



FINAL REPORT DRAFT DECEMBER 2013



PROJECT TEAM & PARTNERS

Green Connections is a collaborative effort led by the San Francisco Planning Department, the San Francisco Municipal Transportation Agency, the San Francisco Department of Public Health, the San Francisco Department of the Environment, the San Francisco Public Utilities Commission, the San Francisco Department of Public Works, the Port of San Francisco, and the Mayor's Office of Housing. The City agencies have partnered with three community based organizations: San Francisco Parks Alliance, Walk San Francisco, and Nature in the City. The project was funded by a Sustainable Communities Planning Grant from the California Sustainable Growth Council.



San Francisco Department of Public Health

Cindy Comerford
Lindsey Realmuto



Municipal Transportation Agency

Seleta J. Reynolds
Miriam Sorell
Jennifer Wong



Planning Department

Adrienne Aquino
Benjamin Caldwell
Paul Chasan
Gary Chen
Lisa Chen
Kearstin Dischinger
Lily Langlois
Nicholas Perry
Adam Varat

GREEN CONNECTIONS

**FINAL
REPORT**

DRAFT DECEMBER 2013

Table of Contents

CHAPTER 1: INTRODUCTION 01

1.1	Introduction	01
1.2	Project Goals	04
1.2	What's Included in this Document?	07

CHAPTER 2: PROJECT SUMMARY 08

2.1	Project Background	09
2.2	Related Plans and Policies	10
2.3	Public Participation and Engagement	11
2.4	Best Practices from Selected Cities	17

CHAPTER 3: THE GREEN CONNECTIONS NETWORK 22

3.1	Introduction	23
3.2	Network Considerations	23
3.3	Route Considerations	30
3.4	Evolution of the Network	32
3.5	Testing the Network	38

CHAPTER 4: DESIGNING GREEN CONNECTIONS **46**

4.1	Design Overview	47
4.2	Design Principles for Public Health	50
4.3	Design Principles for Sustainability	52
4.4	Design Principles for Livability	61

CHAPTER 5: DESIGN TOOLKIT **64**

5.1	Toolkit Overview	65
5.2	Toolkit Elements: Intersections	68
5.3	Toolkit Elements: Blocks	86

CHAPTER 6: IMPLEMENTATION **98**

6.1	Introduction	99
6.2	Building a Green Connection	100
6.3	Implementing Green Connections: Projects Delivered by the City	103
6.4	Implementing Green Connections: Coordinating with Private Development	105
6.5	Implementing Green Connections: Neighborhood-led Projects	106
6.6	Funding for Green Connections Projects	114
6.7	Stewardship and Maintenance	119

CHAPTER 7: NEIGHBORHOOD CONCEPT DESIGNS **120**

7.1	Introduction	121
7.2	Bayview: Oakdale Avenue	124
7.3	Chinatown: Washington Street	128
7.4	Potrero Hill & Dogpath: 22nd Street	132
7.5	Tenderloin: Jones Street and Ellis Street	138
7.6	Western Addition: Eddy Street	144
7.7	Visitacion Valley: Leland Avenue	150

APPENDIX **154**

A1	Ecology Guides	
A2	Pedestrian Environmental Quality Index Analysis	
A3	Community Resource List	
A4	Green Connections Network Drafts	

CHAPTER

1

Introduction

Green Connections: A network connecting people to parks, open space and the waterfront.

1.1 INTRODUCTION

San Francisco's rich and varied landscape of parks, recreational facilities, and open spaces are one of the city's most beloved resources, and a major attraction for residents and visitors alike. They provide a break from our bustling urban environment, opportunities for play and exercise, and places for social gatherings, large and small. The City ranks in the top five communities nationwide for land area devoted to parks, and enjoys a well-established network of community groups, volunteers, and other partners dedicated to working with local agencies to continually maintain and improve our parks.

Despite these many assets, park accessibility can be a challenge, particularly for those on bike or foot. For decades, streets were built to maximize car volume and speed, resulting in roads with fast-moving traffic, inadequate pedestrian and bicycle facilities, and other barriers that can make it difficult and unpleasant for people to walk, bike and use other forms of "active transportation."

As cities around the country grapple with congested roads, the growing obesity epidemic, and other environmental, social, and economic costs of auto-centric development, they are rethinking how they design their transportation systems. In recent years, San Francisco has made great strides in retrofitting streets with pedestrian and bicycle improvements that make it easier to access parks, schools and other neighborhood destinations.

Green Connections builds on this work, envisioning a network of safe, functional, and attractive streets connecting people to parks, open spaces, and the waterfront that will be built over the next twenty years.

In addition to increasing park accessibility, Green Connections takes inspiration from “greenway” and “green street” programs, which view streets themselves as places for potential stewardship of nature. For instance, a street with a landscaped buffer, widened sidewalk or large median – all of which help calm traffic – could provide habitat for native plant and animal species, features that retain and filter stormwater, or opportunities for community gardening.

These innovative strategies help realize an even broader aspiration of the project that is harder to articulate, yet no less important: creating streets with a tangible sense of place. Most people can recall experiences of traveling on truly great streets – grand boulevards, small town main streets, neighborhood backroads – roads with character, where the experience of moving through a community is as memorable as reaching the final destination.

It is easy to overlook the contribution of roadways as public spaces, but they comprise a major resource: about 25% of San Francisco’s land area is devoted to streets, more than what is contained in the City’s entire park system. Green Connections is premised on the idea that streets can be designed to be both beautiful and functional spaces in their own right – places to travel to, not just through. As San Francisco continues to grow, these strategies are critical to ensure access to neighborhood services, alleviate traffic congestion, and maintain the high quality of life that attracts so many people to our City.

Off the Beaten Path: New Concepts in Street Design

Communities across the country are reconsidering the way they design and build streets to encompass goals as broad as increased active transportation, neighborhood beautification, and environmental sustainability. Here are some terms that planners and urban designers are using to describe these emerging strategies – many are used in combination, and somewhat interchangeably.

Bicycle boulevards: Bicycle boulevards are meant to provide distinct, easy-to-navigate bicycle routes that limit conflicts with car traffic and make the experience of cycling low-stress and pleasant. Typically, bicycle boulevards do not depend on designated facilities like bike lanes, but are on streets where vehicle volumes and speeds are so low that most riders feel comfortable taking the lane. Common features include traffic-calming devices that slow and divert car traffic, “flipped” stop signs that give priority to the bicycle boulevard street at intersections, and wayfinding signs to brand the route. Bicycle boulevards sometimes parallel and provide alternatives to main, high traffic arterials.

