

# CIP White Paper

Seattle Department of Transportation

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## Section 1 - Overview

The Seattle Department of Transportation (SDOT) develops, maintains, and operates a transportation system that promotes the safe and efficient mobility of people and goods, and enhances the quality of life, environment, and economy of Seattle and the surrounding region. The transportation infrastructure is valued at over \$13 billion. Major system assets include: 1,540 lane-miles of arterial streets, 2,412 lane-miles of non-arterial streets, 135 bridges, 494 stairways, 587 retaining walls, 22 miles of seawalls, 1,060 signalized intersections, 47 miles of bike trails, more than 200 miles of on-street bicycle facilities, 35,000 street trees, 2,150 pay stations, 40 parking meters, and 26,200 curb ramps.

Transportation activities in the City of Seattle reflect its role as a mature major city. Roughly a quarter of the land area within city limits is dedicated to travel.

As a mature city, Seattle rarely creates new road transportation facilities. The City optimizes or redevelops existing facilities to make them safer, more efficient and supportive of diverse urban needs. The City also maintains or improves critical transportation infrastructure of regional, statewide and national significance in cooperation with external partners.

SDOT's capital budget includes four broad categories of investment. See Exhibit 1-1 for examples of projects/programs included in each category.

The four investment categories are defined as follows:

- *Large Capital Projects* are individual projects that stand out among the City's transportation needs because of their size or complexity, potential community impact, high cost, or coordination with outside partners.
- *Maintenance and Rehabilitation Programs* optimize existing facilities by keeping facilities and equipment in good condition and good operating order.
- *Neighborhood Programs* are similar to system improvements, but generally comprise smaller-scale projects identified through community input.
- *System Improvements Programs* fill in gaps or make extensions to networks that are identified through subarea or modal plans.

The 2013-2014 Proposed Budget and 2013-2018 Proposed CIP for SDOT include significant new investments in these areas, as described at the end of this paper. Additional details are provided in the 2013-2018 Proposed CIP and the 2013-2014 Proposed Budget.

Some funding uncertainties are not reflected in the TCIP. One example involves additional funding gaps not shown for projects that are in the TCIP but are currently on hold for lack of

funds (e.g., Magnolia Bridge replacement). Another example of uncertain funding availability includes grant awards. The long-term annual average grant funding revenue for SDOT is \$22 million; however the amount of grant funding awarded from year to year can have extreme fluctuations. Lastly, specific grant-eligibility requirements can cause a capital project to advance ahead of higher-priority projects in order to take advantage of available funding.

**Exhibit 1-1**

**TRANSPORTATION CAPITAL IMPROVEMENTS PROGRAM - EXAMPLE ACTIVITIES**

MAINTENANCE & REHABILITATION		NEIGHBORHOOD PROGRAMS	
Bridge Rehabilitation and Repair	TC366850	NSF / CRF Neighborhood Program	TC365770
Retaining Wall Repair and Restoration	TC365890	Freight Spot Improvement Program	TC365850
Sidewalk Safety Repair	TC365120	Neighborhood Traffic Control Program	TC323250
Arterial Asphalt & Concrete Program	TC365440	[Pioneer Sq] Hazard Mitigation Program	TC365480
Landslide Mitigation Program	TC365510	Center City Access Strategy Program	TC366600

LARGE CAPITAL PROJECTS		SYSTEM IMPROVEMENTS	
Linden Ave Complete Streets	TC366930	Pedestrian Master Plan Implementation	TC367150
Cheshiahud Lake Union Trail	TC367070	Bicycle Master Plan Implementation	TC366760
King Street Station Multimodal Hub	TC366810	Transit Corridor Projects	TC366860
Mercer Corridor	TC365500	Pay Stations	TC366350
Spokane St Viaduct	TC364800	Street Lighting Program	TC366900

**Section 2 - Summary of Upcoming Budget Issues and Challenges**

After several years of decline, the economy has begun to see signs of recovery. The City’s revenue forecast is improving, and there were no 2012 mid-year budget cuts as the City ended 2011 better than expected due to stronger revenue performance compared to plan.

Despite this good news, SDOT still faces another challenging budget process for 2013-2014. City revenues, while up, are not growing fast enough to pay for the rising cost of existing services and respond to emerging issues. The City’s General Fund is facing a \$32 million deficit each year for both 2013 and 2014, which will require further reductions citywide. Although this is lower than the original \$40 million deficit predicted last November, significant challenges remain.

Looking to the future, SDOT faces a large backlog of unfunded maintenance needs, as well as needed system improvements. Deferred maintenance leads to more costly repairs in the long run, and the City lags far behind industry standards for repair and replacement cycles in many functional areas. In addition, there are significant transportation improvements that need to be made to ensure the efficient flow of goods and services and to support diverse urban needs. In November 2011, a \$60 Vehicle License Fee (VLF) measure was placed on the ballot by the Seattle Transportation Benefit District to provide additional funding for major maintenance, transit, and bike and pedestrian facilities. This measure failed. No decision has been made on how to approach SDOT's growing maintenance backlog and needed transportation system improvements in light of this. Before the current Bridging the Gap levy program expires at the end of 2015, it will be imperative to have conversations about how to adequately address transportation to continue to support the needs of the Seattle community in the years to come.

Making the transportation system work for everyone is a complex job that that becomes even more of a challenge in times of financial hardship. Given a shrinking budget, SDOT has worked hard to adjust to lower revenues and focus on what is most vital to keep our streets safe, our infrastructure in good shape, enhance our community, and spend our resources wisely.

To this end, for the last few months SDOT has been engaged in an internal prioritization process that scored and ranked all operational and maintenance programs, with a heavier weight on Safety and Focusing on the Basics guiding our decisions for 2013-2014.

### **Section 3 - Thematic Priorities**

The role of the transportation system is to connect people, places and products. To accomplish this, the framework SDOT used to prioritize services and capital projects in SDOT's 2013-2014 Proposed Budget and Proposed 2013-2018 CIP is SDOT's Action Agenda that was released in March of this year. The Action Agenda lays out a clear set of transportation policies, actions, and measures of success guiding the Department over the next two years.

<http://www.seattle.gov/transportation/actionagenda.htm>

The Action Agenda is organized around five core principles:

1. **Keeping it Safe** - using engineering, education, enforcement and evaluation to improve safety for all, and reduce fatalities and injuries
2. **Focusing on the Basics** - maintaining, protecting, preserving and enhancing our capital assets
3. **Building Healthy Communities** - supporting sustainability, livability and equitable growth
4. **Supporting a Thriving Economy** - keeping people and goods moving, and creating great places that attract businesses
5. **Providing Great Service** - helping people access transportation services and information

Transportation projects are initiated through a number of methods including planning processes (modal, subarea, neighborhood planning), preservation, operations and safety needs assessment, regulatory requirements, elected official direction and, in some instances, from neighborhood input such as the Neighborhood Street Fund program.

Stakeholders have significant input in development of all SDOT plans through public involvement processes. Seattle’s Pedestrian, Bicycle and Freight Advisory Boards also provide input on project/program needs.

A number of factors can impact SDOT’s project and funding decisions. These can include regulatory requirements, state and federal law (such as the Americans with Disabilities Act) and construction seasons. Opportunities to leverage the City’s limited funding with grants or coordinated projects with other agencies can also affect SDOT’s decisions.

In every case SDOT strives to implement the City’s policy goals laid out in Seattle’s Comprehensive Plan and individual policy initiatives such as Complete Streets, the Race and Social Justice Initiative and the Environmental Management Initiative. SDOT’s Transportation Strategic Plan, modal plans and subarea plans provide an overall framework for implementing these goals.

## **Section 4: Project Selection Criteria**

While SDOT has characterized its CIP investments into four broad categories--**Large Capital Projects, Maintenance and Rehabilitation, Neighborhood Programs and System Improvements**--each program/project within these categories uses different criteria (based on the thematic priorities as tailored to specific program purposes) to rank and select projects as highlighted below.

### **LARGE CAPITAL PROJECTS**

Large Capital Projects stand out among the City’s transportation needs because of their size or complexity, potential community impact, high cost or coordination with outside partners.

Projects are first screened to meet three criteria prior to moving forward. They must be a stand-alone capital facility improvement. Each project must include a project scope / description with specific locations and extent. Lastly, the description/scope of work must also support a minimum estimated cost of over \$500,000.

Each project is then scored on eight quantitative criteria derived from the policy direction provided in Seattle’s Comprehensive Plan as reflected in SDOT’s Action Agenda themes described in Section 3 (total of 100 possible points):

- **Assess total collision rate:** calculate a normalized comparison of project area accidents frequency; more accidents equal a higher score (maximum 10 points)

- **Assess bicycle and pedestrian collisions:** calculate a normalized comparison of area roadway accidents specifically involving bicyclists or pedestrians; more accidents equal a higher score (maximum 10 points)
- **Improve infrastructure conditions:** assess the number and type of infrastructure assets in fair or poor condition and the number of assets addressed within the project limits; more identified assets equal a higher score (maximum 10 points)
- **Promote environmental stewardship:** identify whether a project reduces greenhouse gas emissions, improves water quality or reduces vehicle miles traveled; 0 or 5 points each (maximum 15 points)
- **Support community equity and health:** identify projects located within statistically significant concentrations of populations needing enhanced transportation access: low income, disabilities, obesity, diabetes, low car ownership; 0 or 2 points each (maximum 10 points)
- **Support priority corridors:** award points based on the project location’s rank among city’s planned modal corridors: bicycle, pedestrian, transit, freight and road; maximum of 3 points for each mode (maximum 15 points)
- **Advance complete streets implementation:** award points for how many, and how well, non-single occupancy vehicle modal improvements are incorporated into the project scope (maximum 15 points)
- **Support areas of future growth:** prioritize projects that support transportation needs in designated urban centers, manufacturing/industrial centers or villages (maximum 15 points)

The above criteria are intended to result in higher scores for projects that make improvements to the environments for walking, biking and riding transit. Projects that focus solely on improvements for automobile travel are not able to achieve maximum points in all categories. Once the projects have been quantitatively evaluated (**see Exhibit 4-1**), projects are additionally assessed for qualitative “balancing factors” that can influence each project’s ranking priority beyond the raw score (**see Exhibit 4-2**):

- **Leveraging opportunities:** identify opportunities to ameliorate traffic or community impacts using timing, weather conditions or similar activities with other projects
- **Other funding availability:** projects that require specific windows of partner participation (e.g., utilities, other agencies), are eligible for specific grant awards, or offer a significant cost savings opportunity
- **Community support:** projects that have the support of major / multiple constituencies, are identified as part of a neighborhood plan or feature private / public partnerships
- **Existing commitments:** projects subject to a signed agreement, memorandum of understanding or contract, special levy, elected official commitment, or that have completed prior phases and are “ready to go” for additional work

- **Geographic equity:** look for a fair distribution of investments, functional benefits / impacts and community access to transportation systems

The Revenue and Capital Development group of SDOT Policy and Planning Division compiles the projects and initial scores and ranking. The CIP Working Group, a committee of division directors and senior managers, reviews the scoring and subsequent ranking prior to Department Director approval.

## **MAINTENANCE & REHABILITATION**

### **Arterial Asphalt and Concrete Program (AAC)**

Arterial Asphalt and Concrete is Seattle's largest paving program. It is the primary means by which SDOT renews its 1,534 lane-miles of arterial street surfaces and systematically maintains its street network in a state of good repair. AAC paving projects also include construction of curb ramps at intersections (bringing street crossings into compliance with federal American Disabilities Act requirements), installation of stormwater detention and treatment systems as mandated by City code, and "Complete Streets" ordinance elements. A pavement management system is used to track street condition, estimate maintenance needs, and to establish priorities and select the streets to be rehabilitated each year.

