

Draft Central SoMa Policy Paper

Environmental Sustainability

March 2015

Introduction

The vision of the Central SoMa Plan is for Central SoMa to become the first regenerative neighborhood in San Francisco – a true “eco-district” where urban development returns more to the environment than it takes. Here, buildings and infrastructure will use 100% clean renewable energy, much of it generated within the neighborhood. Carbon emissions and fossil fuels will be almost completely eliminated and totally offset from this area. Water will be captured, treated and re-used within the district. Nature will become a daily experience – biodiversity and wildlife will thrive on streets, buildings and parks. And zero solid waste will be sent to the landfill. The result will be one of the most sustainable urban places on the planet, serving the daily needs of the community and at the forefront of action on global climate change.

Background

Existing and Projected Conditions

Central SoMa’s current environmental conditions are typical of a dense urban area. The neighborhood’s density of housing and jobs coupled with a strong local and regional transit infrastructure supports non-auto transportation (walking, bicycling and public transit)– and thus contributes less greenhouse gas (GHG) emission per capita than less dense, more car-dependent areas. Additionally, large commercial and dense multi-family buildings tend to use less energy and water per square foot than more suburban low-rise building patterns. That being said, these large buildings do require substantial amounts of energy and water to operate and demand for these resources will significantly increase as a result of the new development proposed by the Plan.¹ The area’s existing older buildings also have particularly large demands for these resources, as they were built before modern building codes required increased resource efficiency. Currently, very little renewable energy is being generated within the neighborhood (three percent of total demand),² and very little water is being captured and/or reused for non-potable purposes (like irrigation and toilet flushing).³ The energy that is being used is overwhelmingly from carbon-based and non-renewable resources such as

¹ San Francisco’s buildings are the largest source of GHG emissions in the city (52%). Transportation emissions are the second largest source (43%). [SF Climate Action Strategy 2013 Update \(SF Department of the Environment\)](#).

² Calvern, Alexandra; Carr, Russell; Naqvi, Afaan; Roberts, Cole (Arup). 2015. *Community Integrated Renewable Energy (Summary Report)*. California Energy Commission. Publication number: CEC-500-2014-DEC.

³ 2.3 million gallons of water are consumed per day in the Plan Area. Of that, approximately 90 percent is expelled as wastewater (source: analysis conducted for the administrative draft Central SoMa Plan EIR).

natural gas and nuclear power.⁴ There is also very little natural habitat – nearly 90% of the neighborhood is covered in impervious surfaces, and there is substantially less tree coverage in SoMa than found elsewhere in the city.⁵ Subsequently, there is very little habitat to support native wildlife in Central SoMa.

Projected conditions are influenced by expected climate change – and the strategies that the City has already implemented to address, adapt, and combat potential negative impacts. Central SoMa has many low-lying areas (particularly in the southwest part of the Plan Area) that may be prone to flooding from both sea level rise and the increased intensity of future storms.⁶ As global temperatures rise, the entire neighborhood is expected to be subjected to more extreme heat events.⁷ A combination of drought and state population growth will continue to strain our water supply. Increased neighborhood density is expected to increase demand for energy and water and to produce additional solid and liquid waste.⁸

Existing Goals and Strategies

Since the onset of the environmental movement half a century ago, the City has made incremental strides in environmental sustainability. San Francisco is a national and international leader in environmental policy and regulation. This includes setting bold sustainability targets and developing policy regulations to help implement them, and providing tools and assistance to stakeholders to achieve desired outcomes, including the following:

Green House Gas Emissions and Energy Consumption

The City has established targets to reduce greenhouse gas emissions substantially below 1990 levels, including 20% by 2012 (which was achieved and surpassed⁹), 25% by 2017, 40% by 2025 and 80% by 2050.¹⁰ Additional targets created in support of the larger target include shifting away from automobile usage by having 50% of all trips be taken

⁴ [Pacific Gas & Electric \(PG&E\) Preliminary Power Mix \(2013\)](#): 28% natural gas and other fossil fuel, 22% renewable, 22% nuclear, 11% large hydro and 17% miscellaneous market purchase.

⁵ According to the [San Francisco Urban Forest Plan \(Phase 1: Street Trees\)](#), SoMa's tree canopy cover is 4.1%, compared to 13.7% citywide tree canopy.