Neighborhood greenways: Neighborhood greenways are similar to bicycle boulevards and the terms are often used interchangeably. However, neighborhood greenways may be more likely to consider pedestrian improvements and nature space as fundamental to their designation, whereas these things are sometimes considered supplemental features on bicycle boulevards.

Green streets: The term generally denotes streets that promote environmental sustainability – for instance, through “green infrastructure” and “low-impact development (LID)” strategies that retain and filter stormwater, thus reducing stress on local wastewater treatment facilities.



A Bicycle Boulevard in Berkeley (source: flickr user arbandito)

1.2 PROJECT GOALS

Green Connections was created to improve access to parks and open space through a network of walking and biking routes that meets three goals: public health, sustainability, and livability. This section defines these goals and some ways Green Connections can help realize them.

Public Health: Increase active transportation to parks

Neighborhood parks offer spaces for play and exercise, provide opportunities to be outdoors and to connect with nature, and encourage socializing and community-building, all of which are associated with better physical and mental wellbeing. In the midst of growing concerns about the obesity epidemic and related chronic diseases, improving access to parks is a critical public health strategy and the primary goal of Green Connections.

San Francisco's compact, closely-knit neighborhoods present a great opportunity to connect people to parks: nearly all households live within ¼ to ½ miles of a park, recreational facility, or open space – a 10-15 minute walk or a few minutes away by bike. Making it easy to access parks using active transportation – walking, biking, skate boarding, rollerblading, or other travel

modes that involve physical activity – maximizes the benefits to public health, encouraging people to be more active and enabling them to visit more frequently. Currently, visitors at some parks need to navigate wide, fast-moving arterials, difficult street crossings, discontinuous bike and pedestrian facilities, and poor walking connections to transit stops. These stressful traffic conditions can discourage people from visiting parks frequently or may even prohibit some users altogether. This is especially true for youth, seniors, disabled persons, low-income households, and other vulnerable populations who are less likely to drive and who might especially benefit from having easier access to parks and open spaces. Strategies to increase park access and active transportation include:

» **Create an easy-to-navigate network connecting parks and other neighborhood destinations:** Creating an easy, safe, and low-stress street network can increase park accessibility while encouraging people to walk and bike further and more frequently than they might otherwise. Although the main purpose of Green Connections is to increase access to parks and open spaces, the routes also increase network connectivity overall – many are near schools, commercial districts, and other neighborhood amenities.

» **Address all users:** Green Connections aims to make streets user-friendly for people of all modes, ages and abilities. A useful concept in urban planning proposes that cities should be accessible to residents who are 8 years old and 80 years old: places that can support these two groups are likely to ensure a high quality of life for all residents.

» **Improve traffic safety:** As in most dense cities, traffic crashes, injuries, and fatalities are a major concern in San Francisco. Green Connections aims to create a “low stress network” – a street where space for pedestrians and bicyclists is well defined so that they feel welcome and safe. For instance, strategies such as intersection bulb-outs, reducing car lane widths, and occasional traffic diverters encourage drivers to slow down and become more aware of pedestrians, bicyclists, and other road users.

Sustainability: Enhance urban ecology

Any space in our urban environment, no matter how small or modest, can be an opportunity for people to connect with nature. Trees and landscaping beautify our streets, and attract birds, butterflies, reptiles, mammals and other species that punctuate our daily lives and remind us that humans are not the only creatures residing in our city. Green Connections celebrates this ecological diversity, envisioning a network of landscaped corridors that provide wildlife habitat and places to enjoy nature – in essence, knitting our parks with one another and extending their reach into the surrounding neighborhood fabric.

Another key way that roadways can be retrofitted to promote environmental sustainability is by introducing stormwater management features. Today, impervious surfaces such as buildings, streets, and parking lots have covered most of the City, preventing rainfall infiltration. Over time, creeks were buried and connected to the sewers, and wetlands were filled and developed. Instead of percolating into soils, runoff now travels over impervious surfaces, mobilizes pollutants like oil and debris, and washes them into the sewer system or into receiving water bodies—creeks, lakes, San Francisco Bay, and the Pacific Ocean. During heavy rains, stormwater runoff can contribute to localized flooding and exceed stormwater management system capacity, leading to additional discharges of stormwater and sanitary effluent directly into the ocean and bay.

Strategies to enhance the ecological functioning of our streets include:

- » **Design for stormwater retention & filtration:** Paved, impermeable surfaces greatly increase the amount of stormwater that flows from our streets. Green Connections reduces runoff by introducing stormwater management techniques, known as Low-Impact Design (LID) or Best Management Practices (BMP). Routes can include landscaped medians, sidewalks, and parking bays designed to retain and treat stormwater using swales, retention ponds, and other ecological features.

For more information, visit SFPUC's page on low-impact design: <http://www.sfwater.org/index.aspx?page=237>

- » **Increase wildlife habitat:** Despite being one of the most densely urbanized cities in the country, San Francisco boasts a surprising number and variety of plant and animal species found within our borders. Green Connections aims to enrich this biodiversity by including a "planting palette," a list of plants appropriate for our local ecology that can host and nurture wildlife. The City's recently launched Biodiversity Program will provide additional opportunities for citywide coordination on habitat conservation and stewardship.

For more information visit: <http://www.sfenvironment.org/buildings-environments/natural-san-francisco/biodiversity-in-the-city>

- » **Encourage public education & ecoliteracy:** Environmental education can help city dwellers recognize the impact of their actions on the environment. Through educational signage and programs, Green Connections can provide an opportunity for people to contemplate these lessons in an especially profound and intimate setting – their own neighborhoods. Each route is named after a locally-appropriate "target species" or "target habitat," and projects will be encouraged to incorporate plant species that support them.
- » **Increase urban tree canopy:** Street trees connect us to nature and enhance neighborhoods by making them more livable and sustainable: they make streets more enjoyable to walk along, improve traffic safety by encouraging drivers to slow down, and help to mitigate climate change through carbon sequestration. Even though San Francisco has roughly 105,000 street trees, it lags behind other major cities in tree canopy coverage. Green Connections can support a healthy urban forest by including street trees as part of route designs.