The basic criteria SDOT uses to establish paving priorities are: street condition (specifically the current 2011 Pavement Condition Index Survey); cost and cost effectiveness of treatment (using life cycle costs to weigh preservation opportunities against full street reconstruction); traffic volume; transit, freight, bicycle and pedestrian use; citizen complaints and claims; grant funding opportunities; and geographic balance across the city. The AAC program aims to deliver over time the greatest area of improved street surface to the largest number and widest array of users.

As part of the Bridging the Gap (BTG) levy, a nine-year paving plan was developed. The plan is published online at <http://www.seattle.gov/transportation/paving.htm> (scroll to bottom of page) along with maps showing the location of planned work. The nine-year plan is updated annually to reflect changes in pavement conditions, construction costs and to take advantage of coordination opportunities.

Since BTG's inception in 2007, the AAC program has delivered 168.4 lane-miles of paving (36.05 in 2011, 33.3 in 2010, 28.7 in 2009, 41.5 in 2008, and 28.8 in 2007). AAC expects to average 20 to 25 lane-miles per year over the life of the BTG initiative.

### **Arterial Major Maintenance (AMM)**

Arterial Major Maintenance is SDOT's largest crew paving program. It is primarily an asphalt program, although concrete work is sometimes included. As with the Arterial Asphalt and Concrete Program, pavement management data (specifically the current 2011 Pavement Condition Index Survey) is used to track street conditions and plan work. In addition, the AMM program is also used to respond to emerging needs. It allows SDOT to quickly and cost effectively remedy developing pavement problems that are too large to be addressed with a pothole repair, yet are too small to be efficiently contracted. Funding for AMM in 2012 is

\$3.76 million and the program expects to pave approximately 7.5 lane-miles at 31 locations across the city. City crews budgeted against this work are also those who respond to emergency events.

**Non-Arterial Street Resurfacing (NAA) and Concrete Rehabilitation (NAC)**

Non-arterial Asphalt Street Resurfacing (NAA) and Non-arterial Concrete Rehabilitation (NAC) are SDOT's only non-arterial paving programs. Seattle has 2,412 lane-miles of non-arterial streets, the less traveled roadways that nevertheless are critical to residents and businesses. While the amount of paving accomplished is negligible in scale to the system, these two small programs address a few critical streets used by transit and industry or around hospitals and other locations with heavy pedestrian traffic crossing the street. In 2012, funding for NAA is \$105,000 and NAC is \$388,000. This will allow for about 0.5 to 1.0 lane-miles of spot paving on local streets. City crews budgeted against this work are also those who respond to emergency events.

**Bridge Rehabilitation and Replacement**

Currently, there is not a City annual program that funds Bridge Rehabilitation and Replacement. The Program's needs compete with other SDOT large capital projects for funding. The Federal Highway Administration (FHWA) does provide Bridge Rehabilitation and Replacement Program (BRRP) funding as part of the larger Transportation authorization bill. Seattle must compete, state-wide for the BRRP dollars which are managed through the State Local Agency Programs, Bridge Replacement Advisory Committee (BRAC).

SDOT performs bridge condition and safety inspections on all SDOT bridges in compliance with the National Bridge Inspection Standards (NBIS). The inspections collect detailed information about the condition of the bridge, which is used to calculate a sufficiency rating (SR). The rating is used to compare all bridges within the country as to their relative condition. In addition, the NBIS sets standards for determining if a bridge is structurally deficient (SD) or functionally obsolete (FO). Although, the NBIS is a good tool for comparing bridge condition between different cities, counties and states, it does not take into account local factors that may contribute to the prioritization of a bridge project. Therefore, SDOT combines the NBIS ratings with project rating criteria that include the following local factors:

- a. Ensure public safety
- b. Preserve public investment in City's bridges
- c. Generate economic benefits
- d. Ensure social Equity
- e. Support all transportation modes

Final numerical ratings are a result of combining the National numerical ratings with the local Project Rating Criteria. The result is a list of high priority projects that are then considered and matched with available local funding such as Bridging the Gap (BTG) or FHWA funding through BRAC. Although, this system assures that the highest priority bridges are apparent, funding does not always match the list. An example is the Magnolia Bridge, which rates as one of Seattle's top priority bridges for replacement; however, due to the very high cost to replace,

it does not fit well with the BTG program criteria nor does it fit well with the FHWA BRAC criteria, thus it continues to be an unfunded need.

The NBIS criteria were established by the FHWA over 20 years ago. Starting 10 years ago, SDOT combined the NBIS ratings with project rating criteria. These criteria have been updated over time to better align with the Pedestrian Master Plan, Bike Master Plan, the Transportation Strategic Plan, Walk, Bike Ride Initiative and the Race and Social Justice Initiative.

### ***Bridge Seismic Retrofit***

Currently, there is not a City annual program that funds Bridge Seismic Retrofitting. The City Council funded the Bridge Seismic Retrofit Phase 1 Program in 1993 and the Bridging- the-Gap Bridge Seismic Retrofit Phase 2 Program in 2007.

Criteria were developed in 1991 for phase I of the program. The criteria remained the same with the implementation of phase II in 2007; however the prioritization of bridges was different due to an emphasis in Traffic Importance (see Step 2 below).

The following description represents the prioritization process followed for the Phase 1 and Phase 2 programs. FHWA in conjunction with the American Association of State Highway and Transportation Officials (AASHTO) has developed guidelines used to prioritize bridges for seismic retrofitting. SDOT followed these guidelines as well as looked to CalTrans and WSDOT for leadership in developing prioritization criteria. The SDOT process follows the following steps.

**Step 1: Determine Seismic Vulnerability** – This process is a technical review of the bridge, considering factors that would make a particular bridge more or less likely to sustain significant damage during an earthquake. These factors include:

- Bridge age.
- Structure type. Considers ductility, redundancy, truss, fracture critical or multiple load paths.
- Structure material. Considers material properties subject to brittle failure.
- Design features with seismic vulnerabilities. Considers short bearing seat width, non-symmetrical lateral stiffness, load path discontinuities, significant changes in longitudinal stiffness.
- Timing and extent of previous seismic retrofits.
- Structure condition. Considers documented conditions that may cause weakness during a seismic event.
- Geotechnical hazards. Considers seismic settlement, liquefaction, lateral spreading and slope stability

**Step 2: Determine the Traffic Importance** – This process looks at both the importance of the transportation route that the bridge supports and the route that may pass under the bridge, should the bridge collapse. Emphasis is placed on understanding the transportation

“routes” and not simply the bridge on the route. It is understood that the value of a bridge, post earthquake, is the value it provides to the transportation corridor, and the ability to provide emergency services to neighborhoods. Criteria include:

- Emergency routes – proximity to police stations, fire stations, and hospitals
- Transit routes
- Freight routes
- Available detours
- School routes
- Average Daily traffic
- Impact to economy and social equity

Many of Seattle’s initiatives are embedded in the evaluation of the Traffic Importance criteria. Additionally, the criteria align with SDOT’s Disaster Readiness and Response Plan and the City’s Emergency Response Plan.

The two rating criteria are combined to develop groups of bridges within a relative priority. Thus, Group A, Group B, Group C, etc., with Group A having the highest combined Seismic Vulnerability and Traffic Importance.

Next, a Concept Design Report is prepared to provide enough engineering to validate the cost benefit of performing a seismic retrofit. An Expert Peer Review Panel consisting of subject experts from Caltrans, WSDOT, FHWA, and University of Washington, participate in reviewing the Concept Design Reports. This review provides an early, high level validation that the retrofit concept will provide the anticipated benefit. Some candidate projects may drop in the priority list based on this peer review analysis. An example is the Magnolia Bridge. Although, this bridge rated high in both seismic vulnerability and traffic Importance, the Concept Design Report determined that significant liquefaction risk existed throughout much of the bridge and resulted in a cost to retrofit in excess of funding.

Finally, projects are matched with the available funding.

### **Bridge Painting**

Painting of bridges plays an important part in the overall preservation of the city’s steel bridges. In our harsh northwest climate, with salt spray coming off Elliott Bay, Seattle’s steel bridges are uniquely vulnerable to corrosion-induced deterioration. There are 24 steel bridges in Seattle that are maintained by SDOT. There are additional bridges that have steel components, such as railing that require periodic painting as well.

SDOT follows the Federal Highway Administration (FHWA) guidelines for both the condition inspection of the coating and the frequency of re-coating steel bridges. Life cycle analysis is used to understand the most cost effective time period to re-coat. Currently, the coating cycle averages once every 18 years. Inspection of the coating condition occurs at least once every 24 months.

Life-cycle analysis for bridges exposed to our northwest environment recommends that re-coating occurs when 3% to 5% of the coating has failed. Coating failure follows an exponential curve. As the coating ages the failure rate increases rapidly. To delay re-coating steel bridges and components results in greater costs due to the significant increase in areas of failed coating, exposing structural steel elements to weakening due to corrosion-induced section loss.

The bridge painting program work plan is reviewed annually. Bridges that are programmed for re-coating within the next five years are analyzed for their percent of coating failure. The condition of bridge paint is assessed at least once in every 24 months. If the coating failure rate is greater than predicted or less than predicted the programmed re-coating date is adjusted. In the past, available funding also has affected the prioritization process.

The Bridge Painting prioritization process has been in place for the past 20 years. As the program is truly preservation/maintenance of existing steel bridges, bridges are prioritized based on life cycle analysis that minimizes the cost of painting. No specific City initiatives are included in the selection criteria.

### **Stairway Rehabilitation**

The annual Stairway Rehabilitation Program provides funding to rehabilitate existing stairways that have significant condition and safety defects. SDOT performs routine inspection on stairways and assesses their condition. Element level ratings are given to the different parts of a stairway. This information is used to develop a numerical condition rating.

From the list developed by the numerical ranking of condition, additional rating criteria, reflected below, are applied to rank projects for consideration in the annual work plan. In addition, geographical location is considered, to fairly spread annual rehabilitation projects throughout Seattle. Available funding is also considered, as one stairway may exceed available funds, and thus a decision may be made to delay the rehabilitation to the next year or schedule the work to span across two years.

#### **1. Safety**

- Differential settlement and tilting of landings or treads
- Non-standard railing, railing is low, no grip rail or no railing exist
- Condition of tread surface

#### **2. Function**

- Stair geometry in relation to current design standards
- Standard connections at both ends
- Benefits of an added bicycle feature

#### **3. Condition**

- Cracked or deteriorated treads
- Cracked or deteriorated riser
- Cracked or deteriorated stringer

- Damaged or weak railing
- Slope instability

#### **4. Use**

- Number of users
- Stair is on or connects a school route
- Stair is on or connects a transit route
- Length of detour route
- Neighborhood connectivity

#### **5. Neighborhood Plan**

- Part of the Neighborhood Plan
- Part of Pedestrian Master Plan
- Part of Bike Master Plan

The current criteria were developed in 2007 and are re-evaluated annually to support Neighborhood Plans, and better align with the Pedestrian and Bike Master Plans and the Transportation Strategic Plan.

