APPROACH

"I'd prefer to see traffic calming strategies, including lane reductions on multi-modal corridors, provided this is accompanied by more robust transit service and bicycle network improvements to provide alternatives to driving."

The BMP provides a long-range vision for improving conditions for bicycling in Seattle. This plan will be implemented incrementally over the coming years.

How We Do Business

In addition to guiding the location, type, and extent of bicycle infrastructure, end-of-trip facilities, and programmatic investments, this plan identifies opportunities for the City of Seattle to expand partnerships that support bicycling. These opportunities will leverage resources with other city departments and with partner organizations to implement bicycle projects and programs comprehensively and efficiently.

The plan identifies actions to better integrate bicycling throughout Seattle Department of Transportation (SDOT) operations. Currently, SDOT's approach is one of shared responsibility to create a culture that focuses on all modes of transportation and integrates bicycle implementation throughout the department. However, SDOT also recognizes that, like many great bicycling cities across the US, a dedicated bicycle coordinator position may increase accountability and project, program and maintenance implementation.

Decision making by the city to implement the BMP is supported by a set of activities that includes policies, management practices, and processes. The sections in this chapter describe current governance practices and provide actions needed to implement the vision of the plan through changes in the way the city does business, including:

- Bicycle Project Delivery that includes a project development and design process, creating public engagement strategies
- New and enhanced activities to ensure BMP implementation success
- Partnerships that will be essential for sustaining increased bicycling

IN THIS CHAPTER:

How We Do Business 93
Coordination between SDOT and other city departments, public agencies, and partner organizations is essential to successful implementation of the plan.

Bicycle Facility Maintenance 101
SDOT will need to continue to maintain and upgrade existing bicycle facilities. As more facilities are developed, the maintenance needs will grow over time.

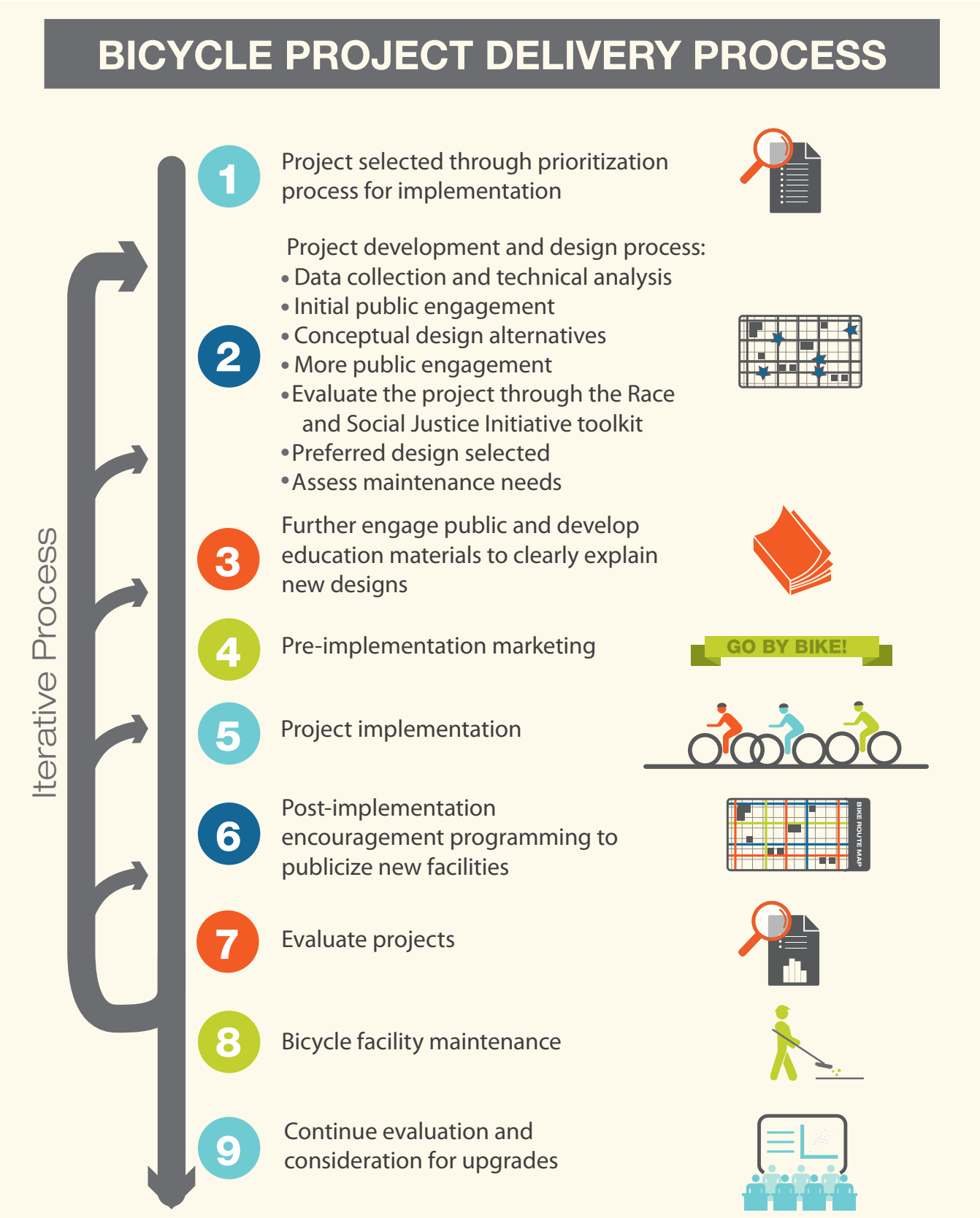
Prioritization Framework 104
The plan sets a long-term vision for bicycle facilities and programs. How the city decides what to implement over time should be based on a robust and data-driven prioritization framework.

Investment Approach 108
A summary of strategies the city and SDOT will pursue to fund the plan over time.

Performance Measures 112
To measure progress towards achieving the goals of the plans, SDOT will track performance measures over time.

Climbing lanes provide a space for bicyclists on hills while allowing motor vehicles to pass.

Figure 7-1: Bicycle Project Delivery Process



Bicycle Project Delivery Process

The plan strives to create a more integrated and strategic Bicycle Project Delivery Process to be used by SDOT, especially in regards to public engagement. Consistency is critical to provide the public a general understanding of how a project will be developed, designed, and implemented. Each project should also be evaluated using the City of Seattle Race and Social Justice Initiative Equity Toolkit.

The BMP is a system-wide plan that lays out a future vision of where bicycle facilities should be developed and what kind of facility is appropriate. As described in Chapter 4, the bicycle network map was defined based on a robust methodology. However, as bicycle projects are developed in the future (through the project development and design process), more work will be done to assess the feasibility of projects, and more detailed design and community engagement may lead to a project being developed in a different way or location than envisioned in the plan.

As noted in Figure 7-1, the project development and design process includes data collection, technical analysis, and more defined public engagement, as well as additional identification and analysis of alternatives, or alternative street cross-sections, and a preferred design to implement bicycle improvements. The process also consists of education about and promotion of the bicycle facility, ongoing maintenance, and further evaluation and potential evolution of design.

Public engagement at the University of Washington during the development of the draft BMP.