Livability: Support neighborhood stewardship and placemaking

Green Connections is ultimately intended to advance a new way of thinking about our streets: not just as infrastructure, but also as places to be outside and explore the city. The project provides a toolkit of design treatments such as sidewalk gardens, intersection islands, street parks, and play streets that can provide a backdrop for people to meet, gather, stroll, sit, play, exercise, and meditate. In a dense city such as San Francisco, these small-scale interventions can go a long way in building cohesive, livable neighborhoods.

The project's success rests on its ability to attract people to the network: the plan envisions a comfortable, inviting network of streets which people will gladly go out of their way to travel on. This will not happen unless routes are attractive, exciting, and reflective of user needs – in planning terms they need to have a tangible “sense of place,” where people experience a strong feeling of neighborhood character and identity.

The Green Connections project included design processes in six Focus Neighborhoods, providing opportunities for residents to work with planners to explore design options and discuss tradeoffs, priorities, and opportunities. Other Green Connections routes are meant to be designed and implemented in a similar fashion over the 20-year horizon of the plan. This model of community-

based planning ensures that local needs are integrated in the finished designs and builds a sense of stewardship, increasing the likelihood that stakeholders will stay invested throughout the planning and implementation stages.

Strategies to enhance stewardship and placemaking include:

» **Create designs that foster a sense of place:**

Green Connections should provide inviting community spaces that people visit frequently and where they expect to run into friends and neighbors. Design features such as landscaping, lighting, seating, paving treatments, art installations, and other colorful touches add variety and encourage people to visit and linger. Increasing the use of public spaces can also lead to more “eyes on the street,” promoting neighborhood safety.

» **Develop a distinct & navigable network:**

If fully implemented, Green Connections would help users walk and bike between nearly every neighborhood of the city. Clear, recognizable signage and other wayfinding features can inform people about Green Connections, drawing them to the network and helping them navigate it more easily, especially on busier sections of the network or where multiple routes converge.

» **Encourage creativity & local stewardship:**

Neighborhood organizations, businesses, and volunteers are a valuable resource, and can work with the city to develop inventive, locally appropriate solutions for each route. This process will ideally build champions from within the neighborhood who stay invested throughout the life of the project, which can greatly enrich the final design and encourage stewardship – for instance, a local gardening club may offer its expertise in developing and maintaining sidewalk gardens, or a youth development organization may help design signage and street art.

1.3 WHAT'S INCLUDED IN THIS DOCUMENT?

This document summarizes the results of a two-year planning process to define a Green Connections network of streets, along with a sample design toolkit and preliminary concept designs for Green Connections in six Focus Neighborhoods (Bayview-Hunters Point, Chinatown, Potrero Hill, Tenderloin, Visitacion Valley, and the Western Addition).

- » **Chapter 2** provides a summary of the project history and timeline, and national case studies that provided inspiration for Green Connections.
- » **Chapter 3** provides a summary of how the Green Connections network was created, including what factors informed the selection of streets, and the ways that the final network meets overall project goals.
- » **Chapter 4** provides an outline of how green connections may be designed and the principles to guide their design.
- » **Chapter 5** describes the design toolkit, a resource for community members, city agencies, and designers to guide the design, development and implementation of a Green Connections route.
- » **Chapter 6** describes how the network can be implemented over time.
- » **Chapter 7** outlines the conceptual designs in the six neighborhoods, the feedback received and recommendations for next steps.

CHAPTER

2

Project Summary

2.1 PROJECT BACKGROUND

Project Basics

The Green Connections project team conducted a two-year planning process from Winter 2011 to Winter 2013 to develop a citywide network linking people to parks, open spaces, and the waterfront. The main work products developed during this period include:

- » **Green Connections Draft Network:** a map of 24 routes (totaling over 115 miles) that span the entire footprint of the City.
- » **Design Toolkit:** a set of 16 design elements for blocks and intersections that could be applied to meet local needs and goals.
- » **Focus Neighborhood Concept Designs:** The Green Connections team developed preliminary designs for routes in six Focus Neighborhoods: Bayview-Hunters Point, Chinatown, Potrero Hill, Tenderloin, Visitacion Valley, and Western Addition.

» **Ecology Guide,** which provides a narrative for each route and recommendations for plants that promote target species.

» **Implementation Guide:** a description of resources, programs, and processes that could help the City, private sector and community members to implement the network.

Green Connections routes will be planned and implemented gradually over the next twenty years to build a cohesive network. Some components could potentially be completed as a citywide project, such as directional signs and other wayfinding strategies. Other, more neighborhood-specific streetscape or traffic calming elements will be phased depending on funding availability, project need, geographic equity, coordination opportunities (such as a scheduled street repaving or other capital projects), and other factors. Green

Connections does not create a new City program; rather, routes will be implemented through a variety of existing City programs and agencies.

Green Connections is also meant to be implemented through community-based planning processes, understanding that stakeholders bring creative ideas and knowledge about local needs and priorities. Green Connections does not offer prescribed, one-size-fits all designs for the routes; rather, the design toolkit is meant to provide a menu of options that will be adapted to fit the local context. The planning process in the six Focus Neighborhoods was meant to provide a model for future planning efforts across the city, whether led by the City or initiated by neighborhood groups.

2.2 RELATED POLICIES

Green Connections builds on several City efforts related to street design, open space and sustainability. Collectively, these plans describe a set of strategies for how to improve our streets for walking and bicycling, increase access to parks and open spaces, and enhance the ecological functioning of our streets.

Recreation and Open Space Element: An Element of the General Plan of the City and County of San Francisco – Revised Draft. The Recreation and Open Space Element provides a 20-year vision for a comprehensive open space network. A draft was released in December 2013.

Better Streets Plan. A set of standards, guidelines, and implementation strategies to govern how the city designs, builds, and maintains its pedestrian environment. The plan outlines specific design guidelines for a variety of street types. Adopted in 2010.

Walk First: Improving Safety & Walking Conditions in San Francisco. WalkFirst identified a network of Streetscape Streets, these are streets where people are walking or would likely walk if the conditions were better. These streets are in close proximity to pedestrian generators (schools, parks, tourists activities and shopping districts), and are also located in areas where there might be more dependence on walking as a means of transportation, due to demographics, street slope and/or limited access to transit or private automobiles.