#### **Hazard Mitigation - Areaways**

The Hazard Mitigation – Areaways Program is funded to inventory city areaways and repair inventoried areaways that present the most critical public safety concern. All areaways exist in the downtown urban center with a majority in Pioneer Square, International and Central Business districts. Many of these areaways were constructed in the late 1800s or early 1900s and more than 100 years old.

Known areaways are inspected for condition. Based on condition ratings of the various structural elements, the areaway is given a numerical condition rating. Areaways with the most severe defects are grouped together for consideration for repair.

There have been two strategies used to eliminate the public safety hazard posed by deteriorated areaways: 1) SDOT has filled the areaway eliminating the void space and thus the hazard; and 2) SDOT has restored the areaway, rebuilding the structural elements to a current standard. SDOT works closely with the Pioneer Square Preservation Board and other community groups to discuss the best way to preserve the historic nature of Seattle’s areaways.

Project cost greatly affects the project selection process. Costs to repair an areaway can range from \$200,000 to fill an areaway to over one million to rebuild one. The following criteria are used to select an areaway for fill or restoration.

1. Public Safety
2. Available funding / project costs

This prioritization process has been in place since 1999.

### **Retaining Wall Rehabilitation**

The Retaining Wall Rehabilitation Program funds relatively small emergency repairs of existing retaining walls managed by SDOT, including the Alaskan Way Seawall. With over 580 retaining walls with a value of over \$600 million, the funding level does not allow for a fully integrated asset management approach to retaining wall management. The current level of funding is less than 0.1% of the asset replacement value.

Retaining walls are targeted for inspection on a 7-year cycle. Based on established inspection guidelines that assess the retaining wall's structural sufficiency, the condition of the retaining walls is given a numeric value. Complete failure is rated at a value of 100 and excellent condition is rated at a value of zero. Conditions of the retaining wall that can affect the rating include: concrete cracks, steel corrosion, section loss, bulging, tilting, sliding, and erosion. Retaining walls fall into good, fair, poor categories based on condition. From the list of poor category retaining walls the following criteria are applied to select candidates for repair.

The criteria to replace or rehabilitate a retaining wall are:

- Public safety
- Condition rating
- Social equity (geographic location)
- Available funding

This prioritization process was established 15 years ago and was recently updated to include the Race and Social Justice Initiative.

### **Sidewalk Safety Repair Program (SSRP)**

The SSRP Program is funded by BTG through 2015 for repairing sidewalks, curb ramps, and curb. It does not design, construct, or install new sidewalks. City Code assigns the responsibility for sidewalk repair to the abutting property owner except where the city has contributed to or caused damage.

An initial list of candidate locations for sidewalk repair was created in 2006 from citizen requests, locations with claims history, staff or other agency identification. In addition to this list, data has been added from a 2008 Sidewalk Inventory, a 2009 Sidewalk Condition Assessment of Urban Villages, and the list of other Capitol Projects as part of a complete streets approach. Street Maintenance estimates there is a 1,000-year back log of repair with current BTG funding levels.

Prioritization criteria for preparing a working list for repairs separate from emergent issues was created in 2007 and revisited after the adoption of the Pedestrian Master Plan. The following documents and initiatives were used to guide ranking criteria:

- Bridging-the-Gap
- Pedestrian Master Plan
- Urban Forestry Management Plan

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- Transportation Strategic Plan
- Complete Streets
- Right-of-Way Improvement Manual
- Sustainable Communities Initiative

The SSRP Program tends to focus projects along the busier walking routes, typically adjacent to street trees, applying the following selection criteria:

1. Located on a sidewalk, pedestrian ramp, or curb adjacent to on street parking Adjacent to city-owned property (facilities, street trees planted and/or maintained by the city)
2. Adjacent to an arterial street
3. Within the boundaries of an urban village
4. Within three blocks of a community facility such as a school, park, library, clinic, hospital, transit stop, or senior housing.
5. Leveraging opportunities (add to other existing projects, cost share, support complete streets)
6. Safety concern or claim response
7. Geographic & social justice distribution
8. Identified as a departmental priority (Pedestrian Master Plan or otherwise determined)
9. Constructability & cost

There are so many high-level needs that final projects are often determined subjectively and the list of identified annual projects exists as a working document. The types of projects selected include:

1. Emergent Issues (“make-safe” shims to un-programmed repairs)
2. Implement the intent of the [2007 Complete Streets Ordinance](#).
3. Neighborhood priority identified for Neighborhood Street Funding
4. All Other Repairs

Exhibit 4.3 Sidewalk Safety Repair Project Locations

YEAR	LOCATION	
2012	E Madison St & 41st Ave E	NPF-SSRP
2012	35 <sup>th</sup> Ave SW & SW Alaska Street	
2012	1401 E Pine Street	
2012	NE 47 <sup>th</sup> Street & Roosevelt WY NE	
2012	900 Madison Street	
2012	1 <sup>st</sup> Avenue at Vine Street	

YEAR	LOCATION	
2012	3201 W McGraw Street	NPF-SSRP
2012	401 Lenora Street	
2012	520 Pike Street	
2012	3400 S Horton Street	NPF-SSRP
2012	N 85 <sup>th</sup> Street & Greenwood Ave N	AAC-SSRP
2012	7 <sup>th</sup> Ave S & S Lane Street	NPF-SSRP
2013	N Northgate WY	AAC-SSRP
2013	E Madison Street and 27 <sup>th</sup> Ave E	SSRP-Metro
2013	800 4 <sup>th</sup> Ave	
2013	Seattle Center Area Spot Repairs	
2013	2200 1 <sup>st</sup> Ave	
2013	2205 2 <sup>nd</sup> Ave	
2013	NPF – SSRP To Be Determined	
2013	Beacon Ave Spot Sidewalk Repairs	
2013	35 <sup>th</sup> Ave NE Spot Repairs	
2013	24 <sup>th</sup> Ave NW and NW 65 <sup>th</sup>	
2013	Yesler WY	
2014	9400 Delridge WY SW	AAC-SSRP
2015	23 <sup>rd</sup> Ave S Jackson- E Madison	AAC-SSRP

**Landslide Mitigation Program**

This program enables SDOT to address and repair landslide concerns that affect the right-of-way. It provides SDOT with staff and resources to identify and prioritize landslide concerns to undertake reconnaissance engineering and geotechnical studies of problem areas, and to make repairs at the highest priority locations, usually where landslide concerns have caused the roadway to be partially or completely closed.

According to recommendations outlined in the “Landslide Policies for Seattle” plan dated June 1, 1998, SDOT commissioned the preparation of the Risk Assessment for Slope Hazards, Phase 1 – Arterial Streets. The goal was to create a systematic process to select landslide mitigation projects to protect city streets within the public road right-of-way. The consultant interviewed City staff and then developed a matrix to prioritize the sites. Based on staff interviews, eight criteria were selected in the matrix:

1. Slope hazard condition
2. Traffic volume
3. SDOT street segment condition
4. Access
5. Adjacency to other public facilities

6. Slope modification history
7. Joint projects
8. Adjacency to private facilities.

Two values are assigned to each criterion for specific location. They are called Decision Factor Weight and Utility Value Score. The Decision Factor Weight is fixed for each criterion (e.g., Slope Hazard Condition carries a weight of 36 which is the largest, and Adjacent to Private Facilities is weighted 4.5 which is smallest). The Utility Value Score changes from one to seven with one (1) being the lowest and seven (7) the highest priority.

Because of the nature of a landslide which most of time falls into an emergency situation, it is very difficult to plan and select a mitigation project with limited annual budget while several landslides requires a response most every inclement weather season. This is why some of the completed landslide projects in the past ten years were not in our circa 2000 “Risk Assessment...” prioritized list. Examples include 41<sup>st</sup> Ave NE retaining wall, Lakeside Place NE retaining wall, Gilman Drive W retaining wall, 47<sup>th</sup> Ave SW retaining wall, 20<sup>th</sup> Ave E retaining wall, Ferry Ave SW retaining wall etc. Some of these projects were funded by the Federal Emergency Management Agency (FEMA) or FHWA stemming from a federal emergency declaration in which the City utilized Landslide Mitigation funds provided the local match to leverage federal funds, typically at 87.5% reimbursement rate or higher, to accomplish permanent slope stabilization objectives. Please refer to Exhibit 4-4 for a prioritized list of street segments that have been identified as high risk.

#### ***Other Maintenance Prioritization Decision Tools***

SDOT’s asset management (AM) efforts have focused on building a knowledge base for the transportation infrastructure to better inform decisions regarding maintenance approach, both for corrective or routine work and for major repair or replacement. This knowledge base includes inventory status and condition information for most (on replacement value) of the department’s \$13 billion infrastructure. In total, approximately 55% of the infrastructure is rated Good; and the balance, 45%, is either Fair or Poor, in roughly equal proportions.

Condition information is available to guide decision-makers in programming maintenance. For example, poor condition guardrail replacement has been programmed by the Traffic Management Division. Similarly, signal assemblies with components in poor condition have been identified and prioritized for maintenance as funding allows. Formal incorporation of risk and condition into the budget and capital program development process will occur as the department produces asset plans.

Condition information is included in the criteria to prioritize large capital projects as well. Projects that eliminate the risk presented by assets in poor or fair condition, either by rehabilitation or replacement are awarded up to ten points in the Large Capital Project prioritization matrix.

For more on SDOT’s AM efforts, see: <http://inweb/sdot/am/overview.htm>

## **NEIGHBORHOOD PROGRAMS**

### **Neighborhood Street Fund/Cumulative Reserve Subfund (NSF/CRS) Neighborhood Program**

This program specifically addresses transportation needs identified by the community. The projects selected tend to have high community involvement. The NSF/CRS Neighborhood Program has two complementary elements: Neighborhood Projects Funds (NPF) and Large Neighborhood Street Fund (NSF).

#### **Neighborhood Project Fund (NPF)**

This ongoing program specifically addresses transportation needs identified by the community. The projects selected tend to have high community involvement and cost less than \$100,000 to implement.

Projects are selected on an annual basis through a process that starts with an application early in the year. The projects are prioritized by each of the 13 Neighborhood District Councils. SDOT reviews the projects and provides suggestions concerning scope and budget and also seeks leveraging opportunities. Each individual Neighborhood District Council prioritizes the projects differently; SDOT is not involved in this selection/prioritization process. In the fall the projects are adopted in the CIP and constructed the following year.

Typical improvements may include projects, such as sidewalk repairs and replacement, curb bulb installation or other traffic calming devices, and improvements to marked crosswalks including ADA ramps. The program enhances the safety, quality and condition of the pedestrian, bicycle and neighborhood environments.

#### **Neighborhood Street Fund (NSF)**

Funded by the 2006 Bridging the Gap Levy, this funds projects estimated between \$100,000 and \$750,000 that are prioritized by the community at large and a citizen review committee. Once every three years, each of the 13 Neighborhood District Councils identifies their top three projects from the project applications. After SDOT reviews the projects and develops conceptual designs and cost estimates, the projects are forwarded to the Bridging the Gap Oversight Committee to recommend to the Mayor and City Council for funding.

Large NSF projects are ranked using the 2009 Pedestrian Master Plan criteria, including pedestrian demand, equity and corridor function. See the PMP methodology: [http://www.seattle.gov/transportation/pedestrian\\_masterplan/append.htm](http://www.seattle.gov/transportation/pedestrian_masterplan/append.htm).

The BTG Oversight committee also uses criteria that are based upon site visits and how much value the project would add to the community:

- Bang for the buck;
- Quality of life;
- Safety;
- Neighborhood District Council ranking
- Geographic mix.