Chapter 7 Strategies and Actions: Bicycle Project Delivery Process

Strategies	Actions
7.1 Develop procedures and processes for bicycle project delivery	**7.1.1 Include public engagement, data collection and technical analysis, conceptual design alternatives and preferred design in the project delivery process.** • **Public engagement:** Work with the community to understand their priorities and develop solutions that balance local community and system-wide needs to implement safe bicycle facilities. Public engagement policies and strategies will be developed and then conducted during the project development and design process and will include numerous stakeholders; the surrounding community (residents and businesses), transit agencies, freight entities, other city departments, advisory boards and committees, etc. • **Data collection and technical analysis:** Parking utilization studies, traffic volumes, pedestrian and bicycle counts, traffic speed studies, assessment of transit and freight needs, adjacent land uses and potential future land use changes, driveways, emergency access etc. will be considered. • **Conceptual design alternatives:** Alternative street cross-sections, including facility types and locations. • **Preferred design:** Upon completion of the project development and design phase for the project, if it has been determined that a recommended cycle track (protected bicycle lane) is not feasible on the arterial street, then the project team would incorporate an adjacent neighborhood greenway to ensure people of all ages and abilities can ride to their destinations on an all ages and abilities bicycle facility.

New and enhanced activities to ensure Bicycle Master Plan Implementation Success

The implementation of the BMP will result in an expanded set of responsibilities for SDOT.

Chapter 7 Strategies and Actions: Implementation

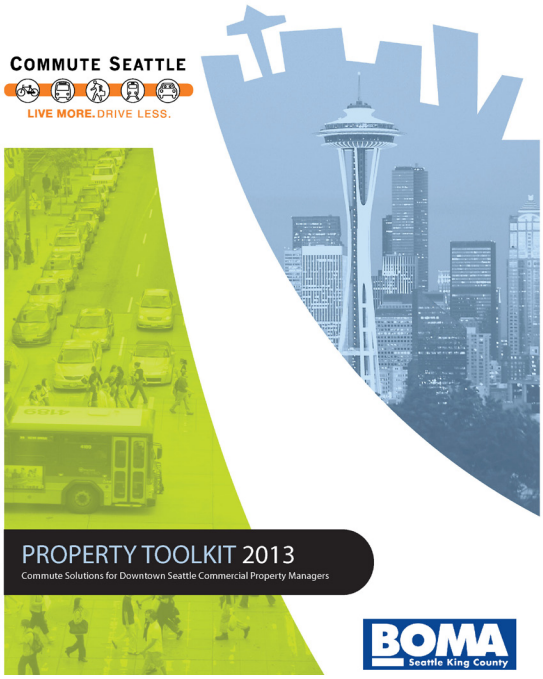
Strategies	Actions
7.2 Strengthen bicycle project and program delivery processes	**7.2.1 By the 2015 budget cycle, evaluate the need for a bicycle coordinator position(s)** to oversee all bicycle plan implementation activities.
	7.2.2 Develop an implementation matrix for all strategies and actions within the BMP to help define an organizational structure and assignment of new roles to SDOT and potential partners.
	7.2.3 Evaluate and monitor projects by conducting before and after counts, including incorporating new technology and perception surveys.
	7.2.4 Develop public engagement policies and strategies for use by SDOT and make any webpage, mobile apps, blogs, Twitter feeds, etc. fully integrated, complementary, user-friendly, and consistent with the Race and Social Justice Initiative principles..
	7.2.5 Develop a pilot program for temporary implementation of bicycle facilities. Experiment and test improvements of a bicycle facility in order to determine traffic operation pros and cons and/or modal trade-offs associated with the incorporation of the bicycle facility prior to final design and implementation.
	7.2.6 Explore innovative bicycle facility solutions that may work to overcome Seattle's topography barriers. Research and experiment with hill climb assistance technology to facilitate bicycle travel on steep grades where there is not a feasible flat route alternative.
	7.2.7 Explore the implementation and siting of bicycle "fix it" stations along high bicycle ridership corridors.
	7.2.8 Update the Traffic Control Manual to include requirements for bicycle detour plans. Review street closures and detours due to construction with the Seattle Bicycle Advisory Board.
	7.2.9 Test, evaluate, and implement appropriate innovative design treatments and technology that improve operating conditions and safety for people riding bicycles. These may include new technologies for bicycle detection and counting people bicycling, more durable pavement marking materials, and new products, and materials that extend the life cycle of facilities.
	7.2.10 Provide training of city staff, including SDOT and Seattle Police Department (SPD). Training can include best practice bicycle facility design, safety countermeasures, maintenance/new materials capabilities, and bicycle detection and count technology. Include training that pertains to bicycle-related research and studies such as, economic, safety, perception surveys, etc. Also provide SPD with educational tools and materials to share with the general public.
	7.2.11 Evaluate bicycle facility projects and programs with the Race and Social Justice Initiative Equity Toolkit.

Strategies	Actions
7.2 Strengthen bicycle project and program delivery processes	**7.2.12 Enhance the data collection program** to include a variety of sources. • Conduct an annual phone survey and increase sample size when possible. • Investigate opportunities to supplement the Puget Sound Regional Council travel survey to increase the City of Seattle sample size. • Ensure data analysis and reporting on an annual basis for performance measure targets and trends. • Update count data collection and technology as new bicycle detection allows for counting as well as detection of bicycle riders. • Ensure collision data collection includes both police (SPD) reported and fire department (SFD) reported collisions. • Develop a process for analyzing police reports to document where a bicycle collision occurred on the street within the specific bicycle facility or in an adjacent travel lane.
	7.2.13 Conduct regular reviews of the Seattle Municipal Code (SMC) sections that pertain to the rules of the road and to new development to identify changes that would facilitate better bicycling conditions. Pursue any identified local legislative changes to facilitate better bicycling conditions in Seattle. Partner with the Seattle Police Department and the Law Department to review and advocate for SMC changes that promote safe and lawful use of all transportation modes on city streets.
	7.2.14 - Continually monitor, evaluate, and improve bicycle facility infrastructure. A bicycle network is always evolving and the city can evaluate and modify its bicycle facilities to best meet the needs of people of all ages and abilities. (see action 7.13.1)
7.3 Review bicycle-related collisions, collision rates and frequencies over time and identify and implement safety strategies	**7.3.1 Analyze bicycle-involved collisions to identify trends, behaviors, engineering solutions, and policy/institutional issues** that can be changed to reduce the likelihood of future collisions.
	7.3.2 Track bicycle-involved collisions per type of bicycle facility. Review and compare collision rates across a variety of facility types over time to determine whether new facilities are having the intended effect of increasing safety by reducing collisions.
	7.3.3 Work with the Seattle Police Department (SPD) to analyze the collision data and, when applicable, determine locations for targeted and enhanced enforcement of all users of the roadway.
7.4 Track development of the bicycle facility network as part of SDOT's asset management system	**7.4.1 Develop a formal process for updating the bicycle facility network database.** Continue to track the bicycle facility information, such as lane miles per facility type and signage, and consider tracking new information.
7.5 Negotiate maintenance agreements with partners	**7.5.1 Unify multi-use trail standards, including maintenance, among all trails within the City of Seattle, regardless of land ownership.**
7.6 Update the Bicycle Master Plan	**7.6.1 Update the Bicycle Master Plan every 5-7 years** to take advantage of emerging opportunities, re-evaluate priorities, address network gaps, and respond to changes in mode share and travel patterns.