San Francisco Bicycle Plan. The bicycle plan establishes a citywide network of bicycle infrastructure, including a number of near-term improvements to specific routes. Adopted in 2009.

SFMTA 2013-2018 Bicycle Strategy. The SFMTA 2013-2018 Bicycle Strategy sets new directions and policy targets to make bicycling a part of everyday life in San Francisco. The key actions identified are designed to meet the mode share goal of 50 percent of all trips made using sustainable modes (walking, bicycle, public transit, and vehicle sharing). Draft adopted in 2013.

San Francisco Pedestrian Strategy. Released by the Mayor's Pedestrian Safety Task Force in 2013, the San Francisco Pedestrian Strategy provides a path towards making San Francisco the most walkable city in North America.

San Francisco Stormwater Design Guidelines. San Francisco's stormwater ordinance requires new development disturbing 5,000 square feet or more of the ground surface to manage stormwater on-site. The Stormwater Design Guidelines outline ways to incorporate on-site stormwater management using low impact design (LID) strategies, also known as green infrastructure. Adopted in 2010.

Blue Greenway Vision and Roadmap to Implementation. The Blue Greenway plans to create a 13-mile greenway network along the City's Southeastern Waterfront.

Urban Forest Plan. The Urban Forest Plan identifies strategies to proactively manage and grow the City's urban tree population with a primary focus on street trees. The ultimate goal is to create an expanded, healthy and thriving urban forest now and for the future. Draft released in 2013.

2.3 PUBLIC PARTICIPATION AND ENGAGEMENT

The Green Connections planning process included a number of opportunities for community input, including more than twenty outreach events across the city. This effort helped the team understand stakeholders' vision for Green Connections and solicited feedback on the draft network, needs and opportunities in different neighborhoods, and potential design options for the routes. Example outreach events include:



OPEN HOUSE #1
February 15, 2012

Kick-off event for the Green Connections project held at the LGBT Center. Members of the public were invited to stop by and provide feedback on their route to the park and their vision for a Green Connection.



OPEN HOUSE #2
October 3, 2012

The second open house for the Green Connections project held at the LGBT Center. Members of the public were invited to stop by and provide feedback on a draft network map and design toolkit.



**UNLIKELY HABITAT:
A TENDERLOIN
SWALLOWTAIL TOUR**
July 1, 2012

A neighborhood walk to explore Civic Center, the Tenderloin, and the habitat these neighborhoods provide for butterflies and people alike. Highlights of the walk include learning about local swallowtails, visiting the Tenderloin National Forest and discussing opportunities for improving walking conditions and greening local streets.



**POTRERO HILL TO
THE BLUE GREENWAY**
August 19, 2012

This neighborhood walk explored walking connections from Potrero Hill to parks and the Blue Greenway, a 13-mile walkway along San Francisco's southern waterfront. Highlights of the walk include the Potrero Hill Recreation Center, Esprit Park, Warm Water Cove, the new Pennsylvania Community Gardens.



**SUNDAY STREETS:
CHINATOWN**
August 26, 2012

Green Connections attended six Sunday Streets events in 2012, where community members were invited to draw their route to the park and describe what they want to see in a Green Connection.

Year 1 (Winter 2011 – Fall 2012)

The main goal during the first year of the project was to develop the Draft Network and Design Toolkit. The project team launched Green Connections with a Kick-off Meeting on February 15th, 2012, attended by 150 members of the public. Stakeholders were asked to identify their favorite parks to visit, what streets they use to get to parks, existing barriers to walking and biking, and what other destinations they would like to reach using the routes.

Following the project kick-off, the team participated in a number of events to publicize the project and solicit additional feedback. From March to September 2012, the project team conducted outreach at Sunday Streets events in six neighborhoods (Embarcadero, Great Highway, Mission, Bayview/Dogpatch, Chinatown, and the Western Addition), Bike to School events, and Neighborhood Office Hours in the six Focus Neighborhoods.

In collaboration with Nature in the City, San Francisco Parks Alliance, and Walk San Francisco, the team also led seven walking tours to highlight local ecology and innovative street design strategies already being implemented in the city. Key stakeholders and subject experts were invited to participate in subject-specific charrettes: Walk San Francisco hosted a pedestrian charrette in July 2012 focused on strategies to improve walking conditions, and Nature in the City hosted a series of Ecology Think Tanks in April 2012 to invite experts to deliberate on opportunities for enhancing wildlife habitat corridors in San Francisco.

Throughout these events, community members were asked to provide specific ideas about which parks to prioritize for improved access, the characteristics of streets that influence which routes people take to the park, and what elements people would like to see in a Green Connection.

At these events, the public was asked a series of questions:

- » What is your favorite park to walk to? What do you like about this route?
- » What is your least favorite park to walk to? How can your route could be improved?
- » How do you envision a Green Connection?

To supplement the outreach events, the Green Connections project team also developed an online survey. The survey asked participants to identify barriers to accessing parks and open spaces and what features they would like to see in a Green Connection. It was available from February to June 2012, and over 450 responses were received.

KEY QUESTIONS FOR YEAR 1 OUTREACH

Green Connections: WHAT IS YOUR FAVORITE PARK TO WALK OR BIKE TO?

Place a **green dot** next to a park you like to visit and draw your route.



Tell us what you like about your route.

Area for drawing route and notes.

Green Connections: WHAT PARK WOULD YOU LIKE TO WALK OR BIKE TO MORE?

Place a **red dot** next to a park you would like to visit more and draw your route.



Tell us how your route could be improved.

Area for drawing route and notes.

Green Connections: HOW DO YOU ENVISION A GREEN CONNECTION?

Are people walking or biking? Are there birds, butterflies or other animals? Are cars moving fast or slow or not at all? Are kids playing? Are there landscaping, trees or sidewalk gardens? Do you feel safe, calm, playful?

Tell us how you envision a green connection...

Area for drawing route and notes.



ONLINE SURVEY #1

Online Survey.
450 Participants.
February to
June 2012.

Who took the survey?