Typical improvements may include projects, such as sidewalk construction, repairs and replacement, curb bulb installation or other traffic calming devices, and improvements to marked crosswalks. The program enhances the safety, quality and condition of the pedestrian and neighborhood environments.

**Neighborhood Traffic Control**

The Neighborhood Traffic Control Program (NTCP) is an ongoing program that installs traffic calming devices citywide on both arterial and non-arterial streets, in response to investigations of resident requests. These devices include traffic circles, speed humps, radar speed signs, speed cushions, chicanes, and other devices.

The program responds to resident inquiries about speeding, vehicle and pedestrian safety, and similar concerns on their street. The project selection process varies depending on the specific nature of the request/concern: traffic circle, speeding on neighborhood streets, or speeding on arterial streets.

On an annual basis, all traffic circles on the priority list are subjected to a formula that considers the number of documented collisions, traffic speeds, and traffic volumes. The highest ranking circles are prioritized for funding the following year.

Residents who are concerned about speeding traffic or specifically request other types of traffic calming devices, such as speed humps, on their non-arterial streets are enrolled in the Neighborhood Traffic Calming Program. This is a two-phase program. The first phase consists of education and implementation of low-cost speed reduction devices such as signs. If speeds are still high (generally, if 85% of drivers are exceeding 30 mph) at the conclusion of phase 1 of the program, the street is eligible for phase 2, meaning more aggressive traffic calming devices, such as speed humps, may be constructed. Generally, these are prioritized for construction in order of highest speeds first.

Requests for traffic calming measures on arterials have been prioritized and ranked in terms of three main criteria: documented speeds, the history of reported collisions on the corridor, and the corridor’s priority in the Pedestrian Master Plan.

The traffic circle program has the most formal criteria, which were last refined in 2008. Traffic circle candidate locations are evaluated according to collision history, traffic volumes and traffic speeds.

**Exhibit 4-6: Traffic Circle Prioritization Criteria**

**Traffic Circle Program: Scoring Criteria**

<p><b>Reported Collision History</b> Points are determined from annual Accident Rates - average number of reported accidents over the past three</p>
--

years.	
Points	Annual Accident Rate (accidents/year) at intersection
1	0.5 - 0.875
2	0.876 - 1.250
3	1.251 - 1.625
4	1.626 - 2.000
5	2.001 - 2.375
6	2.376 - 2.750

<b>Traffic Volumes</b> (Vehicles per Day - Average Weekday Traffic)	
<i>Points</i>	<i>Traffic Volumes</i>
<i>0.5</i>	<i>500 - 1100</i>
<i>1.0</i>	<i>1101 - 1700</i>
<i>1.5</i>	<i>1701 - 2300</i>
<i>2.0</i>	<i>2301 - 2700</i>

  

<b>Traffic Speeds</b> (85th Percentile Speed)	
Points	Traffic Speeds (mph)
0.5	26 - 29
1.0	29.1 - 32
1.5	32.1 - 35
2.0	35.1 - 38
2.5	38.1 - 41
3.0	41.1 - 44

The typical traffic calming project that SDOT funds and builds will be located in a low-density residential neighborhood with a documented collision history and speeding problem. Please note that our analysis does not always comport with the neighborhood’s perception of traffic on their street.

**Exhibit 4-7: Sample Traffic Circle Candidate List (2009)**

	Location	# Collisions/3 years	# Collisions/year	Points	85th - Percentile Speed	Points	AWDT	Points	Total Points	Rank
1	44 Ave S & S Warsaw St	7	2.333	5	25.3	0	440	0	5	1
2	Mary Ave NW & NW 92 St	5	1.667	4	29.1	1	494	0	5	2
3	Burke Ave N & N 47th St	4	1.333	3	24.4	0	441	0	3	3
4	Palatine Ave N & N 117 St	3	1.000	2	27.7	0.5	527	0.5	3	4
5	1 Ave W & W Lee St	3	1.000	2	25.1	0	828	0.5	2.5	5
6	24 Ave & E Columbia St	3	1.000	2	25.6	0	624	0.5	2.5	6
7	Corliss Ave N & N 44 St	3	1.000	2	23.9	0	602	0.5	2.5	7
8	1 Ave NW & NW 81 St	3	1.000	2	24.5	0	370	0	2	8
9	25 Ave SW & SW Findley St	3	1.000	2	25.4	0	437	0	2	9
10	9th Ave NW & NW 50th St	2	0.667	1	27.3	0.5	606	0.5	2	10
11	39 Ave S & S Andover St	2	0.667	1	24.1	0	523	0.5	1.5	11
12	49 Ave S and S Adams St	2	0.667	1	27	0.5	339	0	1.5	12
13	6th Ave NW and NW 74th St	2	0.667	1	27.8	0.5	279	0	1.5	13
14	9th Ave NW & NW 51st St	2	0.667	1	25.9	0	506	0.5	1.5	14
15	Fremont Ave N and N 101st St	2	0.667	1	26	0.5	265	0	1.5	15
16	33 Ave S & S Brandon ST	2	0.667	1	25.4	0	257	0	1	16
17	Densmore Ave N & N 39 St	2	0.667	1	24.1	0	236	0	1	17

Yellow shading denotes projects that have been constructed.

## SYSTEM IMPROVEMENTS

### Pedestrian Master Plan Implementation

The Pedestrian Master Plan Implementation program builds sidewalks, installs ADA-compliant curb ramps and signal improvements, and makes small-scale pedestrian crossing and safety improvements, as identified by the Seattle Pedestrian Master Plan (PMP), as well as implements policy improvements.

The 2009 Pedestrian Master Plan evaluated every street and intersection in the city to identify locations where improvements could benefit pedestrian safety and comfort, as well as specified policy changes needed to create the most pedestrian-friendly city in the county. See the PMP methodology:

[http://www.seattle.gov/transportation/pedestrian\\_masterplan/append.htm](http://www.seattle.gov/transportation/pedestrian_masterplan/append.htm).

SDOT uses these identified locations, sidewalk and other pedestrian infrastructure inventories, and requests made by the traveling public and other agencies as the starting point for developing Pedestrian Master Plan implementation projects.

Projects priorities are determined by a data-driven assessment that looks at three factors: pedestrian demand, equity and corridor function. Using the Pedestrian Master Plan criteria to prioritize projects means projects are located in areas that will be of greatest benefit to pedestrians.

- Locations with high pedestrian demand are where people walk and where destinations attract pedestrians such as colleges, transit stops, parks and local business districts.
- The equity criteria examines demographic data in order to serve residents who most need to walk due to restricted income, limited access to a car or limited mobility due to disability or other health-related issues.
- Corridor function prioritizes locations that have the most direct access to transit routes, or have high volumes of traffic and need more pedestrian improvements to help walkers get to transit and major destinations.

Each location identified in the PMP is evaluated against criteria based on these factors. The prioritization process includes several different steps:

- Step 1: Base Analysis
  - 1a. Potential Pedestrian Demand
  - 1b. Equity
  - 1c. Corridor Function
- Step 2: High Priority Areas
  - Combine the results of the potential pedestrian demand, equity and corridor function analyses from Step 1 in order to identify High Priority Areas
- Step 3: Needs Assessment
  - Assess pedestrian needs through an analysis of conditions walking “Along the Roadway” and “Crossing the Roadway”
- Step 4: Development of Project Lists
  - Combine the High Priority Areas analysis and the needs assessment to identify projects where conditions are difficult and where people need to be able to walk the most

Using the list of high priority locations generated by this process, SDOT identifies improvements that will become part of an annual work plan.

Below is a sample of part of the prioritized list of potential sidewalk locations, with the recommended action or outcome.

**Exhibit 4-8: Samples from PMP prioritized “Along the Roadway” List**

Location	Score	Action/Recommendation
4 <sup>th</sup> Av S between S Fidalgo St and S Front St	47	Built in 2011 (east side).
Myers Way S between Olson Pl SW and city limit	47	Do not build – no pedestrian generators or destinations.

Location	Score	Action/Recommendation
S Cloverdale St between Cloverdale St off ramp and 5 <sup>th</sup> Av S	47	Do not build - connects to limited access facility.
Greenwood Av N between N 134 <sup>th</sup> St and N 136 <sup>th</sup> St	47	Built in 2008.
4th Av S between S Front St and S Michigan St	47	Built in 2008.
Airport Way S between 13 <sup>th</sup> AV S and S Hardy St	47	Do not build – missing segment is on east side with no pedestrian generators. Spot improvements on west side built in 2011.
Greenwood Av N between N 140 <sup>th</sup> St and N 143 <sup>rd</sup> St	47	Refer to CIP due to size.
Sand Point Way NE between NE 70 <sup>th</sup> St and NE 74 <sup>th</sup> St	47	Refer to CIP – would require extensive retaining wall and drainage.
Sand Point Way NE between NE 52 <sup>nd</sup> St and 47 <sup>th</sup> Av NE	47	Built in 2010 (east side)
Westlake Av N between Halladay St and Newell St	45	Do not build - parallels a multi-use path.
15 <sup>th</sup> Av NE between NE 107 <sup>th</sup> St and NE Northgate Wy	45	Built in 2010 (east side)
Sand Point Way NE between NOAA Dr and Inverness Dr NE	45	Partially built - Fairway Estates to BGT spur built in 2010 (west side)

**Bicycle Master Plan Implementation**

This ongoing program implements the recommendations in the 2007 Seattle Bicycle Master Plan. Typical improvements may include installing bike lanes and sharrows, bicycle route signing, completing key links in the urban trails network, adding bicycle/pedestrian signals to complete the network, and reconstructing key sections of the trails. The goals of the program are to increase bicycle ridership, safety and access, and reduce bicycle collisions.

Projects are selected on an annual basis for study and implementation. The project selection process utilizes prioritization criteria and a set of balancing factors to score projects. Projects with the highest scores, as well as projects with leveraging opportunities, are evaluated for feasibility study. The number of projects per project type is determined by Bridging the Gap deliverable numbers set by a combination of program goals, budget and the Bridging the Gap oversight committee. Once high scoring projects are evaluated, an annual work plan is presented to Seattle Bicycle Advisory Board.

There are five criteria categories used to rank Bicycle Master Plan projects. Each category provides conditional points from which projects are scored based on the project’s geographic location. These categories are:

- 1) *System completion (20 pts):* Is the project within the Bicycle Master Plan recommendations;
- 2) *Safety (30 pts):* Is the project near or at a high collision location;
- 3) *Mobility Improvement (40 pts):* Does the project help to cross a major barrier, expand the existing network and/or provide a connection to transit;
- 4) *Anticipated Demand (20 pts):* What is the project’s proximity to an urban village, neighborhood commercial district, school, park, library, major employer etc. ; and

- 5) *Equity (20 pts)*: Does the project occur in an area where it will serve residents with the greatest needs i.e. low car ownership, lower income, low physical activity.

The points are assigned to each project via a geographic information system (GIS) analysis. Once the list is created, balancing factors are applied to the list. Balancing factors include geographic balance, funding opportunity, community interest, interagency coordination and pavement conditions. **In 2012 -2013 the Bicycle Master Plan is being updated. The prioritization process will likely be revised.**

Typical improvements may include installing bike lanes and sharrows, bicycle route signing, completing key links in the urban trails network, adding bicycle/pedestrian signals to complete the network, and reconstructing key sections of the trails.