Partner Roles

The City acknowledges the critical role of various nongovernmental, public, and private partners as it looks to implement the BMP. While SDOT is the primary implementer of bicycle infrastructure improvements in Seattle, coordination with other city departments is critical to success. Working with all city departments to effectively achieve the goals of the BMP is a key and necessary part of the plan. All city departments should strive to understand how they play a role in helping to achieve safer streets for all while providing people options for getting around the city.

To help partners deliver programs, SDOT should provide support where possible. This includes providing grant funding, technical assistance, coordination on bicycle messaging, sponsor and logistical support for events, and event or meeting space. There are a variety of bicycle-related partners that SDOT already works closely with: at a state-wide level – The Bicycle Alliance of Washington and Cascade Bicycle Club; at a city scale – Commute Seattle and Seattle Neighborhood Greenways; and at a neighborhood level – Bike Works, West Seattle Bicycle Connections and other neighborhood groups and bicycle shops. Developing relationships with a large variety of bicycle-specific, safer streets advocates, and other organizations will help expand the knowledge about why bicycling is important to the future of Seattle.



Commute Seattle is a not-for-profit organization working to provide alternatives to drive-alone commuter trips in downtown Seattle. One of its initiatives is to help building owners and managers identify amenities, such as bicycle end-of-trip facilities, that encourage their tenants to commute by means other than driving.

Rainier Ave Summer Streets parade.

Chapter 7 Strategies and Actions: Partner Roles

Strategies	Actions
7.7 Seek partnerships for implementation of projects, initiatives, and programs	**7.7.1 Work with partners to deliver education and encouragement programs.**
	7.7.2 Work with partners to administer bicycle-related events.
	7.7.3 Document bicycle facility maintenance roles.
	7.7.4 Gather expertise and input from local bicycling organizations for project planning, design, and construction impacts.
	7.7.5 Work with partners to increase the supply of end-of-trip facilities.

Strategies	Actions
7.8 Work with other City of Seattle departments to implement the plan	**7.8.1 Coordinate with Seattle Public Utilities (SPU) during project development and design** to maximize transportation and stormwater benefits. An ideal coordination outcome would be to construct a project with both departments' elements at the same time to improve construction efficiency and reduce repeat construction impacts to one street. Incorporation of greener infrastructure on all streets is important for livability, sustainability, and the environment.
	7.8.2 Work with Seattle Police Department (SPD) to increase safety for all roadway users. Analyze collision data as a team to determine enforcement and/or engineering design treatments, educate the officers about operations of new bicycle facilities, and support proactive enforcement of the rules of the road for all modes. Invite community police officers to all new bicycle facility celebrations and opening ceremonies.
	7.8.3 Include Seattle Fire Department (SFD) staff in the project development and design phase of project implementation to maintain emergency access. Educate the fire fighters and emergency responders of the safety aspects of new bicycle facility and intersection designs.
	7.8.4 Work with Seattle Department of Planning and Development (DPD) to modify any Seattle Municipal Code regulations that will impact bicycling and the bicycling environment. Educate staff about new bicycle facility treatments and other aspects of this plan for use during streetscape concept plans, neighborhood zoning changes, and future planning studies. Include SDOT staff in Early Design Guidance (EDG) development meetings to alert private developers of proposed bicycle facilities along their property frontage for opportunistic implementation, as well as for access management needs.
	7.8.5 Partner with Seattle City Light (SCL) to provide lighting in critical locations so that bicycle facilities, especially off-street facilities, remain safe to use during all hours of the day and throughout the year.
	7.8.6 Work with Seattle Parks and Recreation Department (Parks) to provide bicycle access to and, where appropriate, through parks. Explore opportunities to expand existing multi-use trails or build new all ages and abilities bicycle facilities through Parks land. Assist Parks in updating their bicycle policy to reflect the desire of new riders to travel through parks. Promote bike share and bicycle parking near or within parks.
	7.8.7 Assist Seattle Center to update its bicycle policy to address the desire of new riders to safely travel through the Center to access destinations. Promote bike share locations near and within Seattle Center.
	7.8.8 Educate Seattle Department of Neighborhoods (DoN) staff about new bicycle facilities and the role they have in creating safer streets for all users. Share information about upcoming bicycle project outreach and engagement and provide SDOT project manager contact information for all projects.

Strategies	Actions
7.8 Work with other City of Seattle departments to implement the plan	**7.8.10 Work with Seattle Office of Economic Development (OED) staff on bicycle programmatic actions that enhance the economy.** Encourage OED to conduct before and after economic analyses and studies to communicate the benefits that new bicycle facilities have on a neighborhood and city-wide scale, including tourism. Continue to work with OED on intercept surveys to better understand how people access neighborhood business districts.
	7.8.11 Work with Seattle's Office of Sustainability and Environment (OSE) to incorporate implementation strategies and complementary programs that help to achieve the goals of the Climate Action Plan.
	7.8.12 Work with the Office of Intergovernmental Relations (OIR) to promote Seattle's interests with other agencies and state and federal government policy to advance the goals and objectives of the BMP.
	7.8.13 Engage with the Seattle Law Department to assist with Seattle Municipal Code recommendations and creation of new enforcement policies as necessary.
7.9 Build and expand upon public partnerships	**7.9.1 Engage transit operators at the bicycle facility project development stage when there is an overlap with transit service.** Design of the bicycle facility should allow safe operations of both modes, ideally through separation of the modes where possible. It will be important to acknowledge bus layover zones, bus stop/bulb locations, crosswalks, traffic signals, and right-of-way allocation.
	7.9.2 Engage King County Public Health to understand public health trends as they relate to bicycling. Continue to measure health impacts related to safety, obesity, respiratory health, other active lifestyle health benefits and equity.
	7.9.3 Engage with the Puget Sound Regional Council (RSRC) via membership in its numerous boards and committees so SDOT can remain a leading partner for regional transportation success. PSRC funding opportunities may enhance non-motorized projects.
	7.9.4 Engage and coordinate with neighboring jurisdictions for the continuity of bicycle networks when city boundaries are crossed. Coordination regarding signage, facility type, and design can help to create a cohesive regional bicycle network for people riding bicycles.
	7.9.5 - Engage with the Seattle Public Schools to continue to partner with Safe Routes to School, on traffic safety education, and encouragement of walking and biking to school.

Linden Ave Complete Street, including a cycle track (protected bicycle lane) opening day celebration event.

Bicycle Facility Maintenance

People riding bicycles are particularly sensitive to the condition of the roadway or multi-use trail surface, because maintenance-related issues like potholes, irregular surfaces, and debris can be uncomfortable and may lead to collisions. Maintenance affects the comfort and appeal of facilities, and lack of well-maintained facilities may reduce bicycling rates.

Maintaining the Bicycle Network

Improving maintenance for bicycle facilities requires action on several fronts:

- designers should be expected to think about maintenance (materials and labor costs) when they begin project development
- low-maintenance and high-quality techniques and materials should be the rule rather than the exception
- maintenance policies should be shared and agreed upon by all relevant agencies
- bicycle facilities and pavement conditions should be assessed
- the public should be involved in identifying maintenance needs.