LIVE IN SAN FRANCISCO



WORK IN SAN FRANCISCO



GENDER



CHILDREN IN HOUSEHOLD



DOGS IN HOUSEHOLDS



Park visited most frequently:

PARK MOST VISITED (TOP 10) % chosen

GOLDEN GATE PARK	28%
DOLORES PARK	11%
OTHER	9%
CRISSY FIELD	4%
BERNAL HEIGHTS PARK	4%
GLEN CANYON PARK	3%
YERBA BUENA GARDENS	3%
ALAMO SQUARE	2%
PATRICIA'S GREEN	2%
DUBOCE PARK	2%

HOW DO YOU GET THERE? Mode



WHERE DO YOU START FROM? Place



HOW OFTEN DO YOU VISIT? Frequency



Park would like to visit more:

PARK LIKE TO VISIT MORE (TOP 40)

GOLDEN GATE PARK	22%
CRISSY FIELD	8%
OTHER	7%
JOHN McLAREN PARK	6%
DOLORES PARK	6%
PRESIDIO	6%
GLEN CANYON PARK	4%
HERON'S HEAD PARK	3%
ALAMO SQUARE	2%
BUENA VISTA PARK	2%

HOW DO YOU GET THERE? Mode



WHAT ARE THE REASONS YOU DO NOT GO MORE FREQUENTLY? % chosen

DISTANCE FROM HOME	52%
FAST MOVING CARS	31%
LACK OF BICYCLE FACILITIES	22%
STEEP ROUTE	17%
POOR STREET CONDITIONS	12%
FEELS UNSAFE (CRIMINAL ACTIVITY)	11%
DIRTY	9%
PHYSICAL BARRIERS	9%
LACK OF TREES	6%
NOWHERE TO SIT	6%
NARROW SIDEWALK	5%

Qualities that influence route to park:

FOR THOSE THAT WALK: % chosen

SHORTEST ROUTE	60%
FEELS SAFE	33%
FROM CRIMINAL ACTIVITY	
TREES	32%
LANDSCAPING & GARDENS	28%
VIEWS	25%
FLATTEST ROUTE	23%
SLOW MOVING TRAFFIC	21%
CLEAN SIDEWALK	21%
INTERESTING SHOPS	18%
WIDE SIDEWALK	15%
SMOOTH/EVEN SIDEWALK	12%
SIDEWALK LIGHTING	7%
PLACES TO SIT	3%

FOR THOSE THAT BIKE: % chosen

BIKE FACILITIES	72%
FLATTEST ROUTE	62%
SHORTEST ROUTE	38%
SLOW MOVING TRAFFIC	31%
OTHER PEOPLE BIKING	30%
NICE VIEWS	24%
GOOD STREET CONDITIONS	23%
TREES	8%
LIGHTING	3%

Envisioning a Green Connection

WHAT ATTRIBUTES WOULD YOU LIKE TO SEE IN A GREEN CONNECTION?

ATTRIBUTES % chosen

TREES	63%
SIDEWALK GARDEN & LANDSCAPING	59%
CLEAN STREETS & SIDEWALK	58%
SLOW CAR TRAFFIC	57%
FACILITIES FOR BIKING	55%
PLACES TO SIT	41%
WIDE SIDEWALK	39%
SMOOTH OR EVEN SIDEWALK	35%
SIDEWALK LIGHTING	33%
SPECIAL PAVING	19%

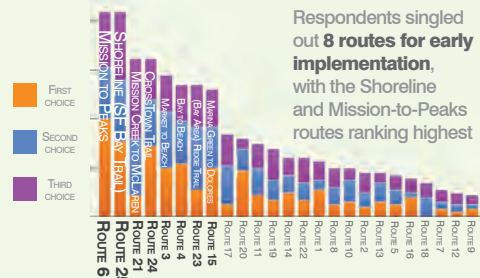
ONLINE SURVEY #2

Survey on the DRAFT Network. Over 400 participants. October 2012 - March 2013.

CITYWIDE NETWORK COMMENTS

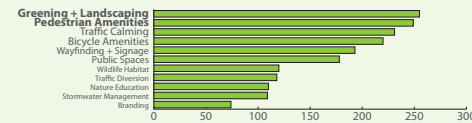
90% of respondents live within 5 blocks of a route
66% of respondents live within 2 blocks of a route

96% of respondents would go as much as 5 blocks out of their way to reach a Green Connection route

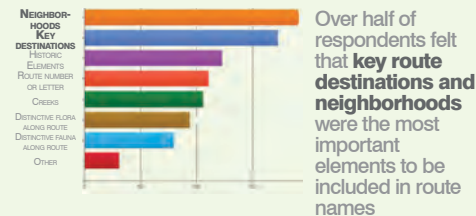


IDENTIFYING + IMPROVING THE NETWORK

Three-quarters of respondents think **greening** and **pedestrian improvements** are most important to transforming a street into a Green Connection



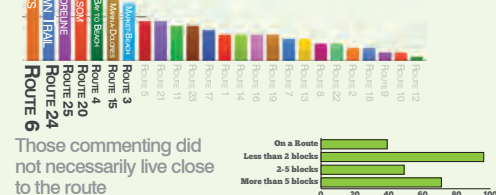
Route signs and wayfinding are key identifying elements for over half of respondents



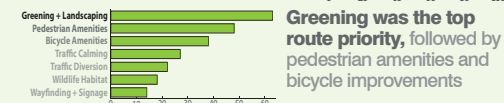
Over half of respondents felt that **key route destinations** and **neighborhoods** were the most important elements to be included in route names

ROUTE SUGGESTIONS

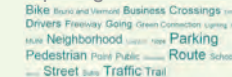
Respondents offered comments on every route. Routes 6 and 24 received the most comments



Those commenting did not necessarily live close to the route



Respondents foresaw some implementation challenges, many related to parking and traffic



Respondents envisioned many roles they could play in helping implement Green Connections projects



The project team hosted an Open House on October 3, 2012 to share and gain feedback on the Draft Green Connections Network and Design Toolkit, which was attended by over 100 community members. Materials included a summary of community feedback during the first year of the project, a draft Green Connections network and design toolkit, and a test of the draft network based on project goals.

Following the open house, a second online survey was available for six months to provide an additional opportunity for the public to provide specific feedback on the network. Over a six-month period, 400 people responded, providing input on changes to the proposed routes as well, as ideas for ways to name the routes and improve them over time.