**Exhibit 4-9: Excerpt from Signed Bike Route Project List Illustrating How Projects Are Ranked**

<b>ANNUAL PROJECT LIST: Signed Routes</b>														
#	Project	Completes	Safety	Linkages	Barriers	Modal	Land Use	Access	Equity	Score	Stud y Yr	Com p Yr	Facili ty type	Length (Miles)
	<b>2011</b>													
1	<b>I90 BIKE TRAIL:</b> 23rd Ave S to I-90 Bridge	20	10	10	5	4	7	10	20	86	2011	2011	signed bike route	0.8
2	<b>GREEN LAKE WAY N:</b> Green Lake Dr N to E Green Lake Dr N, E Green Lake Wy N to Green Lake Wy N to N 50th St to Fremont Ave N	20	30	0	5	2	7	10	5	79	2011	2011	signed bike route	2.6

**Transit Priority Corridor Improvements**

On April 16, 2012, the City Council, with the Mayor’s concurrence, adopted the new Seattle Transit Master Plan. The TMP is a 20-year plan, designed to deliver near-term priorities for transit system investment. The TMP employed an outcome-based evaluation process to determine where and how to invest limited transit funding.

The evaluation led to the prioritization of five corridors that are poised for high-capacity transit investments, and 16 corridors where significant investments in rubber-tired transit improvements are merited. The MAE process identified a clear set of priorities for City transit investment that serve as a foundation for TMP recommendations.

*How the TMP Determined Corridor Investment Priorities*

The TMP used an outcome-based process called multiple account evaluation (MAE) to identify capital and transit service investments that support the TMP goals. The evaluation accounts used to prioritize corridor investments are listed below:

EQUITY

- Benefits to transit reliant people
- Benefits to people with access and functional needs
- Housing and transportation cost
- Access to service sector and living wage jobs

COMMUNITY

- Current land use
- 2030 land use
- Support of Urban Village strategy
- Non-motorized access
- Active transportation

ECONOMY

- Access to employment
- Transit supportive zoning

EFFICIENCY

- Ridership
- Productivity
- Regional connectivity strength
- Operating cost
- Cost effectiveness (cost per passenger served)

ENVIRONMENT

- GHG reduction potential
- Human health benefits

The MAE process provided a powerful tool to engage stakeholders in developing a set of corridor investment priorities. It also helped the City to make investment decisions in line with economic, environment, health, and community development goals.

*Investment Phasing Principles*

Given limited resources for transit investments for the City and its partners, transit improvements will need to be implemented in phases. Principles for making investment phasing decisions include:

- **Leverage:** Consider the ability for a corridor project to complement and/or enhance projects currently underway or planned by the City’s partners, e.g., Link and RapidRide corridors.
- **Demand:** Invest where need is greatest. The corridor evaluation process provides detailed modeling of potential ridership and related benefits.
- **Anticipated Growth:** Invest in transit where the greatest growth is planned, allowing developers to make design and construction decisions based on the knowledge that the neighborhood will have high-quality, permanent transit infrastructure.
- **User Benefits:** Investments that lead to significant travel time benefits will attract the most new riders and merit priority.
- **Grant Opportunities:** Include partnership and grant funding opportunities as important inputs when developing project implementation schedules.

These priorities are implicit in the TMP recommendations and should serve as guidelines as the TMP is used to make decisions about project priority.

### **Freight Mobility Spot Improvements**

The Freight Mobility Spot Improvement program makes small-scale mobility improvements to the city’s street system to improve connections between the port, railroad intermodal yards, industrial businesses, the regional highway system, and the first and last miles of the supply chain. Typical projects include small-scale turning radius improvements, new signage (truck routes, steep grades, etc.), pavement repair, and railroad crossing improvements (in partnership with the railroads).

Projects are identified through the neighborhood plans for Seattle’s two Manufacturing and Industrial Centers (MICs), through direct input from freight operators and other stakeholders, and through staff identification of potential improvement opportunities.

Criteria for project prioritization include whether the location is on a Major Truck Street or in a MIC, and the extent to which it will improve freight mobility and safety.

Freight spot improvement projects that are located on a major truck street or in a MIC are the highest priority for this program. Improvements that are not on major truck streets or in MICs are implemented as funding allows.

SDOT is seeking to identify funding to complete a Freight Master Plan that will provide a framework for a more robust project identification and prioritization process.

### **New Signals**

The New Traffic Signal program selects, designs, and builds low-cost traffic signals using city staff and crews.

SDOT receives many requests for new signals every year. Current funding levels allow the construction of between two and five new signals each year.

Using national guidelines, SDOT performs an analysis of traffic conditions, measuring auto and pedestrian volumes, traffic delay and collisions. Those locations that meet one or more of the eight possible warrants<sup>1</sup> are placed on a list of potential projects for consideration. Each signal candidate location is measured against its benefit to transit, freight, pedestrians, and bicycles. Prioritized locations are balanced against the possibility of alternative treatments, suggested for further monitoring, put on the CIP list due to high cost, or prioritized to build.

Each candidate location is rated according to the criteria below. The project’s score is the sum of the points received in each category. The list is updated every year to include newly identified locations.

**Exhibit 4-10: New Signal Prioritization Criteria**

**2012 New Signal Prioritization Criteria**

<b>Locations Meeting Vehicle Guidelines</b>	
<b>Transit - 10 points max</b>	<b>Points</b>
Helps w/ access, safety or turning on a transit route	10
Helps w/ progression on a transit route	5
<b>Freight - 10 points max</b>	
Helps w/ turning, safety or access for freight on a Major Truck Street	10
Helps w/ turning, safety or access for freight on any arterial	5
Helps progression on Major Truck Street	5
<b>PMP - 10 points max</b>	
Tier 1 location or area	10
Tier 2 location or area	5
<b>BMP - 10 points max</b>	
Identified as a priority in the BMP	10
Improves crossing on a bike corridor	10
<b>Signal-Correctable Collisions</b>	
2 points per correctable collision	2 x collisions
<b>Warrants</b>	
7 points per warrant	7 x warrants
<b>1/2 Signal due for conversion</b>	
50 points if due	50
<b>Pedestrian Collisions</b>	<b>Points</b>
5 points per pedestrian collisions (4 year total)	5 x collisions
<b>Pedestrian Volume</b>	

<sup>1</sup> The warrants are in the Manual on Uniform Traffic Control Devices (Sec. 4C). They define minimum conditions under which traffic control signals are justified.

Number of pedestrians per hour divided by 5	Volume/5
<b>Pedestrian Master Plan - Crossing the Roadway Tier</b>	
Tier 1	20
Tier 2	10
<b>Pedestrian Master Plan – Priority Area Tier</b>	
Tier 1	20
Tier 2	10

Below is the 2012 prioritized signal list, which was developed in late 2011 and, includes the 2012 planned projects.

**Exhibit 4-11: New Signal Priorities**  
**2012 New Signals**

New signals are planned for the five locations listed below. These signals will be designed in 2012 and built in 2012 unless otherwise noted. These locations meet national guidelines for signal installation, scored well in the annual prioritization process, and leverage other program funding.

- Aurora Avenue North and North 95<sup>th</sup> Street (construction in 2012 or 2013)
- Avalon Way Southwest and Southwest Genesee Street
- First Avenue and Clay Street
- First Avenue South and South Walker Street (construction in 2012 or 2013)
- Sand Point Way NE and 40 Ave NE (construction planned by Children’s Hospital; date TBD)

The locations listed below met one or more of the national signal installation guidelines, but were not selected for 2012 funding. They are listed in prioritized order, from highest to lowest scoring.

Locations that met one or more of the vehicle-related guidelines:

1. 15<sup>th</sup> Avenue W and W Howe Street
2. 5<sup>th</sup> Avenue NE and NE Banner Street
3. N 34<sup>th</sup> Street at Troll Avenue N
4. 8<sup>th</sup> Avenue NE and NE 70<sup>th</sup> Street
5. Avalon Way SW and SW Yancy Street
6. Greenlake Drive N and W Greenlake Drive N (near Densmore Avenue N)
7. 3<sup>rd</sup> Avenue NW and NW 125<sup>th</sup> Street

Locations that met one of the pedestrian-related guidelines:

1. E Pike Street and Belmont Avenue E
2. 12<sup>th</sup> Avenue and E Marion Street

3. 1<sup>st</sup> Avenue and Battery Street
4. Nickerson Avenue and Dravus Street
5. E Pine Street and Belmont Avenue E
6. Beacon Avenue S and S Lander Street
7. Queen Anne Avenue North and Highland Drive
8. 12<sup>th</sup> Avenue NE and NE 50<sup>th</sup> Street
9. 1<sup>st</sup> Avenue S and S Orcas Street
10. 47<sup>th</sup> Avenue SW and SW Admiral Way
11. S Jackson Street and 10<sup>th</sup> Avenue S

### **Pay Station Installation**

This project funds the purchase and installation of multi-space parking pay stations and capitalized costs for design, installation, materials and upgrades, for meter replacement and expanded paid on-street parking, to improve parking management associated with neighborhood growth, transit service investments, economic development and environmental protection. Seattle has installed more than 2,150 pay stations covering more than 13,000 paid spaces.

In 2004-2006, SDOT systematically replaced nearly all mechanical meters. From 2005 to 2010, new areas of paid parking were identified through neighborhood requests for parking management or because they were located in urban areas where improved parking management would benefit local business districts. Plans for new or expanded paid parking were implemented in Uptown, South Lake Union, Westlake Avenue North, Uptown Triangle, Denny Triangle, Fremont, Pike-Pine, Capitol Hill and First Hill. Staff resources for this effort have been reduced and no requests for capital funds for installation of new paid parking are anticipated in the next budget cycle.

Operating costs associated with installation of paid parking include: credit card processing fees (currently approximately 6.5% of the amount of credit card transaction amounts; approximately 86% of pay station revenue is credit card-based); per unit communications and data costs; paper and spare parts replacement costs (the pay stations come with a 5-year warranty but a 10-year lifespan, therefore the costs of maintaining the pay stations off-warranty after the 5<sup>th</sup> year must be factored in); and pro rata costs of maintenance and troubleshooting by SDOT crews. The program contributes \$32 million in paid parking revenues to the General Fund.

The Seattle City Council adopted legislation directing SDOT to set parking rates based on measured occupancy that will result in an average of 1 to 2 open spaces per block throughout the day. In 2011, SDOT made changes to parking rates citywide, raising them in four areas, leaving them constant in seven areas and reducing the rates in eleven neighborhoods in support of this goal. Also in 2011, SDOT reported to Council on the feasibility of performance-based parking pricing including a number of recommendations, some of which were funded in the subsequent budget process. Further changes to parking pricing and time limits continue in 2012 as well as deployment of Pay By Phone and outreach efforts to communicate new programs (such as After 5 and Best Value) to make this increasingly complex system understandable and user-friendly.

### **Pedestrian Lighting**

Historically, the Pedestrian Lighting Program has selected projects based on leveraging opportunities with other capital projects and neighborhood support. Currently, SDOT is in the process of finalizing the Pedestrian Lighting Citywide Plan, which will be part of the Pedestrian Master Plan. One of the goals of the Pedestrian Lighting Citywide Plan is to create a clear set of criteria for prioritizing lighting projects.