⁶ [Planning Director Bulletin No. 4: Review of Projects in Identified Areas Prone to Flooding](#), SF Planning Department (2009).

⁷ San Francisco Department of Public Health: Climate Projections. Average temperatures in San Francisco are expected to increase between 4.1 and 6.2 degrees Fahrenheit by 2100. Extreme Heat (over 85 F) events expected to increase by 15-40 days per year by 2050 and potentially by 90 days by 2100. <http://www.sfclimatehealth.org/san-francisco-climate-projections/>.

⁸ For example, peak energy demand is expected to increase from 90 megawatts today to about 130 megawatts with full build out of the Central SoMa Plan. Calvern, Alexandra; Carr, Russell; Naqvi, Afaan; Roberts, Cole (Arup). 2014. *Community Integrated Renewable Energy (Summary Report)*. California Energy Commission. Publication number: CEC-500-2014-DEC.

⁹ A third party verified that San Francisco's 2012 GHG emissions were 23.5% below 1990 levels compared to the stated 20% reduction target in the City's Climate Action Plan (confirmed by SF Department of the Environment, 2015).

¹⁰ [SF Climate Action Strategy 2013 Update \(SF Department of the Environment\)](#).

by other means by 2017 and 80% by 2050.¹¹ Additionally, the City is seeking that buildings use 100% renewable energy by 2030 and to reduce energy consumption in existing commercial buildings by 2.5% annually.¹²

To help meet these targets, the City has:

- Required that all newly constructed buildings (and many renovations and additions) must meet or exceed California's Title-24 Energy Code by up to 10 percent.¹³
- Required that all existing commercial buildings larger than 10,000 square feet of conditioned space complete energy benchmarking and have an energy audit by a qualified professional, and share key data about building performance with the City.¹⁴
- Required homes to be retrofit with energy and water efficiency measures at time of sale;
- Provided accessible financing to cover the upfront cost of installing energy efficiency and renewable energy projects on buildings through its Property Assessed Clean Energy (PACE) program;
- Instituted numerous strategies to shift travel mode, such as investing in facilitating demand through new transportation infrastructure (e.g., the Central Subway and new bicycle lanes) and requiring large development to provide shuttles, transit passes, and/or other strategies to reduce driving, while simultaneously constraining supply through the reduction in the amount of parking that can be built in new development.

Water

The City and State have both developed targets around water usage. The State has established a goal of 20% reduction in per capita water use by 2020.¹⁵ Currently, San Francisco's has already achieved daily per capita water use is below the 2020 urban water use targets, therefore the City is already in compliance with the requirements of the Water Conservation Bill of 2009¹⁶ but continues to promote multiple water conservation initiatives.

¹¹ [SF Climate Action Strategy 2013 Update \(SF Department of the Environment\)](#).

¹² [SF Climate Action Strategy 2013 Update \(SF Department of the Environment\)](#). The State has also established GHG reduction targets ([AB 32](#)), which aim to reduce GHG emissions to 1990 levels by 2020 – a goal that the City of San Francisco has already surpassed.

¹³ SF Green Building Code & Ordinance. See SF Department of Building Inspection's (DBI) [Administrative Bulletin No. 93: Implementation of Green Building Regulations](#).

¹⁴ Existing Commercial Buildings Energy Benchmarking Ordinance, [San Francisco Environment Code, Chapter 20](#).

¹⁵ [State Senate Bill X7-7 \(2009\)](#) requires all water suppliers to increase water use efficiency and set an overall goal of reducing per capita urban water use by 20% by December 31, 2020 with an interim goal of reducing per capita water use by 10% by December 31, 2015.
http://www.swrcb.ca.gov/water_issues/hot_topics/20x2020/.

¹⁶ [Urban Water Management Plan](#) (SFPUC 2010).