The summary on the following page highlights the outreach events that took place over the first year of the project and some of the community generated ideas about what a green connection might look like and the qualities of green connections they would like to see.

SUMMARY OF YEAR 1 OUTREACH

SUNDAY STREETS

Sunday Streets in neighborhoods across the City. We asked for your feedback on how your route to the park could be improved

EMBARCADERO	MAR 11, 2012
GREAT HIGHWAY	APR 15, 2012
MISSION	JUN 03, 2012
BAYVIEW / DOGPATCH	JUL 22, 2012
CHINATOWN	AUG 26, 2012
WESTERN ADDITION	SEP 09, 2012



NEIGHBORHOOD OFFICE HOURS

Informal meetings in the neighborhood to learn more about the project, share ideas and provide input.

WESTERN ADDITION	MAR 14, 2012
TENDERLOIN	MAR 21, 2012
POTRERO HILL	MAR 28, 2012
VISITACION VALLEY	APR 04, 2012
CHINATOWN	APR 11, 2012
BAYVIEW	APR 25, 2012



BIKE TO SCHOOL DAY

Bike to School Day was held on April 12, 2012. Postcards were distributed to over 3000 students with information about the project and ways to participate in outreach events.



WALKS

A series of walks to envision what a Green Connection could look like. Walks took place throughout San Francisco, looking at completed projects and exploring opportunities to incorporate greening and landscaping, traffic calming features, and promote habitat. Participants were invited to complete a short questionnaire summarizing observations and their for a green connection.

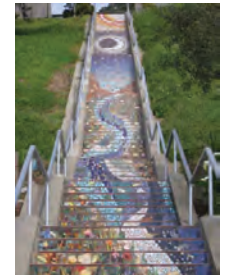
BIRDING AT HERON'S HEAD PARK (WITH JOSIAH CLARK)	MAR 10, 2012
VISITACION VALLEY GREENWAY WALK	APR 21, 2012
GREEN HAIRSTREAK BUTTERFLY: A WALK THROUGH AN ECOSYSTEM CORRIDOR	MAY 20, 2012
HOLLY PARK TO ALEMANY FARM BUTTERFLY WALK	MAY 26, 2012
GREEN STREETS, MEAN STREETS:	JUN 16, 2012
SOMA ALLEYS AND GARDENS	
UNLIKELY HABITAT: A TENDERLOIN SWALLOWTAIL TOUR	JUL 01, 2012
POTRERO HILL TO THE BLUE GREENWAY, GREY TO GREEN TO BLUE --WITH CHOCOLATE SPRINKLES!	AUG 19, 2012



ENVISIONING A GREEN CONNECTION

EXAMPLES OF STREETS THAT ARE LIKE GREEN CONNECTIONS NOW

Visitation Valley Greenway	Paths at the top of San Jose Avenue
The Wiggle	Stairways
Poppyland and Penny Lane, Glen Park	Presidio
Alleys in Sunnyside	Market Street (separated bike lanes)
Mid-block open paths in Balboa Terrace	Valencia Street



Moraga Street Steps

SUGGESTED COMPONENTS OF A GREEN CONNECTION

Daylighted creeks (Mission, Islais)	Good paths for jogging
Urban agriculture, farmer's markets, community gardens, permaculture	Connections to transit
Separated bike lanes	Bathrooms
Alleys, if sunny and clean	Mosaics, public art, murals
Plazas	Connections to footbridges, walking bridges
Chicanes, bulb-outs	Pocket parks
Benches	Par course exercises
Storm/rainwater gardens	Shade
Native plants	Interesting architecture
Seasonal plantings	Trellises on (retaining) walls w/native plants, green roofs



Visitation Valley Greenway



The Wiggle, Scott Street



Presidio, Crissy Fields



Green Connection in Bayview:
Board from Open House June 11, 2013



Green Connection in Visitacion Valley:
Photo from Meeting #1 October 13, 2012



Green Connection in Potrero Hill/Dogpatch:
Board from Meeting #1 November 17, 2012

Year 2 (Winter 2012 – Fall 2013)

The focus of the second year of the project was to refine the Green Connections network and the design toolkit based on feedback from community members and City agencies, and to develop a concept design for a Green Connection in six focus neighborhoods: Bayview-Hunters Point, Chinatown, Potrero Hill, Tenderloin, Visitacion Valley, and the Western Addition. This was an opportunity to apply the design toolkit and test the idea of a green connection at a specific location. These neighborhoods were selected for a number of reasons. All of them demonstrate a great need for pedestrian and bicycle improvements – they have high population densities, large populations of children and seniors, and limited open green

spaces within their bounds and little access to parks and open spaces elsewhere in the city. They also have large proportions of minority and low-income households, and in some cases residents are less likely to own cars and more likely to walk, bike, and use transit.

Some of these neighborhoods are also home to other planning projects that have the potential to introduce significant new investment and growth, and thus present opportunities to coordinate with and build-off of other development projects. For instance, three of the neighborhoods (Bayview, Potrero Hill and Visitacion Valley), contain sites that are part of HOPE SF (<http://hope-sf.org>), an

initiative led by the Mayor's Office of Housing to transform San Francisco's most distressed public housing sites into thriving communities with mixed-income housing, community facilities, and new and upgraded infrastructure, including streets.

Events in the focus neighborhoods included workshops and meetings to define project goals and develop initial design concepts. The outreach approach for each focus neighborhood varied, in response to local needs and opportunities. A summary of community engagement and conceptual designs developed in each Focus Neighborhood is described in chapter 6.

2.4 BEST PRACTICES FROM SELECTED CITIES

San Francisco's Green Connections program is an effort to connect people to open spaces via a new kind of street that is itself green and sustainable. In this effort, the project drew inspiration and expertise from established and successful neighborhood greenway and green streets programs around North America and the world. The descriptions and photos here present just a few of the notable examples that the Green Connections team looked to for inspiration. It is worth noting that many cities aiming to respond to a renewed swell of residents and various sustainability and transportation goals have programs similar to Green Connections.