Currently, the following criteria are used in selecting pedestrian lighting projects:

- Proximity to a business district
- Inclusion on a Neighborhood Plan
- Prevalence of mature trees that shade the pedestrian path
- Support from Department of Neighborhoods
- Support from Seattle Police Department
- Proximity to major transit transfer points
- Opportunity for cost sharing
- History of night time vehicle collisions
- History of night time pedestrian collisions
- Importance in the urban design/place making
- Inclusion on the Bicycle Master Plan
- Opportunity of use of a high efficiency light source
- Efficiency of the light distribution created
- Proximity to projects previously funded by this program
- Cost
- Location in an economically challenged area
- Proximity to a pedestrian generator

The criteria outlined above have been in place since 2008. There are new criteria being developed as part of the Pedestrian Lighting Master Plan. These are expected to be in place in 2012, to be used for planning for 2013 and beyond.

For the Pedestrian Lighting Citywide Plan, maps are being generated that will objectively prioritize projects based on:

- Pedestrian demand
- Social equity
- Crime statistics

These maps provide a basis for prioritizing future investments in pedestrian lighting, locating lighting where pedestrians need it most, and in turn increasing pedestrian access to transit, retail and services, schools, and other pedestrian locations.

The new Pedestrian Lighting Citywide Plan criteria are based on several objectives outlined in the Pedestrian Master Plan. Within the Pedestrian Master Plan there are strong elements of the

Race and Social Justice Initiative and Walk Bike Ride. Additionally, the new criteria will incorporate information regarding street and night-time related crime hotspots, as part of SPD's Evidence-based policing initiative.

Historically, pedestrian lighting implementation has been focused in neighborhood business districts, which overlap substantially with the City's Urban Centers and Urban Villages.

## **Section 5 – Aligning Infrastructure with Planned Growth**

The City's growth management strategy is to direct growth and most new public services and infrastructure to designated urban centers and urban villages. Currently, there are six urban centers (three of the centers have a total of 11 designated urban center villages within them), two manufacturing and industrial centers, six hub urban villages and 18 residential urban villages.

### **LARGE CAPITAL PROJECTS**

The Large Capital Project selection process explicitly evaluates projects on the extent to which they support transportation needs for a designated Urban Center, Manufacturing Industrial Center, Urban Village or Residential Village. Up to 15 points of each project's cumulative score (out of 100 total possible points) can be awarded for alignment with planned growth as follows:

- 15 points Is located within more than one Urban Center or MIC
- 12 points Is located within one Urban Center or MIC
- 9 points Serves one or more Urban Center or MIC
- 6 points Is located within or serves a Hub Urban Village
- 3 points Is located within or serves a Residential Village
- 0 points Is not located within and does not serve a designated Village or Center

### **MAINTENANCE AND REHABILITATION**

#### **Arterial Asphalt and Concrete Program**

The AAC program's focus is rehabilitating the busiest urban arterials, with an emphasis on those which serve transit and alternate travel modes. These streets are the primary means by which people and goods move about the city and between urban centers and urban villages. Although this program fully supports planned growth, it focuses primarily on preservation of existing assets.

#### **Arterial Major Maintenance**

Arterial Major Maintenance (AMM) work occurs on arterial streets, which link together Urban Centers and Urban Villages. Paving is often coordinated with other improvements such as the striping of a new bike lane, construction of a bus stop, or installation of in-pavement crosswalk lighting. AMM work represents a major resource in addressing arterial pavement conditions needs short of full roadway reconstruction, and is also used to address pavement needs beyond the scope of practical pothole repair allowing other maintenance activities to be targeted more

effectively. Although this program fully supports planned growth, it focuses primarily on preservation of existing assets.

**Non-Arterial Street Resurfacing (NAA) and Concrete Rehabilitation (NAC)**

NAA and NAC work traditionally occurs in urban centers and urban villages, and is also leveraged to work cooperatively with business interests to address other critical roadway infrastructure needs on non-arterial roadways. Typical projects include paving on local streets around the hospitals on First Hill, in the International District, Downtown, and on industrial streets in the Greater Duwamish and Ballard-Interbay industrial areas. Paving is coordinated with other improvements where possible and these funds have also been used to form public/private paving partnerships with local businesses. Although this program fully supports planned growth, it focuses primarily on preservation of existing assets.

**Bridge Rehabilitation and Replacement & Bridge Seismic Retrofit Programs**

Bridge Rehabilitation and Replacement Program (BRRP) and Bridge Seismic Retrofit Program (BSRP) work occur primarily on arterial streets, which provide vital connections through and between the City’s Urban Center and Urban Villages.

The BRRP and BSRP incorporate, in their prioritization process, other SDOT capital and major maintenance project and programs slated for design and construction, such as: Transit improvements, Streetcar development, paving and re-channelization and bike and pedestrian safety improvements. These project and programs provide an indication of future plans for economic development, transit expansion and truck mobility needs. They often include the addition of bike lanes and pedestrian lighting, sidewalk repair and signal installation, which lead to BRRP and BSRP design updates. For example, the type and size of the bridge structure and deck may need to be re-sized to meet the future needs of a specific transportation corridor.

**Bridge Painting**

Prioritization for the painting of the 24 steel bridges in Seattle is predicated on the expected life cycle and regularly assessed condition of a bridge’s paint. There is no direct link between planned projects and infrastructure needs in the City’s urban center and urban villages.

**Stairway Rehabilitation**

There are approximately 494 stairways that are SDOT’s responsibility to repair and maintain, many of which provide vital pedestrian connections through and between neighborhoods and to City Urban Villages. While safety is the primary criteria in prioritizing these projects, decisions are made with input from neighborhood plans and the Pedestrian and Bike Master Plans.

**Hazardous Mitigation – Areaways**

A majority of Seattle’s areaways exist in the Pioneer Square, International and Central Business districts and were constructed in the late 1800’s or early 1900’s.

**Retaining Wall Rehabilitation**

Public safety is the primary criteria in prioritizing Retaining Wall Rehabilitation projects. Those projects that rank high are most often adjacent to roads and sidewalks with high vehicle and pedestrian volumes, often connecting to and through City Urban Villages.

### **Sidewalk Safety Repair Program (SSRP)**

Pedestrian mobility, and directly-related transit access, is a key component of any urban densification planning effort. The sidewalk conditions in Urban Villages have been rated as Good, Fair & Poor and these are mapped in GIS for assisting with setting priorities. Therefore we tend to apply more of our resources to the higher pedestrian volume sections of the City; yet all other repairs benefit mobility between urban villages. Although this program fully supports planned growth, it focuses primarily on preservation of existing assets.

### **Landslide Mitigation Program**

Since landslides happen in landslide prone areas with steep slope, there is no direct link between planned project and infrastructure needs in the City's urban centers and urban villages. However, during prioritization process, some of the criteria in the matrix do add more weight if the protected street is in city's Urban Center due to its high traffic volume and associated impacts to mobility resulting from emergency detours. Although this program fully supports planned growth, it focuses primarily on preservation of existing assets.

## **NEIGHBORHOOD PROGRAMS**

### **NSF/CRS Neighborhood Program**

Generally projects are selected for both the Neighborhood Projects Fund (NPF) and Large NSF are in the city's urban centers and urban villages. Typical improvements are sidewalk construction, repairs and replacement, curb bulb installation or other traffic calming devices, or improvements to marked crosswalks. The program enhances the safety, quality and condition of the pedestrian and neighborhood environments.

### **Neighborhood Traffic Control**

The Neighborhood Traffic Calming and Traffic Circle programs are primarily responsive to resident requests, and most requests originate in lower density residential areas, outside of the urban villages. As such, funding prioritization does not consider whether the requested location is in an urban village.

The Arterial Traffic Calming program often aligns with urban village locations in that a portion of its criteria for prioritization uses pedestrian priorities as identified in the 2009 Pedestrian Master Plan, which are based in part on land use and pedestrian demand.

## **SYSTEM IMPROVEMENTS**

### **Pedestrian Master Plan Implementation**

Because the Pedestrian Master Plan prioritization process includes pedestrian demand as a key component, many of the high priority areas identified in the plan are within Urban Villages.

### **Bicycle Master Plan Implementation**

The Bicycle Master Plan Program prioritizes projects that connect through and to Urban Villages and Urban Centers. Criterion 4 of the Bicycle Master Plan prioritization assigns 10 points to projects with both ends in different Urban Villages or Urban Centers, 7 points are assigned to projects with one end in an Urban Village or Urban Center, projects with one end in a Neighborhood Commercial Area are assigned 5 points and projects that are entirely within

Residential Areas receive 0 points. In addition, points are received if a project is in close proximity to a major employer, or important neighborhood destination.

### **Priority Bus Corridor Projects**

Priority Bus Corridor projects are focused on improving bus speed and reliability, passenger facilities, and ridership along transit routes that provide connections between urban villages, and connect villages with centers. Improvements occur both within urban centers and villages and on primary transit corridors connecting these locations. One of the principles for making investment phasing decisions includes anticipated growth: “Invest in transit where the greatest growth is planned, allowing developers to make design and construction decisions based on the knowledge that the neighborhood will have high-quality, permanent transit infrastructure.”

### **Freight Mobility Spot Improvements**

The program addresses small-scale infrastructure improvement needs in Seattle’s two Manufacturing and Industrial Centers: Duwamish and Ballard/Interbay/Northend, as well as on arterials throughout the city.

### **New Signals**

The New Signal program addresses the infrastructure needs in the city’s Urban Centers and Urban Villages by using criteria associated with those hubs: transit needs, pedestrian needs, bicycle demands, and increases in congestion. Using these criteria, we are able to best meet the needs of the public in an efficient and effective manner.

### **Pay Station Installation**

As neighborhoods increase in density, good parking management becomes more important to lively urban neighborhoods. Since 2004, SDOT has studied parking in 13 of the City’s urban centers and villages and both of the Manufacturing and Industrial Centers (MICs).

### **Pedestrian Lighting**

Historically, pedestrian lighting implementation has been focused in neighborhood business districts, which overlap substantially with the City’s Urban Center and Urban Villages.

SDOT is in the process of updating the selection criteria for the Pedestrian Lighting Program to reflect outcomes that better fit customer needs. These criteria include pedestrian demand, social equity and use of crime statistics.

## **Section 6 – Future Projects/What is on the Horizon?**

### **LARGE CAPITAL PROJECTS**

In most large capital projects, there is both rehabilitation and replacement of a facility as well as improvements or upgrades over what exists. For example, a project such as Linden Avenue Complete Streets will install new bike and pedestrian facilities and rehabilitate the asphalt street pavement. The new sidewalk and bicycle facility will marginally add to the Department’s overall operations and maintenance costs, while the street repaving does not add to the pavement inventory.

Importantly, many large capital projects ongoing operations and maintenance needs are not adequately identified and funded. One of the key reasons for this situation is that SDOT does not have a specific project development function within the department to identify and standardize project components and ongoing maintenance and operations estimates during planning. Because ongoing costs are not budgeted at the time of capital project implementation, the resultant approach has been to defer maintenance and/or make periodic system improvements.

It should also be noted that infrastructure replacement and rehabilitation are more likely to be time-critical (to prevent failure) than planned transportation system improvements, which influences City investment strategies. Strategic investments within an identified maintenance program can create significant cost savings for the City farther in the future.

## **MAINTENANCE & REHABILITATION**

### **Arterial Asphalt and Concrete Program**

Seattle has a large backlog of paving needs that has accumulated through decades of underinvestment in basic street maintenance. As of the last pavement condition survey done in 2010, SDOT estimates the backlog of deferred maintenance on Seattle's arterial streets alone is approaching \$600 million, comprised of approximately 400 lane-miles of pavement at a condition level which indicates a paving need. SDOT's next pavement rating is scheduled for 2013-2014.