On-street bicycle facilities should be maintained as part of other routine roadway maintenance, but with greater attention to detail to ensure smooth travel for more vulnerable street users. Maintenance activities should be funded at a level that allows SDOT to meet the maintenance performance outcomes described in Table 7-1.

Table 7-1: Maintenance Activities

Maintenance Activity	Current Maintenance Activity	Desired Maintenance Activity
Permanent utility cut restoration	Within one year	Within one year
Replace drain grates with new bicycle-friendly grates	As needed	As needed and with all new bicycle projects
Repair and replace pavement	Arterials: 50–100 years Non-arterials: limited to no action	Arterials: 25–65 years Non-arterials: as needed
Fill concrete joints within bicycle facilities	Upon improvement request	Upon improvement request and within corridor improvements assessment
Repair potholes	Within 72 hours of report	Within 72 hours of report
Replace signs	As needed	As needed
Replace pavement markings and striping on bicycle facilities	Multi-year basis	Multi-year basis
Trim vegetation	Upon request for off-street facilities and yearly on multi-use trails by SDOT, Parks, and Port of Seattle	Same as current
Review visibility at intersections	Upon request	Upon request and as part of corridor projects
Complete safety improvements at railroad crossings	None	As prioritized
Remove graffiti	As needed	As needed
Clean leaves, debris, trash, snow, and sand	As needed; upon request	As needed
Repair or replace lighting	Upon request	Upon request
Maintain bicycle racks/furniture	Upon request	As needed
Sweep streets with bicycle facilities	Arterials: monthly Non-arterials: none	Arterials: monthly Non-arterials: as needed
Inspect bridge structures	Annual	Annual
Repair fencing adjacent to multi-use trails	None	As needed
Bicycle counters	None	As needed

Chapter 7 Strategies and Actions: Facility Maintenance

Strategies	Actions
7.10 Maintain on-street and off-street bicycle facilities	**7.10.1 Develop maintenance standards and schedules.**
	7.10.1 Plan for and adequately fund maintenance activities and needs, including equipment and labor.
7.11 Consider maintenance costs, procedures, and long-term funding mechanisms as a part of all new bicycle facility projects	**7.11.1 Gather life-cycle information and cost estimates based on facility type** to better gauge current and future maintenance needs. Update costs projections as needed to remain current.
	7.11.2 Identify maintenance costs in the project development and design stage of all bicycle facility projects.
	7.11.3 Establish clear maintenance responsibilities in advance of construction.
	7.11.4 Identify new maintenance needs (e.g. sweepers of cycle tracks).
7.12 Encourage people riding bicycles to report maintenance complaints and improvement requests to SDOT	**7.12.1 Distribute the street maintenance request form and phone number for surface improvements** like pavement, striping, signing and vegetation, and access improvements. Include this information in the bicycle program portion of the SDOT website and annual user map.
	7.12.2 Respond to requests in a timely manner.
	7.12.3 Expand the program to identify problems that need immediate attention, to identify recurring problems at particular locations, and to set major maintenance priorities.
	7.12.4 Add non-arterials (where neighborhood greenways are implemented) to the Bike Spot Improvement Program and pavement repair programs, where necessary.

*Many North American cities develop policy statements that **integrate bicycle facility maintenance** into project development. In most cases, the intent of maintenance funding policy is to preserve the network in **"a state of good repair."** Yet, few cities develop actionable funding plans or mechanisms that dedicate adequate city funds to this purpose. **Two cities break this mold:** Minneapolis and Santa Monica. Each city has committed **8 to 10 percent of its total bicycle capital investment** program toward maintaining new capital improvements. Minneapolis estimates $2 per linear foot to maintain its network of trails, bicycle boulevards, and bicycle lanes.*

Improving the Bicycle Network

In addition to maintaining existing bicycle facilities, SDOT will also work to improve facilities as needed. An improvement of an existing facility could involve improving the condition of a bicycle facility, modifying operations for all modes, or other engineering elements that provide a safer street for everyone.

Chapter 7 Strategies and Actions: Improving Existing Bicycle Facilities

Strategies	Actions
7.13 Improve bicycle facilities as needed, based on performance criteria	**7.13.1 Develop a data-driven process to identify and prioritize existing bicycle facility corridors** to be considered for improvements. A bicycle network is always evolving. The city must continually evaluate and modify its bicycle facilities to best meet the needs of all bicycle riders. Data to be considered may include the following: • High collision locations • Collision history and trends • Bicycle facility pavement condition assessment • Bike Spot Improvement Program requests • Bicycle counts • Signal timing • Bicycle detection functionality
	7.13.2 Conduct a follow-up study to evaluate the effectiveness of new treatments. Factors that may be considered: • Does the treatment reduce conflicts between people riding bicycles and other roadway or trail users? • Does the treatment improve the behavior of people bicycling? • Does the treatment improve the behavior of people driving? • Do people riding bicycles perceive that they are safer?
7.14 Create a multi-use trails upgrade and maintenance plan	**7.14.1 Assess existing multi-use trail conditions and develop recommendations to improve the multi-use trail environment.** Include pavement and shoulder condition, vegetation control, adjacent buffers and/or barrier treatments, intersection and/or railroad crossings, etiquette signage, and wayfinding signage.
	7.14.2 Conduct multi-use trail capacity studies to evaluate trail expansion needs. If a trail expansion cannot be achieved (for example, adjacency to an environmentally-sensitive area), assess if a parallel street may help serve people riding bicycles. Install alternate route wayfinding signage along the trail when a parallel street bicycle facility is installed.
	7.14.3 Remove unused bollards and bollard receptacles on multi-use trails where they are no longer needed.
	7.14.4 Conduct counts at intersections to assess assignment of right of way at trail crossings.
7.15 Assess the condition of SDOT-owned bicycle racks	**7.15.1 Develop a process to access bicycle rack and on-street bicycle corral conditions and replace as needed.**
	7.15.2 Replace bicycle racks when non-standard racks are determined to be non-functioning or a safety issue.

Prioritization Framework

Bicycle Facility Prioritization

Full implementation of the proposed bicycle network (including new facilities and upgrades to existing facilities) will take many years. This makes it important to develop a process for selecting an equitable and realistic set of prioritized projects to complete over time. This process should fulfill the plan's goals of increased safety, ridership, connectivity, equity, and livability, while simultaneously providing enough flexibility for Seattle to pursue projects based on specific opportunities.

