to provide uniform lighting through all stages of canopy growth. In most cases, pedestrian scaled lighting will be added where street trees already exist.

There are existing guidelines for the placement of pedestrian lighting in relationship to transit stops created by King County Metro that allow for safe boarding and alighting.

#### **Recommendation:**

c. Provide specific pedestrian lighting location guidelines in the ROWIM including guidelines for stairways and pathways.



27

#### C. Selection

#### **Selecting Lighting Fixtures**

The type and style of lighting fixture has an important role in providing appropriate and efficient lighting for pedestrians. Lighting selection also has a significant influence on the distinction of a neighborhood or corridor and as an urban design element that can contribute to the walkability and livability of the street. The City currently provides five pedestrian-scaled lighting options in the ROWIM, section 4.16.2. These fixtures do not currently reflect the needs of the City for efficiency or the neighborhoods' need for appropriate design. The City is working to offer replacement fixtures that meet both the needs of efficient lighting and modern design. In addition, criteria for new lighting fixtures should include:

- Ability to direct light efficiently
- Reduction of light trespass and glare
- Compatibility with chosen City technologies
- Ability to be easily and efficiently maintained
- Adaptability to new technology such as dimming control and LED's
- Available from an established vendor with a history of supporting and maintaining fixture designs
- Compatibility with neighborhood design needs both historic and modern



Pedestrian lights on 12th Ave E

· Ability to be seamlessly retrofitted into the existing system

June 2012

#### **Specialized Fixtures**

There are specialized fixture types that are not currently approved for citywide installation; however, they fit a specialized need for lighting the right-of-way. These include:

#### **Bollards**

Bollards are used when light is needed at a lower level due to obstructions, tree canopies or near residential buildings where a pole-mounted light would be obtrusive. Lighted bollards are also useful when there is a need to restrict vehicle

movements and access or to delineate walkways in a curb less environment.

#### Wall-mounted

Lights mounted to walls are particularly useful in and around structures such as bridge over- and under-passes. They are also used in conjunction with retaining walls and other structures as a costeffective alternative to pole-mounted lights.

Bollard-style lights on Louisa walkway



#### In-ground/on-ground

In-ground and on-ground lights are used

for up-lighting architectural and landscape features, designating edges of pathways or other elements, and for decorative effect. These types of lights are typically the least supportive of night-sky principles and should be used sparingly.

#### Handrail

Handrail lighting is а relatively new technology that provides a lighted strip integral to the underside of a handrail. These are





29

particularly effective on bridges and other structures to provide an alternative to pole mounted lights that can add weight and are more intrusive due to their mounting height.

When these specialized needs are identified, the City chooses a fixture that can be maintained and is supportive of the city's goals of increased efficiency. There are several fixtures that are in a pilot phase which allows the City a definite amount of time to determine if the fixture can be supported. Though this pilot process is not currently codified, it seems to be working well enough until a process is better defined. As new fixtures are added and approved, the City will have the opportunity to use them for special needs.

#### **Historic Fixtures**

The City supports and maintains a wide range of historic and historic-looking fixtures. These particular fixtures are important elements of the character and experience of Seattle's historic districts and neighborhoods. Unfortunately, these fixtures tend to be difficult to maintain, inefficient, expensive, and the least night-sky friendly.

To address these issues, the City will need to undertake the task of consolidating and raising the efficiency of these fixtures while still maintaining the historic look and feel that these lights provide. Sometimes this may be as easy as sunsetting an existing fixture and when it gets replaced using an identical fixture exterior that accommodates better optics inside. Or it may be as simple as reducing the number of globe sizes from three (12", 18" and 20") to two.

#### **Recommendation:**

d. Work closely with historic boards and communities to consolidate historic fixtures and provide alternative selections that meet both community and City goals.



June 2012

#### **Transit Zone Lighting**

King County Metro (Metro), the primary transit provider in the city, uses pedestrian-scaled lighting specific to transit stops. Lighting is installed when transit boardings and alightings reach a certain threshold and light levels warrant additional lighting. Metro coordinates with the City when selecting fixtures so that the City can maintain them after installation. Metro recently updated their fixture selection.

The pedestrian lighting prioritization criteria addresses proximity to transit stops as a component of the street function data. This information will help add lighting to streets that are common walking routes to transit stops. The high priority information should be shared with Metro so that they can use it to help prioritize lighting at transit stops along with their existing transit usage information.

#### **Recommendation:**

e. In coordination with Metro, develop a set of guidelines for light levels and uniformity ratios specific to transit stops.



#### **Trail Lighting**

Multi-use trails are separated trails located throughout the city that provide pedestrian and bicycle connections. These trails are often regional in nature and are used for both daily trips and recreation. Some trail extensions have included pedestrian lighting, including the new Portside trail, while others have opted for street lighting like the Mountains to Sound extension. The lighting decisions are often made within the project and respond to various needs including the anticipated pedestrian and bicycle volumes and available funding. Multi-use trail systems are an important element of both the pedestrian and bicycle networks. While this plan can identify the portions of trail systems that are within high priority areas, it is important to do additional analysis throughout the trail corridor to identify other key issues and opportunities.