With the Bridging the Gap transportation levy, Seattle is doing more paving and has rehabilitated some of the City's most critical streets. Examples of completed levy paving projects include: 15<sup>th</sup> Ave NE, N 34<sup>th</sup> St and NE 54<sup>th</sup> St-55<sup>th</sup> St in the University District area, Dexter Ave N in the South Lake Union area; Ellis Ave S, S Albro St, Corson Ave S, E Marginal Way S, Airport way S, S Lucile St in the Georgetown/ South Industrial areas, Rainier Ave S and 51<sup>st</sup> Ave S in the Rainier Beach area, N/NE 45th St in Wallingford and the University District, 2nd Ave and 4th Ave downtown, Boren Ave and Madison St on First Hill and Capitol Hill, 1st Ave S in SODO, 15th Ave W between Ballard and Lower Queen Anne, S Columbian Way on Beacon Hill, and Fauntleroy Way SW in West Seattle. Current projects in 2012 include N/NW 85<sup>th</sup> Street & Greenwood Paving, and NE Ravenna Blvd Paving. This work would not have been possible before BTG.

The current backlog of *arterial* deferred maintenance is estimated at \$578M. Arterials are 39% of the street system. Pavements deteriorate with traffic loading, weathering, and other factors. Like other infrastructure, pavements are designed balancing serviceability and economy. Typical pavement design life is 20 to 50 years, depending on the material used (asphalt or concrete). This means that the backlog of deferred maintenance will grow over time if investments in pavement rehabilitation do not pace deterioration.

SDOT's pavement management system models pavement performance using pavement type, age, condition, and paving budget/costs. Based on those factors, it is estimated:

1. An average annual investment of \$37 million is required to maintain Seattle's arterial street network at its current condition level, with deferred maintenance stable in the \$600 million range.

2. An annual investment of \$65 million is required to improve the condition of the arterials and eliminate deferred maintenance by the year 2030.
3. Over the remaining life of the BTG initiative, 2011 to 2015, the City's main arterial paving fund source (Arterial Asphalt and Concrete Program, TC365440) averages approximately \$20.3 million per year. (Note: Over the 9-year life of BTG, spending will average approximately \$21M annually.) This indicates that the condition of Seattle's arterials will continue to decline overall and deferred maintenance will grow.

The [2011.07.14 Pavement Condition Update](#) and [2011.07.12 Paving Needs 2010 and Paving 2007-2015](#) describe Seattle's current pavement conditions in greater detail.

Since 2000, paving costs have increased with the rise in oil prices (which fuels heavy construction operations, especially asphalt paving), the federal mandate to install ADA curb ramps, electric trolley bus line de-energization restrictions, Stormwater Code requirements and funding shifts, and the "Complete Streets" ordinance. Seattle's streets are also carrying heavier buses, which have made life extending paving treatments, such as asphalt pavement resurfacing impractical. Transit streets often need to be completely reconstructed, a more costly and time consuming rehabilitation activity. Although contract bids have been favorable in the recession, paving dollars buy fewer lane-miles in 2012 than a decade ago.

The AAC program maintains existing arterial street surfaces. It does not widen streets or build new roadways that would add to the street network and increase ongoing operating and maintenance costs. Adequately funded, the AAC program could effectively reduce operating costs, as pavements in good condition generally require less maintenance attention like pothole filling. Rehabilitation of the City's extensive assets is an immediate and ongoing need.

### **Arterial Major Maintenance**

Seattle has a large backlog of paving needs that has accumulated through decades of underinvestment in basic infrastructure renewal. Demand for pavement repairs exceeds available funding. AMM paving does not widen streets or build new roadways, and therefore future operating and maintenance costs are not increased. Rehabilitation of the City's extensive assets is an immediate and ongoing need.

### **Non Arterial Asphalt and Concrete Rehabilitation**

As with arterial streets, demand for non-arterial pavement repairs exceeds available funding. SDOT is presently funded to do 0.5 to 1.0 lane-miles of non-arterial paving each year out of a 2,414 lane-mile network. This amounts to 0.02% to 0.04% of the local street system each year; a 2,414-to-4,828 year replacement cycle. SDOT does not have a funded pavement management program for non-arterial streets, so it cannot even assess maintenance needs on the basis of condition. However, a typical low-use pavement replacement cycle for asphalt in a mild climate might be 20 to 40 yrs, and for concrete 50 to 100 years. Some of Seattle's most durable non-arterial pavements, made of concrete, are as old as 90 years and remain serviceable. Still, the current replacement cycle, in the thousands of years, is far beyond the expected life of any pavement.

The NAA and NAC programs maintain existing street surfaces. They do not widen streets or build new roadways, and therefore future operating and maintenance costs are not increased by adding pavement to the system. Rehabilitation of the City's extensive assets is an immediate and ongoing need.

**Bridge Rehabilitation and Replacement & Bridge Seismic Retrofit Programs**

Beyond Bridging the Gap funds allocated for these purposes, SDOT does not have annual programs that fund Bridge Rehabilitation and Replacement or Bridge Seismic work. FHWA does provide Bridge Rehabilitation and Replacement Program (BRRP) funding as part of the larger Transportation authorization bill, but Seattle must compete statewide for these dollars.

The replacement value of the City's bridges is \$1.5 billion. Compared to most bridge owners (states and cities) across the country, Seattle owns and maintains larger and older bridges. SDOT bridges are approximately four times larger and more than 10 years older than the national average. In addition, of the approximately 113 bridges in the City's inventory, 20% have a sufficiency rating of poor.

**Bridge Painting**

In the 2009 City budget, the Bridge Painting Program was funded at \$2.4M per year. Funding has been reduced, resulting in the Program extending painting cycles beyond the current recommended 18 years. This delay will result in greater future costs due to the significant increases in areas of failed coating, exposing structural elements to weakening due to corrosion. The program is funded within the six-year CIP.

**Stairway Rehabilitation**

Current funding allows for the Program to address only those stairways that are in the poorest of conditions. Fifty-one percent of the City's stairways currently have a condition rating of fair or poor.

If proposed cuts to the program are accepted, the program will no longer be able to perform systematic stairway inspections and will have a level of funding to only reconstruct stairways in the worst condition, posing the most critical safety hazard.

**Hazardous Mitigation – Areaways**

Program funding allows for inspection of recorded areaways and minor repair and preservation work. There are currently 236 known areaways that will become increasingly more expensive to maintain as they age. Costs for proposed projects can range from \$200K to fill an areaway to over \$1M to rebuild.

**Retaining Wall Rehabilitation**

With over 580 retaining walls with a value of over \$600 million, current funding does not allow for a fully integrated asset management approach to retaining wall management. The current level of funding is less than 0.1% of the asset replacement value. Fifty-seven percent of the City's retaining walls currently have a condition rating of fair or poor.

**Sidewalk Safety Repair Program (SSRP)**

SDOT will continue to leverage funding within the TCIP, such as Safe Routes to School, NSF/CRS neighborhood programs, Transit, etc. while also being responsive to emergent needs and safety issues. SDOT has numerous arterial corridors that all rate very highly for sidewalk repair, particularly where there are older, mature street trees that have outgrown the planting strips, and whose roots uplift sidewalk panels. Some of these sidewalks do not meet the Americans with Disabilities Act (ADA) guidelines and require expensive repairs that may be short lived in order to add years of useful life to the street trees.

Rehabilitation of the City’s extensive assets is an immediate and ongoing need. City resources are sufficient to make permanent repairs to about 44,000 square feet of sidewalks and to place safety shims as an interim repair. In addition, the program repairs curbing and pedestrian ramps and adjacent to city maintained trees. Property owners must also make repairs to sidewalks adjacent to their property. This is done either through a Street Use Permit or a DPD permit.

**Landslide Mitigation Program**

As mentioned previously, it is very difficult to plan and select a mitigation project with limited annual budget when several landslide emergencies occur during a winter. However the “Risk Assessment for Slope Hazard” report is very helpful for the City to anticipate where future slide events are likely to occur. Future projects will primarily address emergent needs in response to storm events. This program will continue to add to the City’s asset inventory of slope stabilization measures (retaining walls, reinforced slopes, etc.), theoretically reducing the number and locations of unstable slopes.

The following projects are budgeted in 2012 except for Lake Dell DR which will be designed in 2012, and constructed in 2013:

- Patten Pl W Landslide Repair (Settlement fund and Mitigation partnership)
- Lake Dell Landslide Repair (FHWA funded project)
- 9800 block of 21<sup>st</sup> Ave NW Street Stabilization (Local project)
- Highland Park Way SW near Othello Street – Stabilization (Local project)

After these projects, if no emergency slide events occur in subsequent winters, the projects will be selected from the attached Prioritized Street Segment Table 6.1 from the “Risk Assessment for Slope Hazard” report. Rehabilitation of the City’s extensive assets is an immediate and ongoing need. As an example, we are currently seeking funding for the 9600-9800 Rainier Ave S slide mitigation which was rated as a high priority on this list.

**NEIGHBORHOOD PROGRAMS**

**NSF/CRS Neighborhood Program**

The Large NSF program is funded through Bridging the Gap, which expires in 2015. In order to continue beyond the upcoming round of projects, ongoing funding beyond 2015 would need to be identified.

### **Neighborhood Traffic Control Program (NTCP)**

The NTCP should be evaluated to determine if it should continue primarily as a program that is reactive to resident requests, or more proactive in accordance with documented needs, or a combination of both. In addition, the program is expected to continue to increase its alignment with other SDOT programs, such as the high collision program and pedestrian/bicycle programs, to make use of joint funding and combined needs, particularly on arterial streets.

The Neighborhood Traffic Control Program is the CIP side of the Neighborhood Traffic Operations program. While there is an operations and maintenance project, its funding pays only for operations and customer service for the program. There is no on-going maintenance of the traffic calming devices installed. As noted above, currently, there is no standard practice at SDOT to identify and secure funding for on-going maintenance of new infrastructure.

## **SYSTEM IMPROVEMENTS**

### **Pedestrian Master Plan Implementation**

At the current level of funding, the program is able to build 10 blocks of sidewalks, install approximately 150 curb ramps, and improve walking routes at 5 schools each year. In addition, the program is able to make approximately 40 crossing improvements each year. In order to accelerate implementation of the PMP, or to include higher cost projects, additional funding would be needed.

Federal standards for curb ramp construction are changing. The new standards, known as PROWAG, will improve accessibility of the ramps for people with disabilities. This means that many older ramps will be out of compliance and will eventually have to be replaced. These new standards will be more expensive to implement. Additionally, since ramps are located at intersections with heavy vehicle traffic, they often need to be maintained or replaced as the roadway deteriorates. In addition, the city is working with the Department of Justice on a settlement agreement related to the city's compliance with the Americans with Disabilities Act.

Each pedestrian improvement installed must be maintained, including emergency repair and major maintenance well into the useful life of the improvement. Each year, maintenance budgets should be adjusted upwards to reflect the new sidewalks, curb ramps and other improvements that are added through this program and stand-alone CIP projects. Due to funding constraints, this has not regularly been the case.

### **Bicycle Master Plan Implementation**

The majority of large projects identified in the BMP, including structures, signals, crossings, and trails, are not funded.

For the BMP there will be ongoing costs associated with new infrastructure including on street facilities, which require regular maintenance.

As bicycle ridership increases in Seattle, there will be more demands to improve pavement conditions on bicycle routes.