Primary Evaluation Process

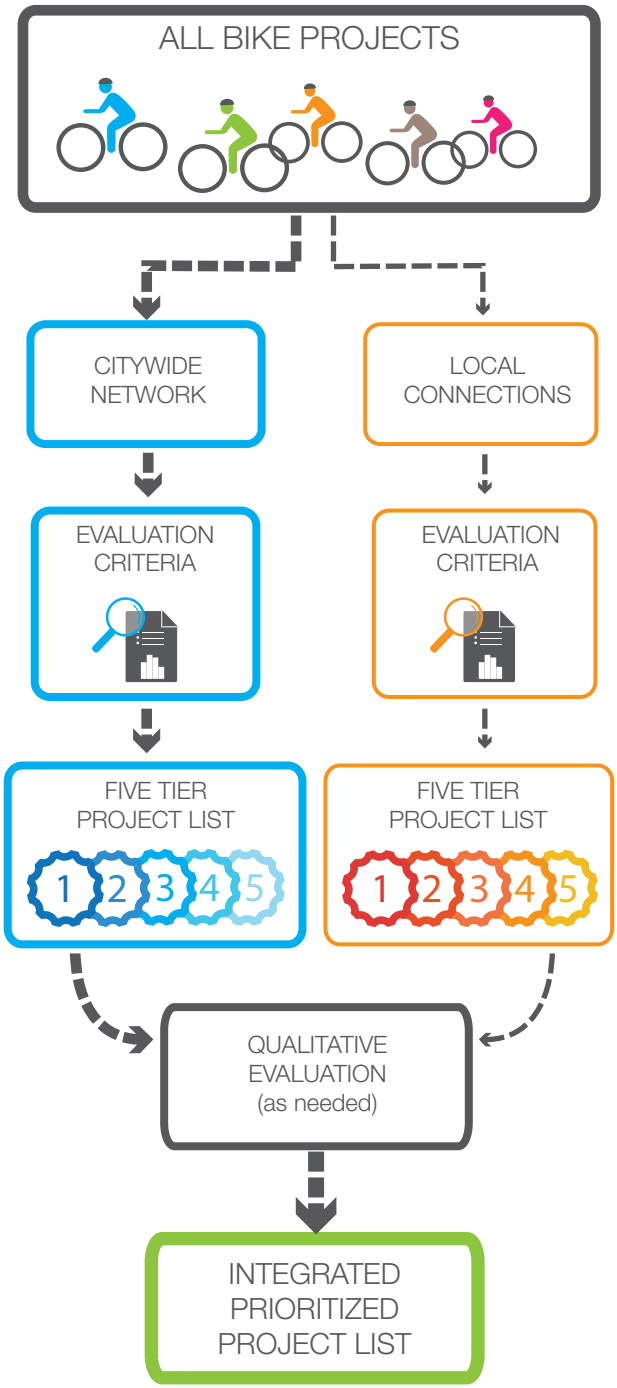
Step one in the prioritization framework recognizes two categories for project prioritization based on their role in the bicycle network:

- **Citywide network**
- **Local connectors**

Completing high-demand segments of the **Citywide Network** should be a near-term priority. The area in the city with the highest overall demand, based on residential and employment densities, is the Center City area (Downtown Seattle and surrounding neighborhoods such as South Lake Union and Capitol Hill). Much of the Downtown core currently lacks high-quality bicycle facilities. A near-term priority for the arterial cycle track (protected bicycle lane) network should be to implement facilities within Downtown, and the creation of safe, high-quality connections to the Center City.

Other near-term Citywide Network implementation priorities should be neighborhood greenways within all neighborhoods throughout the city to provide better pedestrian and bicycle access to local destinations (especially to schools), safer arterial street crossings, and slower moving motorists, which, ultimately, encourages more people to try riding a bicycle, thus creating safer streets for all users of the roadway and more livable communities.

Figure 7-2: Prioritization Process



The city may decide over time to vary future funding allocations between the **Citywide Network** and **Local Connectors** facilities two major categories based on changing priority needs. For instance, a higher percentage of funding could be allocated to bicycle facilities that contribute to the citywide network or funding could be allocated based on project type. Figure 7-2 portrays how the bicycle facility prioritization process will work, using both a quantitative and qualitative evaluation process to ensure the highest scoring projectsare built first.

Quantitative Evaluation Process

Step two in the prioritization process evaluates proposed projects in Seattle's bicycle network based on detailed evaluation criteria related to the plan's five goals as outlined in Table 7-2. While all of the major goals of the plan are important and does factor into project prioritization, safety and connectivity will be scored higher than other criteria. If safety and connectivity are improved across the city, then the other plan goals (increasing ridership, for example) will also be enhanced. Equity is also an important criterion to ensure that facilities are prioritized and implemented across the city, including in historically under-represented communities.

All projects in the networks will be scored against each other, regardless of facility type. The citywide and local connectors networks will be grouped into five tiers based on the number of points scored or the number of projects falling into each tier. Projects in the highest tier would be top priority; the second tier would be moderate priority, and the third would be lower, and so on.

Table 7-2: Prioritization Evaluation Criteria

Theme	Criteria Definition
Improve SAFETY	Addresses location with bicycle collision history and emphasis on vulnerable roadway users
	Enhances bicyclist safety by promoting travel on streets with low motorist speeds and low volumes
	Addresses locations or streets that are associated with greater bicyclist stress and more severe collision potential due to high motor vehicle volumes (ADT) and high speeds
Increase RIDERSHIP	Provides a connection to destination clusters
	Provides a connection to areas with high population density
Address EQUITY	Serves populations that are historically underserved, including areas with a higher percentage of minority populations, households below poverty, people under 18, people over 65, and households without access to an automobile
	Provides a health benefit for people in areas with the greatest reported health needs, represented by obesity rates, physical activity rates (self-reported), and diabetes rates
Enhance LIVABILITY	Reaches the greatest number of riders, but recognizes that all bicycle facilities provide a measurable benefit to at least some bicyclists
	Distribute bicycle facilities across the city so people riding bicycles can reach all destinations
Enhance CONNECTIVITY	Removes a barrier or closes a system gap in the bicycling network
	Makes a connection that will immediately extend the bicycle network

Qualitative Evaluation Process

A third step to guide annual project prioritization is a set of criteria that focuses on more qualitative factors as opposed to quantifiable criteria. The qualitative evaluation criteria outlined in Table 7-3 are useful and important when considering other projects that may not have scored highly during quantitative analysis, but may be opportunity driven, or have some other compelling reason for moving forward.

Catalyst Projects

While large-scale or challenging projects are a part of both the citywide and local connectors bicycling networks and may be prioritized within this framework, it is likely that alternative funding sources (e.g., grant funding) will be necessary to successfully complete many of the catalyst projects.

Program Prioritization

Programmatic actions are also broken down by priority tiers, with Tier 1 representing the most immediate actions, as shown in Table 7-4. Actions are prioritized primarily based on their potential to improve safety; programs believed to contribute directly to increased safety (through increased awareness and understanding about traffic laws) are included in Tier 1. Other factors in the prioritization include community input received throughout the BMP update process and SDOT's estimation of which can be undertaken more immediately, given resource availability.

Each action is also cross-referenced against the plan goals that it serves. Goals shaded in dark directly address that goal; lighter shading indicates that an activity addresses the goal less directly.

Table 7-3: Qualitative Evaluation Criteria

Criteria	Comments
Potential to leverage other funding	Initiating projects will help secure funding
Policy directive	Project specified by policy or City Council
Community interest	Local community has expressed interest in bicycle infrastructure improvements
Geographic balance	Project improves the balance of bicycle funding to be spent among geographic sectors of the city. Project expands the percentage of Seattle residents living within ¼ mile of a bicycle facility.

The cycle track on Broadway provides a physical separation between motorized and bicycle traffic.

