



FINAL REPORT MARCH 2014



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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.

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GREEN CONNECTIONS

**FINAL
REPORT**

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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 will help 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

Many spaces in our urban environment, including small or modest bits, 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 reduce 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