### **Transit Master Plan Implementation**

The Transit Master Plan (TMP) identifies five corridors as appropriate for high capacity transit investments. It also identifies sixteen (16) Priority Bus Corridors which should also receive substantial improvements in the form of both capital and operating investments. The TMP also provides guidance for prioritizing specific investments for funding.

Several efforts are underway to begin to implement recommendations in the TMP. SDOT has been awarded a grant to analyze high capacity transit options within the Center City to connect the South Lake Union and First Hill streetcars. SDOT is also beginning environmental analysis on an extension of the First Hill Streetcar along Broadway. In addition, Seattle is recommended to receive federal grant funds to make transit supportive improvements along 23<sup>rd</sup> Avenue, one of the Priority Bus Corridors identified in the TMP, and on Third Avenue through downtown.

Transit investments included in the 2013-2014 Proposed Budget and 2013-2018 Proposed CIP are described at the end of this paper.

### **Freight Mobility Spot Improvements**

The 2013-2014 Proposed Budget provides funding for SDOT to develop a freight plan, similar to the pedestrian and bicycle master plans. In the meantime, SDOT is in line to receive a \$250,000 grant in 2013 to conduct a port access study in partnership with the Port of Seattle. Both the port access study and a future freight plan will likely result in the identification of new project ideas, many of which would be beyond the current funding level of this program.

### **New Signals**

High-cost signal locations are included in the unfunded large project CIP list. Typically a grant is required to fund one of the higher cost locations.

With changes in project requirements and scope, the cost of installing new signals sometimes exceeds the limit for crew work set in state law (RCW 35.22.610). This can impact how the program delivers new signals. It is now easier to warrant new signals for pedestrians, so the list of “warranted” signals is longer than it has been in past years.

With the current process, only the locations for the current build year are known, since the needs list is very fluid and changes annually, along with where each project falls in the priorities. Funding for the program has fluctuated over the years, and will likely do so in the future, which will dictate how many locations can be constructed. In addition, each signal installed must be maintained, including annual preventative maintenance, emergency repair and major maintenance well into the useful life of the signal. Each year, the Signal Operations and Maintenance budgets should be adjusted upwards to reflect the new signals that are added through this program and stand-alone large CIP projects. This has not regularly been the case.

### **Pay Station Installation**

Of the remaining urban villages that have not yet been studied, a majority would likely not be good candidates for installation of new paid parking; however, at least one neighborhood per year would likely require some paid parking (whether as a new neighborhood or as potential expansion of existing paid parking in the neighborhood.) Staffing this effort has been reduced, as well as funding for studies and outreach, making new initiatives unlikely. Remaining staffing and

funding are adequate for one limited parking study effort each year, usually at the request of the Mayor or City Council.

The capital replacement plan for aging pay stations will be a significant expense, and should begin in 2014. This will cost approximately \$35 million over the course of the seven-year period 2014-2020. Planning and research for capital replacement will begin in 2013.

### **Pedestrian Lighting**

As Seattle continues to encourage our citizens to walk more, the need for additional and improved pedestrian lighting is of high priority. Also, lighting technology has improved in both efficiency and reliability. The City is moving towards high efficiency light sources, such as LED. These sources have a higher initial investment, but over time the City will save maintenance and energy costs. The current cost to replace existing fixtures is approximately \$2,500 per luminaire for system-wide replacement of 10,000 for a total of \$25M. The project is currently funded at \$100k per year.

### **New Facilities**

In the future, SDOT will need additional space (building and yard space) to accommodate operations and capital projects. Temporary trailers are currently housing Bridge Maintenance and Urban Forestry operations until a long-term solution can be identified and funded. In addition, as street car operations expand, it may be necessary to acquire replacement space for other SDOT operations currently located at Charles Street.

## **Section 7 - CIP Revenue Sources**

The Transportation CIP is funded by multiple sources including Gas Tax, Cumulative Reserve REET II, Bridging the Gap Levy LID Lift and Commercial Parking Tax, long-term financing (general obligation bonds) supported by the Commercial Parking Tax, federal and state grants and various funding partners, such as Sound Transit and the Washington State Department of Transportation.

### **Local Revenues**

There are several local funding sources for the Transportation Capital Improvement Program including Gas Tax, Cumulative Reserve REET II, Cumulative Reserve Street Vacation, and the new \$20 Vehicle License Fee. These revenues are used for annual programs that either improve or maintain the City's transportation system or provide local match to SDOT's funding partners on large capital projects. As discussed previously, the economic downturn has reduced significantly the support received from the General Fund and Cumulative Reserve REET II Subfund. Additionally, gas tax revenue has been declining for a number of years as a result of higher gas prices and people choosing alternative modes of transportation rather than driving. However, in 2013, there was an increase in the amount of Cumulative Reserve REET II funding that the City was able to dedicate to transportation.

To help shore up the funding for SDOT's budget, the Executive and Council approved a \$20 Vehicle License Fee as part of the 2011 budget process. The Citizens Transportation Advisory Committee III (CTAC III) developed a plan for how the funding is programmed in 2012 and

beyond. Additionally, the Executive and Council increased the commercial parking tax by 2.5% as part of the financing strategy for the Alaskan Way Viaduct and Seawall and associated projects.

### **Bridging the Gap**

In 2006, the City successfully moved forward the Bridging-the-Gap initiative to repair and improve Seattle's streets, bike trails, sidewalks, and bridges. The funding package included a commercial parking tax, an employee hours tax (EHT), and a property tax levy that was approved by Seattle citizens in November 2006. The property tax levy is set to expire in 2015 and the City will need to go back to the voters to have it renewed.

The revenues received to date from the commercial parking tax have exceeded initial projections. Due to the strength of this revenue stream and the difficulty in administering the employee head tax, the Executive and Council decided to repeal the EHT. It was believed that any loss in EHT revenue would be made up by Commercial Parking tax. The repeal of EHT was effective January 1, 2010 per Ordinance 123150.

### **Long-Term Financing**

Bonds support major projects such as King Street Station Multimodal, Spokane Street Viaduct and Alaskan Way Viaduct & Seawall projects. They also support Bridging-the-Gap major maintenance programs, Bridge Rehabilitation and Replacement and Bridge Seismic Retrofit Phase II. The newly approved 2.5% portion of the Commercial Parking Tax will pay the debt service for the Alaskan Way Viaduct & Seawall and associated projects.

### **Outside Funding Sources**

Approximately 31% of the CIP is funded by outside sources in 2013. SDOT is highly successful in securing state and federal grants. The majority of grants are applied for through competitive processes. Applications are submitted, reviewed and rated based on the grant program's rating system. Projects that rate high based on SDOT's project priority list may not be competitive when rated by the outside granting agencies. The majority of grant programs require the local jurisdiction to provide a set amount of local match for the grant and they limit reimbursement for indirect costs.

SDOT also has many projects with funding from other agencies within the City as well as outside organizations. Seattle City Light and Seattle Public Utilities are partners in major projects such as Mercer Corridor and Spokane Viaduct. SDOT also partners with other public agencies such as the Washington State Department of Transportation and Sound Transit to implement regionally important transportation improvements.

## **Section 8 - CIP Spending by Major Category**

As discussed in the overview, the Seattle Department of Transportation's (SDOT) capital budget includes four categories of investment.

- ***Maintenance and Rehabilitation Programs*** optimize existing facilities by keeping facilities and equipment in good condition and good operating order. Examples include Arterial Asphalt and Concrete and Bridge Seismic Retrofit Phase II programs.
- ***System Improvements Programs*** fill in gaps or make extensions to networks that are identified through subarea or modal plans. Examples include Pedestrian Master Plan Implementation and Priority Bus Corridors programs.
- ***Neighborhood Programs*** are similar to system improvements, but generally comprise smaller-scale projects identified through community input. Examples include NSF/CRF Neighborhood and Neighborhood Traffic programs.
- ***Large Capital Projects*** are individual projects that stand out among the City's transportation needs because of their size or complexity, potential community impact, high cost, or coordination with outside partners. Examples include Linden Avenue North Complete Streets and Mercer Corridor projects.

The 2013-14 Proposed Budget and 2013-2018 Proposed CIP invest more than \$21 million over the biennium to support critical transportation infrastructure needs. These investments are described in more detail below.

#### ***Transit Master Plan Implementation***

The 2013-2014 Proposed Budget makes significant investments to begin implementation of the Transit Master Plan completed in 2012, with an emphasis on developing high-capacity transit options. The budget includes a \$2 million investment to develop a conceptual design of high-capacity transit options in the Eastlake corridor, and \$850,000 over the biennium to develop conceptual design options for the Madison corridor. Using \$500,000 of REET, SDOT will also develop conceptual designs for integrated pedestrian, bicycle and transit crossings of the Lake Union ship canal. To manage these projects and address existing staffing deficiencies, the budget also includes funding for 3 additional FTEs. Finally, in 2014, \$2.5 million is designated in a reserve outside of SDOT's budget for further implementation of the Transit Master Plan.

#### ***Pedestrian and Bike Master Plan Investments***

The 2013-2018 Proposed CIP includes several projects that are consistent with the Mayor's Walk Bike Ride initiative, which aims to make walking, biking, and riding transit the easiest ways to get around in Seattle. Over the six-year period, the CIP includes over \$35.5 million for implementation of the Bicycle Master Plan and \$39.6 million for implementation of the Pedestrian Master Plan. Specific new investments proposed in the 2013-2014 biennium include the following: \$800,000 for three Safe Routes to School projects, which improve safety along school walking and biking routes; \$600,000 for sidewalk safety repair, emphasizing projects located in Urban Villages and supporting low-income communities; \$300,000 for further work on the extension of the Burke-Gilman Trail; and \$208,000 annually for greenway development and related community outreach.

### ***Third Avenue Corridor Upgrades***

The Third Avenue Corridor overlaps multiple modal plans, and is proposed to receive \$1 million of REET. With this funding SDOT will make important capital upgrades to Third Avenue in downtown. This corridor is a key part of the Mayor's Center City Initiative, which aims to create downtown Seattle streets that are safe, inviting and vibrant. These improvements include a major sidewalk expansion and enhancement near Macy's department store, upgrading all remaining pedestrian signals to countdown signals, and re-marking all faded crosswalks in the corridor.

### ***Freight Mobility Enhancements***

Recognizing the critical importance of freight mobility to the economic vitality of the city, the 2013-2014 Proposed Budget adds \$486,000 over the biennium for freight mobility enhancements. The existing Freight Spot Improvements capital project, which makes small-scale freight mobility improvements to the City's street system, is increased by \$235,000 in 2014, and \$251,000 over the biennium is added to support the new Freight Master Plan, as planning for the City's freight investments needs has not been examined since 2005.

### ***Asset Preservation and Maintenance***

Investments to address the maintenance backlog are critical because deferred maintenance leads to costly repairs in the long-run, and, due to funding constraints, the City lags far behind industry standards for repair and replacement cycles in many functional areas. In recognition of the significant street surface repair needs throughout the city, the 2013-2018 Proposed CIP continues the Enhanced Paving Plan that began mid-year 2011. Through the Arterial Major Maintenance program, the CIP includes \$1.65 million of annual funding for this purpose, funded by Rubble Yard proceeds in 2013 and by the Commercial Parking Tax in 2014 through 2018. In addition, in 2013 and 2014, a further \$3.04 million of REET is allocated each year to this project. Depending on project size and the mix of asphalt versus concrete construction, this funding will deliver between 11 and 15 lane-miles of paving across 48-60 locations around the city each year. Finally, the CIP adds \$1.15 million annually for non-arterial street repair.