Table 7-4: Program Prioritization

Priority Tier	Action	Ridership	Safety	Connectivity	Equity	Livability
1	Provide bicycle education for primary-aged children.	Indirectly	Directly		Indirectly	
1	Assess the feasibility and cost of including middle school and high school-aged safety roadway education in Seattle schools.	Indirectly	Directly		Indirectly	
1	Promote bicycle safety and multimodal trip knowledge at Seattle driver education programs and licensing centers.		Directly		Indirectly	
1	Research and assess the feasibility of new laws		Directly			Indirectly
1	Collaborate with partners to develop and strengthen existing "Bike 101" materials.	Indirectly	Directly		Indirectly	Indirectly
1	Support and advertise events and programs that provide helmets, and other safety equipment at free or reduced rates.	Indirectly	Directly		Indirectly	
1	Develop educational materials and programs that explain how to safely drive and bicycle on or near streets with bicycle facilities.		Directly			Indirectly
1	Support information sharing and communication between the freight, professional driver, and bicycling communities.		Directly			Indirectly
1	Partner with Puget Sound Bike Share to promote the system and focus on safety for new riders and other programmatic activities.	Indirectly	Directly			Indirectly
2	Partner with and support Puget Sound Bike Share to encourage expansion to bicycle-friendly business districts and neighbohroods throughout Seattle.		Indirectly			Directly
2	Partner with other departments and organizations to develop education and encouragement programs for populations underrepresented in bicycling.	Indirectly			Directly	Indirectly
2	Update the annual printed bicycle map.			Directly		Indirectly
2	Develop targeted marketing campaigns to encourage people to try bicycling and follow the rules of the road when traveling by bicycle.	Directly	Directly			Indirectly
2	Enhance the existing wayfinding system to incorporate new destinations and include wayfinding signs as a component of all projects			Directly		Indirectly
2	Work with neighborhood groups and other partners who want to promote and improve bicycling.	Indirectly				Directly
3	Support events that encourage neighborhood level active transportation.	Indirectly		Indirectly	Indirectly	Directly
3	Assist neighborhood business districts, or other groups, that want to begin a Bicycle-Friendly Business District.	Directly			Indirectly	Indirectly
3	Coordinate with major institutions to ensure cohesive signage and information sharing.			Directly		Indirectly
3	Make all bicycle-related GIS data available through the Seattle.gov GIS WEB portal.			Directly		
3	Support the development of a bicycle tourism program.	Indirectly				Directly
3	Support strong bicycling elements in Transportation Management Programs (TMP) and Commute Trip Reduction (CTR) sites.	Directly				Indirectly

Directly addresses each goal	Directly
Indirectly addresses each goal	Indirectly

Strategies	Actions
7.16 Develop 3–5 year implementation plan to summarize near-term priorities to implement the Bicycle Master Plan	**7.16.1 Develop a 3-5 year implementation work program to define specific actions to implement the BMP.** The work plan should include information on projects, programs, end-of-trip facilities, maintenance, and other activities. The work plan should be reviewed by the Seattle Bicycle Advisory Board (SBAB) and City Council.
	7.16.2 Update the 3–5 year work plan on an annual basis..

Investment Approach

Other top cycling cities have shown that a broad-based approach to bicycle investment that funds bicycle infrastructure, marketing, education, maintenance, and transit access improvements can simultaneously realize marked increases in bicycle use and bicycling safety. A balanced investment approach, informed by the information in Table 7-5, will be important for SDOT to effectively reach the plans five goals.

The Changing Nature of Bicycle Projects

Seattle residents expect safe, comfortable, and convenient bicycle facilities as a way to improve quality of life and help achieve community livability and economic goals. The layering of the all ages and abilities network onto the existing network of sharrows and arterial bicycle lanes will come at a greater cost than current funding levels, in part because the designs are more complex. Even so, these more attractive facilities are typically less expensive than other modal investments, such as high-capacity transit projects, and require less maintenance, such as roadway paving projects.

Funding Strategy

Federal and state grant funding sources are important, but are becoming a less reliable option for local governments. Federal support for active transportation grants is stagnating, and competition for funding is increasing as more communities around the country and in the state of Washington commit to livable streets and communities strategies. Local long-term revenue streams have successfully funded bicycle projects and programs, yet are not sufficient for widespread expansion of bicycling numbers and safety.

The funding strategy will help the city secure continual financial support for bicycle transportation and recreation, position itself for successful grant applications, and prioritize bicycle projects in strategic planning and budget development to ensure funding in the city's Capital Improvement Program (CIP).

Table 7-5: Summary of Bicycle Strategy Investment Ranges - Portland, Minneapolis, New York City, and Copenhagen

Strategy	Total Cycling Investment (%) per Year	Investment ($) per Capita per Year Based on Peers
Network improvements	72%–98%	$25.00–$50.00
Parking & end of-trip facilities	0.25%–5%	$0.15–$2.00
Bicycle-transit integration	0.40%–4%	$0.20–$1.50
Education	0.50%–17%*	$0.25–$6.00
Encouragement	0.50%–3.61%	$0.25–$1.25

*Note: The broad range in education funding levels displayed above relates to some cities' propensity to boost funding for cycling education once some level of network "maturity" has been achieved.

SOURCE: TRANSLINK REGIONAL CYCLING STRATEGY IMPLEMENTATION PLAN

SDOT should employ a funding allocation strategy that is flexible and allows for opportunistic spending. Seattle's funding approach should be multi-pronged, covering investments not just in constructing new bicycle facilities, but also in offering bicycle parking, encouraging people to use facilities and bicycles in general, educating people about the rules of the road, maintaining bicycle facilities, and tracking the success of bicycle projects and programs.

Bridging the Gap funding levy is a substantial funding source for bicycle projects over nine years (2007-2015).

Chapter 7 Strategies and Actions: Funding and Investment

Strategies	Actions
7.17 Establish a broad-based funding approach	**7.17.1 Fund bicycle projects and programming commensurate to US Census "commute by bike" mode share percentage**. In 2012, 4.1 percent of Seattle residents commuted by bicycle, supported by a bicycle project funding level of approximately 2 percent of SDOT's budget. Mode share-based funding should ultimately take the form of a "stepped" funding program, where funding increases as the bicycle mode share increases and the percentage of transportation funds allocated for bicycle transportation increases gradually over time using scheduled increases in funding.
	7.17.2 Fund high-priority projects first. The plan includes clear direction to prioritize the types of projects that have the greatest potential impact on the plans five goals..
	7.17.3 Continue to include bicycle projects in the City's six-year Capital Investment Program (CIP). The inclusion of more complex and potentially more expensive bicycle facilities in the CIP is appropriate to ensure annual program budgets are not fully consumed by one or two large projects.
	7.17.4 Continue to integrate bicycle projects into Complete Streets analysis.
	7.17.5 Fund bicycle projects through major multimodal capital projects.
	7.17.6 Fund bicycle facility maintenance.
	7.17.7 Consider bicycle funding in a Bridging the Gap renewal measure and other funding programs.
	7.17.8 Capitalize on the multiple benefits of bicycling to fund neighborhood initiatives out of a variety of fund sources, such as the Safe Routes to School program. The Neighborhood Street Fund, Family and Education Levy, and Neighborhood Park and Street Funds are potential funding opportunities for community-driven projects.
	7.17.9 Prepare plans with conceptual design and planning-level cost estimates for high-priority projects to increase readiness for grant funding.
	7.17.10 Develop a citywide strategic investment approach that integrates bicycle facility development into major capital project, multimodal corridor redesign, and roadway maintenance budgets.
	7.17.11 Fund bicycle programs.
	7.17.12 Fund end-of-trip facilities and partner with agencies, major institutions, and private developers in cost-sharing.
	7.17.13 Fund neighborhood greenways and multi-use trail projects out of the Pedestrian and Bicycle Program funds because multiple modes benefit from these investments.