Hudson River Greenway, New York



Map of Riverdale-Maple Glendale Greenway



Bike Boulevard Signage, Berkeley California



Crown Street, Vancouver



Vancouver City Greenways Plan

Vancouver

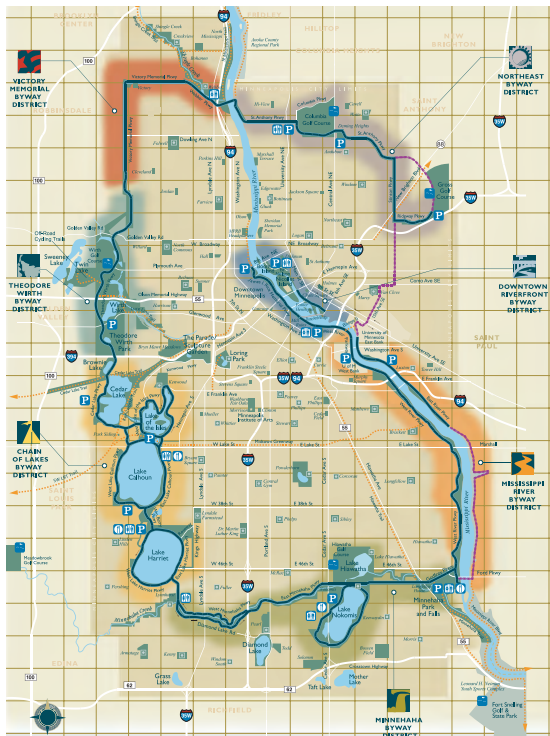
Of all the cities the project team studied, Vancouver with its mix of programs aimed at improving active transportation, accessibility, and sustainability along city streets bears the most resemblance to Green Connections. The Vancouver Greenways Plan, adopted in 1995, has helped the city build what is perhaps the most developed greenway network in North America. It envisioned two types of Greenways, which it defined as "linear public corridors for pedestrians and bicyclists that connect parks, nature reserves, cultural features, historic sites, neighborhoods and retail areas": city greenways, a network of 16 waterfront promenades, urban walking and

biking paths, and environmental and historical education trails that connect people to cross-town destinations, totaling almost 140 km (similar in scale to Green Connections); and neighborhood greenways, which are smaller-scale, neighborhood connectors that are often initiated as public-private partnerships with local residents, and may include elements such as public art and landscaping. A newer Green Streets program complements the greenways, supporting community members seeking to add greening, beautification projects, and stormwater management elements in their neighborhoods.

For more information:

Vancouver Greenways: <http://vancouver.ca/streets-transportation/greenways-for-walking-and-cycling.aspx>

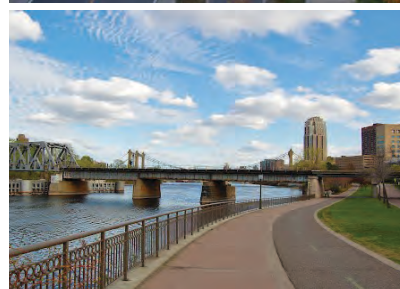
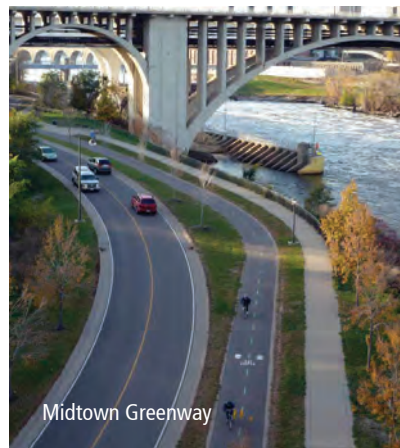
Green Streets: <http://vancouver.ca/streets-transportation/outdoor-community-spaces.aspx>



Grand Rounds National Scenic Byway

Minneapolis

Minneapolis's remarkable trails, paths, and byways comprise what is arguably the best urban trail network in the US. From trails along both sides of the Mississippi River to the Minnehaha Parkway to the beloved trails around the Lakes, Minneapolis is a national leader in providing its citizens with a safe, beautiful, and accessible active transportation network, much of which is separated from car traffic. One of the keys to the city's success is the integration of high-quality trails with the city's extensive park network – in fact,



the Minneapolis Parks & Recreation Board has primary responsibility over acquiring and maintaining trails. The city's efforts to develop bike boulevards and greenways within city neighborhoods are newer, but it envisions this as a next step to increase the reach and accessibility of an already effective system.

For more information:

Grand Rounds National Scenic Byway: <http://www.minneapolis-parks.org/grandrounds/>

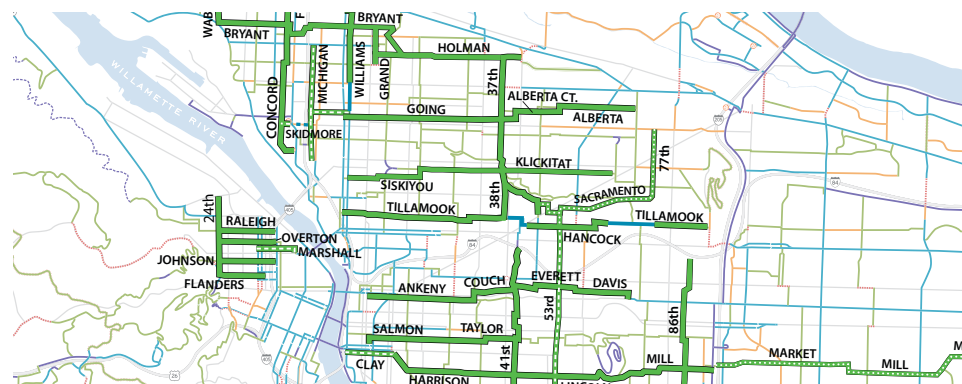
Minneapolis Bicycle Master Plan: <http://www.minneapolismn.gov/bicycles/projects/plan>