To help meet these targets, the City has:

- Required that all new buildings install efficient fixtures.¹⁷
- Required existing properties to repair plumbing leaks and replace inefficient plumbing fixtures including toilets, urinals, faucets, and showerheads with high-efficiency models by 2017 or upon major improvements.¹⁸
- Required that all projects with 1,000 square feet or more of new or modified landscape area design, install, and maintain efficient irrigation systems, utilize low water-use plantings, and calculate a water budget.¹⁹
- Streamlined the permitting process for new developments that choose to collect, treat, and reuse alternate water sources for toilet flushing, irrigation and other non-potable uses.²⁰
- Required that new construction or major alterations to a building totaling 40,000 square feet or more; all subdivisions; and new and existing irrigated areas of 10,000 square feet or more within designated “recycled water use areas” (which includes all of Central SoMa) install dual plumbing (“purple pipes”) for non-potable applications in anticipation of connecting to a future recycled water system.²¹
- Required that all new and redevelopment projects that disturb 5,000 square feet or more of ground surface must comply with the Stormwater Design Guidelines and manage a portion of their stormwater on-site.²²

Waste

The City of San Francisco is a world-renowned leader in the diversion of waste from landfills. Through its recycling and composting programs, San Francisco successfully achieved the state-mandated 50% landfill diversion by 2000 and the locally-mandated 75% landfill diversion by 2010.²³ The City has set a zero waste target by 2020. The City hopes to meet this goal by requiring all persons in San Francisco to separate their refuse into recyclable, compostable and trash, and place each type of refuse in a separate container designated for disposal of that type of refuse. However, the City recognizes that achieving this goal will require a more global movement towards more sustainable product life-cycles.

Habitat and Wildlife

The City has very limited targets and programs regarding natural habitat, and most of these have been established only in the last couple of years. There are many relevant

¹⁷ SF Green Building Code & Ordinance. See SF Department of Building Inspection’s (DBI) [Administrative Bulletin No. 93: Implementation of Green Building Regulations](#).

¹⁸ Commercial Water Conservation Ordinance: <http://www.sfwater.org/index.aspx?page=683>.

Residential Energy & Water Conservation Ordinance: <http://www.sfwater.org/index.aspx?page=688>

¹⁹ Water Efficient Landscape Ordinance: <http://www.sfwater.org/index.aspx?page=689>.

²⁰ SF Public Utilities Commission’s [Non-Potable Water Program](#).

²¹ Recycled Water Ordinance: <http://www.sfwater.org/index.aspx?page=687>.

²² Stormwater Management Ordinance: <http://www.sfwater.org/index.aspx?page=446>.

²³ In fact, the City achieved [80% landfill diversion](#) by 2010.

targets and programs, including the following recent programs spearheaded by the Planning Department:

- A target of 50,000 new street trees citywide over the next 20 years, which will be implemented in part by a requirement that all new development provide street trees at a distance of one per every 20 feet of street frontage.²⁴
- The City's [Green Connections program](#) proposes specific greening strategies along 24 routes, including three in Central SoMa (2nd Street, Folsom Street, and the open spaces running from Market to Howard between 3rd and 4th, including Yerba Buena Gardens).
- The City's [Bird-Safe Building Standards](#) requires that new buildings be designed to minimize bird collisions with building windows.

Community Engagement, Research, and Analysis Specific to Central SoMa

To help create a neighborhood-specific environmental sustainability strategy for Central SoMa, there have been a number of recent and ongoing efforts. Foremost was the work of the Central SoMa Eco-District Taskforce, comprised of approximately 30 members representing a diversity of neighborhood groups, utility providers, developers and property managers, design and construction professionals, city agencies and staff. Throughout 2013, the Taskforce engaged for a series of meetings, tours and brainstorming sessions on how best to create an “Eco-District” in the Central SoMa Plan Area. The Taskforce developed a series of recommendations and potential implementation strategies that have formed the basis for much of the Planning Department’s subsequent work on environmental sustainability. The Taskforce’s Recommendation Report can be found here.

- [Central SoMa Eco-District Taskforce Recommendations Report](#) (SF Planning Department, 2013).

In addition to the work of the Eco-District Taskforce, several studies have been undertaken to better understand the opportunities and constraints related to environmental sustainability in Central SoMa. These include:.

- [Passive Energy Systems in Historic Buildings](#) (SF Planning Department, 2014).
- District-Scale Energy Planning: Smart Growth Technical Assistance to the City of San Francisco (United States Environmental Protection Agency, 2014)²⁵.
- San Francisco City Report – Central SoMa Building-Level Water Recycling, (Re.Invest, forthcoming 2015).
- Central SoMa Eco-District Governance and Financing Study (SF Planning Department, forthcoming 2015).
- Community Integrated Renewable Energy Project (AURP, SF Department of the Environment and SF Planning Department, 2015)²⁶.