Local, Regional, State, and Federal Funding Scan

The BMP contains a variety of facility types, maintenance needs, and programs that will require a diverse range of funding sources. Grant funding will continue to be important, and the city should explore private funds or other revenue options. Appendix 6 presents a scan of public and private funding opportunities that SDOT is well positioned to secure for bicycle infrastructure and programs. The scan also provides a summary of how Moving Ahead for Progress in the Twenty-First Century (MAP-21)—the current iteration of federal surface transportation funding—impacts bicycle infrastructure and program funding and how Seattle can capitalize on these changes.

Bicycle Network Planning-Level Cost

Planning-level cost estimates were developed, based on the facility types in the plan. For each facility type, a range of planning-level cost estimates per linear mile was developed using cost information known to date (based on recent experience) and supplemented with current unit prices and an assumed level of additional infrastructure needs. While the cost range was developed to get an overall plan-level cost for the proposed network, each segment cost will vary due to several elements including, but not limited to, existing pavement condition, pavement type, drainage basin, and existing and proposed signals. Detailed costing will be done as part of the implementation of each project during the project development and design phase.

Planning-Level Cost Assumptions

Arterial crossing treatments

Arterial crossing treatments between projects will vary greatly. Some intersections may not require any changes; other intersections might be improved with traffic signals, pedestrian and bicycle half signals, median islands, marked crosswalks, or other treatments. For the purposes of the order-of-magnitude cost estimate, the range reflects the variety of treatment options.

Installing a wheel curb to protect bicyclists in the bicycle lane from sharply turning traffic.

Pavement Type and Condition

Pavement types and conditions vary as do the level of repair and replacement required for each facility segment. For the purposes of the planning-level system wide costs, concrete was assumed for cycle tracks (protected bicycle lanes) and in street, minor separation facilities. Asphalt was assumed for off street facilities and neighborhood greenways. Five percent of facility length was assumed to be replaced during the facility construction. Pavement type data were used in applying percentages of repair costs for each existing pavement type to the system. It should be noted that additional pavement repair costs could be part of the assumed contingency costs.

Drainage Basin/Stormwater Costs

The location of a specific project, as well as the project type, will drive the drainage costs. For example, projects located in drainage basins may trigger stormwater treatment and detention, while a project in another area may not require detention or treatment.

Bicycle Facility Type Costs

The list below correlates to the facility types indicated on the Recommended Bicycle Network Map.

Off-street Facilities (Multi-use Trail)

The base planning-level cost assumes a 16-foot wide asphalt paved trail with 2-foot gravel shoulders on each side, signage every 1/4 mile in both directions, and continuous 6-foot wide seeded lawn

Connection from the Burke-Gilman Trail to the 39th Avenue NE greenway.

along one side of the trail. Typical improvements include curb and gutter, curb ramps, drainage infrastructure, and minimal power pole relocation.

Cycle Tracks (Protected Bicycle Lanes)

The base planning-level cost assumes a 7-foot wide, one-way facility on each side of the street along the curb line. Many protected bike lanes may be implemented instead with a 12-foot wide, two-way facility on one side of the street. Typical improvements include a 3-footwide continuous striped separation with vertical mounted traffic barrier, bike symbol and "bike only" pavement markings, and informational signage every 1/4 mile. This estimate assumes that, on average, a cycle track could require up to two signal per mile.

In Street, Minor Separation

The base planning-level cost assumes a 6-foot wide, one-way facility on each side of street along the curb line. Typical improvements include a 3-footwide continuous striped separation, bike symbol and "bike only" pavement marking, and informational signage every 1/4 mile.

Neighborhood Greenways

The base planning-level cost includes the installation of facilities designed to give priority to non-motorized movement. Typical improvements include signalization at arterial crossings or other intersection treatments, two-way sharrow symbols, traffic refuge areas, speed humps, curb ramps, curb bulbs, sidewalk and/or pavement repair, and informational signage every 1/4 mile.

Additional Cost Assumptions

For planning-level costing, each per linear mile cost estimate includes an additional 35 percent for "soft costs," which need to be accounted for in developing cost estimates. These would include:

- Project management
- Project scheduling
- Engineering and planning
- Permitting
- Bid package preparation
- Cost estimating
- Bidding services
- Construction
- Construction inspections
- Construction engineering services

In addition, each per linear mile cost estimate includes a contingency amount that ranges from 25 percent at the low end to 35 percent at the high end. Elements that could be included as part of contingency costs include:

- Additional median refuge islands at arterial crossings
- Storm drainage improvements
- Additional pavement improvements
- Unforeseen scope items or variability in site conditions

Table 7-6: Summary of Planning-Level Cost Ranges for Bicycle Facilities in the Bicycle Network

	Total Plan Miles	Facilities to Build (miles)	Approximate Cost per Mile (low end)	Facility Cost (low end)	Approximate Cost per Mile (high end)	Facility Cost (high end)
Off Street	78.9	32.0	$1,456,000	$46,590,000	$1,573,000	$50,340,000
Cycle Track	104.8	101.6	$1,546,000	$157,070,000	$1,894,000	$192,430,000
Neighborhood Greenway	248.9	238.6	$659,000	$156,240,000	$952,000	$226,150,000
In Street, Minor Separation	137.9	93.5	$321,000	$30,010,000	$574,000	$53,670,000
Shared Street	37.8	7.8	$48,000	$370,000	$48,000	$370,000
Total	608.3	473.5		$391,280,000		$523,960,000

As shown in Table 7-6. the rough order-of-magnitude planning-level cost range for the facilities listed in Table 7-7 is $390 million to $525 million. The low range cost estimate assumes that cycle track (protected bicycle lanes) projects would not require major drainage structure revisions; in street, minor separation facilities would not include signal upgrades; and that neighborhood greenway arterial crossings would have curb ramps previously upgraded or paid for by a separate funding source. The upper limit range cost estimate assumes some limited signal improvements for in street, minor separation facilities; curb ramps where neighborhood greenways intersect with arterial streets; cycle track storm drainage pavement repair, and increased the contingency to 35 percent. Because not all projects will come in at either the low end or the high end of the cost spectrum or a cost range is appropriate. Detailed costs will be developed for all projects, based on detailed design and the specific characteristics of each corridor. Based on the low-end planning-level cost estimates, approximately $20 million per year would be required to build the bicycle facility network in 20 years.