Portland Holman Greenway



Portland Green Street



Portland Neighborhood Greenways Plan

Portland

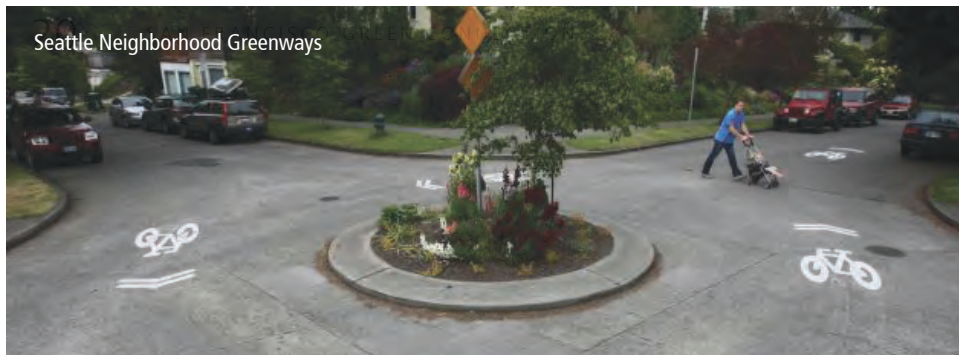
Portland's Neighborhood Greenways, formerly known as Bike Boulevards, are residential streets with low traffic volumes and speeds that prioritize bicycles and pedestrians. They are an integrated subset of the city's ambitious bicycle network envisioned in its Portland Bike Plan 2030. While greenways currently represent only one percent of Portland's roadway network, they have been extremely popular due to the high degree of safety, comfort, and connectivity they provide. They include features such as diverters, signage, and separated cycle

tracks on higher traffic sections. A separate Green Streets Program aims to "convert stormwater from a waste directed into a pipe to a resource that replenishes groundwater supplies," and has yielded some of the most beautiful and effective stormwater management designs in the nation.

For more information:

Portland Neighborhood Greenways: <http://www.neighborhoodgreenways.org>

Portland Green Streets Program: <http://www.portlandoregon.gov/bes/44407>



Seattle Neighborhood Greenways



Seattle SeaEdge Alternatives (SEA) Street



New York City's Hudson River Greenway



Seattle

Seattle has achieved among the most significant stormwater management and street redesign projects to be found in North America. The Sea Edge Alternatives (SEA) Streets pilot program completed in 2001, a subset of its larger Seattle Green Streets program, showcased a range of unique drainage and street design innovations aimed at mimicking the natural landscape drainage systems that existed prior to traditional piped systems. Monitoring data indicate that the pilot generated a

11% reduction in impervious street surfaces compared to traditional roads, resulting in a 99% reduction of total volume of stormwater runoff.

For more information:

Seattle Green Streets: http://www.seattle.gov/transportation/rowmanual/manual/6_2.asp

Seattle Street Edge Alternatives (SEA) Streets: <http://www.seattle.gov/util/environmentconservation/projects/drainagesystem/greenstormwaterinfrastructure/completedgsprojects/streetedgealternatives/>

New York

New York City holds claim to one of the nation's first and most ambitious greenway master plans, a 350-mile planned network first published in the Greenway Plan for NYC in 1993. Greenways have been a celebrated component of the park system throughout the city's history, and the plan builds on this legacy to develop paths and trails which link parks and neighborhoods around the city, providing public access to green spaces and the waterfront as well as recreational opportunities for walking, jogging, biking, and in-line

skating. Stretching some 32 miles in length, the Hudson River Greenway (part of the larger Manhattan Waterfront Greenway) is the longest continuous greenway on Manhattan and the single most heavily-used bikeway in America.

For more information:

New York City Greenways: <http://www.nycgovparks.org/facilities/bikeways>

New York City Hudson River Greenway: <http://www.nyc.gov/html/dcp/html/mwvg/mwghome.shtml>



Denver Cherry Creek Trail



Denver

No other US city has gone as far as Denver in integrating its off-street trail and on-street greenway networks. In 2011, the city adopted its ambitious Denver Moves plan, a collaborative effort of the Denver Parks & Recreation and Public Works departments to establish a single, unified plan for bicyclists, pedestrians, and other active transportation users across the city. The plan includes a number of innovative typologies for walking and biking paths, and focuses on creating safe, comfortable

corridors that link neighborhoods, parks, employment centers, business districts, transit hubs, and other destinations in all parts of Denver.

For more information:

Denver Moves: <http://www.denvergov.org/bikeprogram/bicyclingindenver/streetsandtrails/planning/tabid/438250/default.aspx>

Heels & Wheels Trail

Definition

Heel & Wheel trails are designed to minimize conflicts between different speed users to reduce conflicts in highly used segments of trail corridors. There are several construction, signage, and striping techniques available to reduce conflicts between different users.

Ease of Use

High. The comfort level for Heels & Wheels users will generally be high as the different users will be traveling within a shared lane with users of the same speed. The relative comfort will also vary substantially according to the width of the facility, signed regulations, and volumes.

Use

Heel & Wheel trails should provide additional capacity to trail segments that have poor Levels of Service (LOS) based on the Federal Highway Administration LOS calculations. Heels & Wheels trails are typically best accomplished by adding a parallel trail, adding to the current trail, or reconstructing the trail. Parallel trails can be constructed in hard or soft surfaces depending on the user types and demands.

Design Considerations

Heels & Wheels should be designed to provide increased convenience for all trail users by minimizing conflicts between users with a speed differential of more than 10 MPH. Signage and ground markings should clearly identify where users should travel. Maximum and minimum speed limits should be posted, and where safety issues are identified, speed enforcement should be conducted.

The dimensions and posted speed limits of the Heels & Wheels sections will vary greatly based on user levels and physical constraints. A single-direction wheeled travel path should have a minimum width of 5 feet. A single-direction heeled section should have a minimum width of 5 feet. A two-way wheeled path should have a minimum width of 12 feet. A two-way heeled section should have a minimum width of 8 feet.

Heel & Wheel trails are necessary where documented safety issues and user levels warrant such treatments. The design of the Heel & Wheel should be carefully considered to maximize the safety and user adherence to the intended trail user separation. A key design and construction consideration should be the speed of users.

Denver Examples

Cherry Creek Trail

(Downtown)

A common Heels & Wheels section provides separation for bicycles and walkers/runners. In some instances, families riding bicycles at slower speeds, inline skaters, long boarders, parents pushing strollers, or mobility impaired persons using a mobility device are uncertain where to travel. It will be critical to understand the unique travel requirements of each user of the corridor (vehicle width, clearance, top speed, braking, etc.) and apply the most appropriate designations between users. To minimize conflicts and provide an uninterrupted experience for users, it will be critical to designate speeds that are appropriate for the trail users in the corridors under consideration for Heels & Wheels treatment.



Denver Heels & Wheels Trail