²⁴ San Francisco Planning Code, [Section 138.1](#).

²⁵ Available from the San Francisco Planning Department.

²⁶ Available from the San Francisco Planning Department.

Proposal

The Central SoMa Plan aspires for the neighborhood to be truly “regenerative”, in that it actually improves environmental quality and that urban development has the capacity to return more to the environment than it takes. Achieving this goal will require the implementation of the existing requirements on new development, which unto themselves will greatly enhance the environmental sustainability of the Central SoMa neighborhood. This includes more efficient use of energy and water, reduced greenhouse gases emissions and solid waste per capita, and more habitat – which serves its own ends, and also helps address the projected effects of climate change.

The Plan is also proposing to implement higher sustainability targets in areas where the existing targets are insufficient to meet the Plan’s vision. In some instances (such as water conservation and habitat creation), these are reasonable targets given the known and projected environmental conditions in Central SoMa. In other cases (such as reduction of carbon emissions and local generation of power), these targets may be seen as aspirational, given the challenges of a dense urban environment and/or policies and regulations at the state and federal level. However, the City hopes that this vision can serve as a motivating factor for innovation and positive change, and provides clear direction.

The key to success will be to institutionalize this vision in an organization that will be able to keep its “eyes on the prize” over the 25+ year implementation of the Central SoMa Plan. Potential strategies to accomplish this goal are also discussed below.

Carbon Neutrality

As described above, the City already has an existing target of reducing carbon emissions by 80% by 2050. The Central SoMa Plan proposes to extend this goal for the neighborhood by aspiring to achieve carbon neutrality in that timeframe. For Central SoMa, carbon neutrality would mean that the amount of any resultant carbon released into the atmosphere due to Central SoMa’s activities would be met by a corresponding removal or sequestration of this same amount. Meeting this goal will require removal of carbon from the atmosphere by creating projects within and outside the district to offset Central SoMa’s carbon emissions such as energy efficiency, renewable or district energy projects, tree planting and carbon offset programs. It may also require implementation of any as-yet developed technologies.

Meeting this goal will also require a proactive shift in the types of energy consumed by the district. The Central SoMa Plan therefore proposes a target that 100% of the energy consumed by buildings be generated from renewable resources by 2030. This goal can be met through a combination on-site renewable generation and procurement of energy from renewable GHG-free sources. To help ensure this goal is met, and to help provide local resiliency against disaster, the Plan also proposes that by 2030, 50% of this renewable energy demand is generated within the Plan Area, through rooftop solar or other means. The Department recognizes that meeting these goals will likely require the

creation and widespread adoption of new technologies in the larger marketplace (such as electric vehicles). If such technologies become available sooner, the timeframe for reaching carbon neutrality should be moved up.

To achieve the Plan's energy and climate goals, the Planning Department envisions developing a "Central SoMa Energy Plan" that identifies a clear path for implementation, including specific priorities and projects. This Energy Plan would be developed in consultation with other City agencies such as the SFPUC's Power Enterprise, SF Department of the Environment, Department of Building Inspection, and Department of Public Works, as well as the private sector. The following are strategies for consideration and potential inclusion in such an Energy Plan.

Energy Strategy #1 – Make Existing Buildings More Efficient:

- Achieve 50% energy efficiency from Title 24 (2013) baseline for all residential construction and commercial buildings with low Energy Use Intensity (EUI) by 2030.²⁷
- Work closely with the "[San Francisco 2030 District](http://www.2030districts.org/sanfrancisco/about)"²⁸ organization to leverage best practices with its district-wide energy efficiency program for existing commercial buildings, including maintenance and operation.
- Develop and implement an "Energy & Water Use Benchmarking and Disclosure Ordinance" for all buildings (commercial and residential), regardless of size.²⁹
- Conduct "Energy Audits" for all buildings by 2020 and enforce monitoring/re-auditing every five years.³⁰
- Develop and implement an "Energy Efficient Construction Retrofits" program (including tax and development incentives, attractive financing and penalties for noncompliance) for all existing building by 2030.

Energy Strategy #2 – Construction of "Net Zero" Buildings:

- Meet zero net energy³¹ for all new residential construction by 2020 and commercial construction with low Energy Use Intensity (EUI) by 2030, by using either onsite OR offsite renewable energy sources/generation.³²

²⁷ Excludes existing buildings with high Energy Use Intensity (EUI) such as hospitals and data centers.