Other Bicycle System Costs

The planning-level system costs do not include:

- Catalyst projects (see Map 4-9): While these projects are an integral part of the future system, their implementation will likely be either part of a larger regional infrastructure project or will require other agency partners to implement.
- Maintenance: While maintenance is critical to a successful system, the maintenance costs will vary depending on the amount of the current and future system that has been installed.
- End–of-trip facilities: Bike racks, showers, changing facilities, and maintenance stations are all necessary components of a bicycling-friendly environment. Those end-of-trip facilities are provided by a coordination of public and private development and through an ongoing SDOT bicycle program efforts funded annually.
- Programs: Education, enforcement, encouragement, and promotional efforts of new bicycle infrastructure, are complementary to the development of on- and off-street bicycle facilities. Existing SDOT program resources (e.g. safety) can be leveraged to support identified programmatic needs.

Performance Measures

The performance measures in the plan are important for assessing whether the plan is meeting its goals over time. While they are focused on assessing progress over the long-term, data on these measures should be collected on a regular basis to help track interim progress being made. This information will allow for course adjustments to be made to help ensure achievement of plan goals.

The plan performance measures are based on the five goals of the plan (see Tables 7-7 and 7-8). The performance measures are generally outcome-based (focused on achieving policy objectives such as increasing ridership). The intent of outcome-based performance measures is to prioritize investments that do the best job of achieving desired plan outcomes, as opposed to output-based metrics that are more dependent upon available resources, that may fluctuate year to year.

The performance measures for the BMP were selected in part based on SDOT's ability to collect relevant data, both now and in the future. This data can help inform project selection and design, the development and success of education and encouragement programs, measures to improve safety, and other issues. Data and performance measures outlined in the following table represent the way SDOT will track achievement of the BMP plan goals over time; however, SDOT expects to collect an even broader spectrum of data as it implements the plan over time.

While the BMP update includes new performance measure targets, SDOT plans to continue tracking several 2007 plan performance measures (tripling ridership and reducing the number of reported collisions by one-third between 2007 and 2017) to see if these original performance measure targets were met. Since SDOT's ridership-gathering methodology has changed substantially since 2007, the ridership assessment in 2017 will be based specifically on downtown cordon counts; this is the only way to compare ridership statistics going back to 2007. The 2013 plan will measure ridership based on SDOT's updated counts methodology, and data collected by all-day bicycle counters, which have recently been installed.

Table 7-7: 2013 Bicycle Master Plan Performance Measure Targets

Goal	Performance Measure	Baseline Measurement	Performance Target
Ridership	Number of bicyclists counted at locations throughout Seattle	2014 citywide quarterly counts and daily counts at counter locations	Quadruple ridership between 2014 and 2030
Safety	Bicycle collision rate	2014 rate (based on updated 2014 counts)	Reduce bicycle collision rate by half (50%) between 2013 and 2030
	Number of serious injuries and fatalities	2013 number	Zero fatalities by 2030
Connectivity	Percentage of bicycle facility network completed	2013 percentage (calculate number based on final network map)	100 percent of bicycle system constructed by 2035
Equity	Areas lacking bicycle facilities	2012 Existing Conditions report	Zero areas of city lacking bicycle facilities by 2030
Livability	Percentage of households within ¼ mile of an all ages and abilities bicycle facility	2013 percentage (calculate based on latest built network)	100% of households in Seattle within ¼ mile of an all ages and abilities bicycle facility by 2035

Table 7-8: 2013 Bicycle Master Plan Performance Measure Trends

Goal	Performance Measure	Baseline Measurement	Desired Trend
Ridership	Commute mode share	2012 Census data (American Community Survey)	Increase
Safety	Percentage of Seattle residents who identify safety as a major impediment to bicycling	2013 SDOT phone survey percentage	Decrease
Connectivity	Key Travel Sheds Completed	2013 percentage of key travel sheds completed	Increase
Equity	Percentage of females, older adults, and people of color who ride regularly (a few times a month or more)	2013 SDOT phone survey percentage	Increase
Livability	Number of bicycle racks and on-street bicycle corrals	2013 number	Increase
	Self-reported physical activity	2006 King County Public Health report	Increase

APPENDIX

"Education of all road users, enforcement of road laws, and meaningful consequences to dangerous drivers (loss of license, fines, prison) would create a safer city for all of us."

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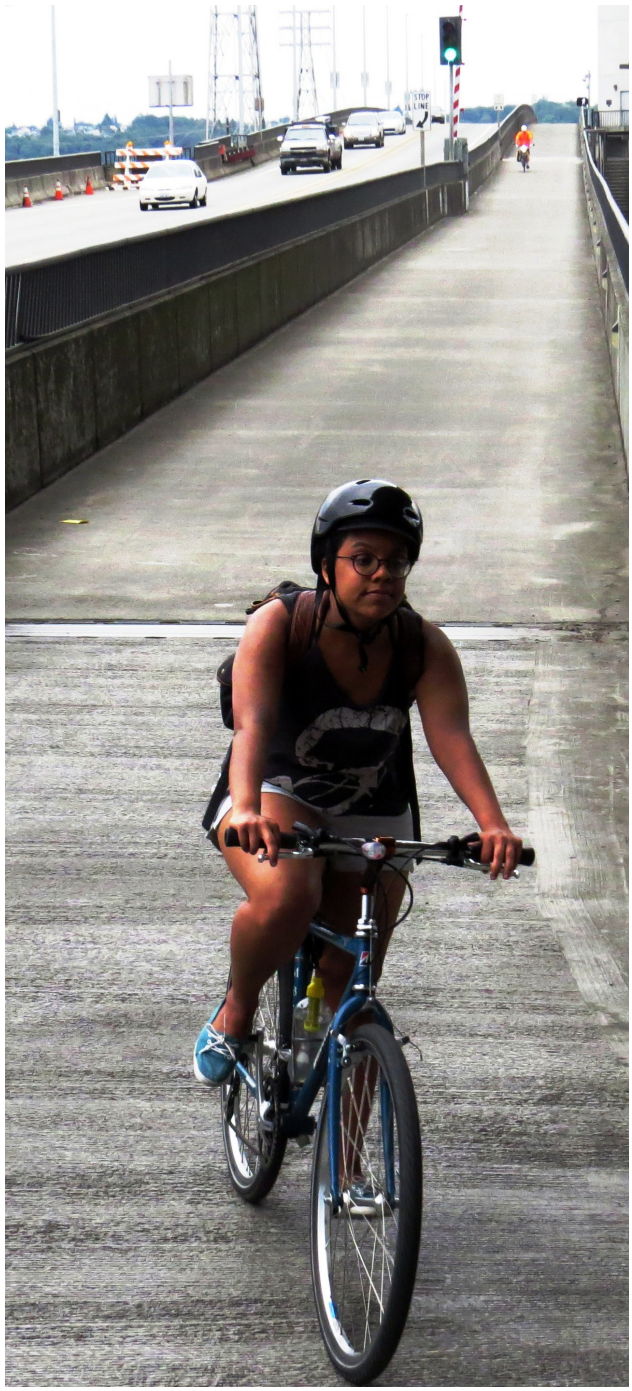
If you would like to review the information outlined in the Appendix, please go to the following website: http://www.seattle.gov/transportation/bikemaster_materials.htm



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Seattle Bicycle Advisory Board

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