#### Recommendation

f. Provide additional data analysis including pedestrian and bicycle volumes and corridor continuity as part of an update to the Bicycle Master Plan.

31

#### **Lighting Fixture Catalogue**

As part of the strategy, the City is working on reducing the overall number of fixtures currently in the Lighting Catalogue (the number of fixtures operated and maintained by the City) by consolidating similar fixtures and replacing multiple fixtures with fewer new efficient versions. With these reductions, it is anticipated that additional classes of fixtures that are needed for unique situations may be added including pedestrian-scaled fixtures.

#### **Recommendations:**

g. Continue the partnership between SCL and SDOT to move forward with a reduction in fixtures in the SCL catalogue and provide new efficient replacement fixtures for pedestrian lighting including specialized fixtures. Seattle Design Commission should be involved in the final aesthetic selection of fixtures.



## **IV. FUNDING**

#### Maintenance

Maintenance is a key factor in the safe and continuous operation of pedestrian lighting.

Most, but not all, lighting in the ROW is maintained by SCL. It is important to understand the implications of maintenance when selecting and locating fixtures. An accurate rate for maintenance to the General Fund will need to be calculated for each new fixture type. Furthermore, additional capital funding for pedestrianscale lighting would, most likely, be accompanied by a slight increase in maintenance costs due to higher fixture costs. SDOT is often responsible for installing pedestrian lighting, particularly on bridges, stairwells, and pathways not adjacent to roadways. SDOT typically maintains pedestrian lighting located on bridges, these are powered and metered along with the operable portion of the bridge.

#### **Recommendation:**

# h. Maintenance-related criteria should be included in both site and fixture selection.

Funding is a key element of the development of pedestrian lighting. Currently there are a few ways that the city funds pedestrian lighting:

- Pedestrian Lighting Program
- CIP and Major Projects
- Neighborhood Street Fund

Most of these programs are described in the Planning & Design section of this document. This section will focus on the funding issues associated with each program.

#### **Pedestrian Lighting Program**

This SDOT program is the only City funding specifically designated for pedestrian lighting. Historically, the program has been funded at \$100,000 per year with some additional discretionary funds allocated in the past few years. This allows a maximum of 2-3 pedestrian lighting projects per year. Most of these projects are small given the total number of lights that can be installed and are often prioritized based on the ability to leverage these funds with other projects. The typical project installs 10-15 pole-mounted lights but can vary wildly based on the existing infrastructure 33

needs and obstacles. As the sole source of funding entirely dedicated to pedestrian lighting in the City, it would take 10-15 years to install the top tier corridors, intersections, and stairways identified through the gap analysis. Though this plan will assist with the prioritization of the existing funding in the pedestrian lighting program, until more funding is available, it will continue to be focused on leveraging other projects and may not reach the projects with the highest need.

#### **Recommendations:**

*i.* Develop project estimates for the top ten corridors, intersections, and stairway/pathways selected through the gap analysis.

#### **Capital Improvement Projects and Major Projects**

Capital Improvement Projects (CIP) are funded through several sources including bonds, federal, state and local grants, state and regional partnership agreements, Bridging the Gap property tax levy, real estate excise taxes, street vacations, gas tax, and an annual allocation from the city's General Fund. Some specific projects are a good match for pedestrian lighting including bridge structures, stairway rehabilitation, transit priority corridor improvements, and new sidewalks. Other programs including the Arterial Asphalt and Concrete Program (AAC) have opportunities only in some projects. The AAC program will often repave an arterial but only within the extent of the existing curbs with few opportunities to install pedestrian lighting.

All large projects, including AAC, are reviewed through the Complete Streets checklist which offers a prime opportunity for analysing priority for pedestrian lighting.

#### **Recommendations:**

*j.* Include the pedestrian lighting gap analysis in the Complete Streets checklist for implementation on larger projects.

*k.* Include pedestrian lighting in grant proposals based on the pedestrian lighting gap analysis.

34

#### **Neighborhood Street Fund**

The Neighborhood Street Fund is a program through SDOT and the Department of Neighborhoods (DoN) that creates a funding opportunity for neighborhoods to identify specific projects to be implemented. Several pedestrian lighting projects have been funded through the Neighborhood Street Fund including Columbia City and First Hill. These projects tend to be underfunded by the Neighborhood Street Fund and have often required additional funding from SDOT's pedestrian lighting program to meet the need. The Neighborhood Street Fund is not required to meet any criteria other than overall cost under \$200,000 and meet a transportation need. The funding is not linked to any of the modal plans or subarea plans and should remain a wholly community-focused fund.

#### **Recommendations:**

I. SDOT's pedestrian lighting program should assist with funding gaps on pedestrian lighting projects requested through the Neighborhood Street Fund that meet the needs outlined in the pedestrian lighting gap analysis.

## V. CONCLUSION

Pedestrian lighting is a critical element of making Seattle the most walkable city in the nation. This plan sets out clear steps that will move the city toward a more efficient and effective implementation of pedestrian lighting. Many of these steps are simple policy or process changes that once in place will have a significant impact on pedestrian lighting. Some of the steps are more difficult and will require diligence and collaboration over the long term to achieve the goals of this plan.

The City is now poised to provide the next step in making Seattle the most walkable city in the nation.

35