²⁸ The San Francisco 2030 District is a private-sector-led initiative in partnership with City agencies that is focused on setting targets for reducing energy, water and CO2 emissions from commercial building development and operations by 2030 within downtown San Francisco. See: <http://www.2030districts.org/sanfrancisco/about>.

²⁹ San Francisco Benchmarking and Disclosure already underway for commercial buildings larger than +/- 10,000 sf.

³⁰ Source: SF Environment presentation. Already underway and expected completion by 2014

³¹ Zero Net Energy or Net Zero Energy refers to buildings that "rely on exceptional energy conservation and on-site renewable generation to meet all of their heating, cooling and electricity needs," [Net Zero Energy Building Certification](http://www.2030districts.org/sanfrancisco/about), International Living Futures Institute (2015).

³² This is based on the California goal for 2020 and 2030. In Central SoMa, the definition of NZE will be expanded to energy generated outside of the project site or Central SoMa district boundaries. This will allow having a lot of flexibility from where the renewable energy is generated (not just onsite as defined by NZE). Also, this allows for inclusion of all new residential buildings but is limited for commercial uses that have a high EUI (hospitals, data centers).

- Become net positive energy (“regenerative”) in commercial buildings less than 25,000 square feet by 2030.³³
- Modify Planning Code to remove existing barriers to designing high performance green buildings—applicable for all new constructions and major alterations.
- Work with the SF Department of Environment to develop an “Outcome-Based Performance Energy Code” for specific application in Central SoMa, including the establishment of Energy Use Intensity (EUI) metrics for 90% of the total building portfolio.³⁴
- Mandate Electric Vehicle (EV) charging infrastructure and supply for all new construction, synched to offset the remaining 20% GHG left from automobile trip generation by 2030.³⁵
- Refine a specific set of “passive solar design” strategies that can be incorporated into the zoning code for Central SoMa.

Energy Strategy #3 – Generate and Share Renewable Energy:

- Reach a minimum of renewable energy district capacity for district resiliency by 2030, relying on both onsite and offsite renewable energy sources.³⁶
- By 2030, achieve onsite renewable energy capacity by 2030, capable of meeting basic energy needs for energy resiliency based on the 72 hour emergency metric.
- Develop Central SoMa’s Solar Capacity Map, by surveying/ inventorying all roof potential in new and existing buildings roofs (photovoltaic and solar hot water).
- Modify Planning Code to maximize for solar-ready capacity on roofs of new buildings, and triggered by major alterations in existing buildings.
- Develop an inventory of potential sites for permanent/exclusive use of renewable energy generation in perpetuity, capable to supply renewable energy for various properties in Central SoMa long term.³⁷
- Advocate removal of current regulatory barriers that restrict the generation and distribution of electricity between multiple buildings and across public rights of way.³⁸

³³ 105% of the project’s energy and water needs must be supplied by on-site renewable or energy efficiency, on a net annual basis. Projects must provide energy storage (at least 10% of lighting load and refrigeration for up to one week).

³⁴ A recent report prepared by ARUP for the SF Department of Environment (ARUP, 2015), concludes that comprehensive code coverage of energy code end-uses, possible federal preemption of specific appliances, and limitations from energy modeling make it difficult to aspire to energy neutrality when there are inherent deficiencies in the code to demonstrate performance. The report recommends an “outcome based” Code based on specific Energy Use Intensity (EUI, kbtus/ft²), presumably based on the ability of the City to determine accurate EUI baseline for buildings in San Francisco.

³⁵ [The Climate Action Strategy 2013 Update](#) requires reduction by 80% of auto-trips which leaves 20% auto trips remaining. If this 20% can use renewable energy charged electric vehicles, carbon neutrality for auto trips could be achieved by 2030.

³⁶ This allows for flexibility to how much renewable energy can be generated onsite, which in Central SoMa is an enormous challenge (ARUP).

³⁷ Sites dedicated for permanent or exclusive use of renewable energy generation are critical because individual onsite generation is very limited (roof area, et al). Also, district energy cannot rely on temporary uses such as existing/underutilized parking areas (ARUP 2015).

³⁸ Currently, anyone providing energy to more than two properties must be recognized and regulated as a “utility” by the State of CA. (ARUP 2015).

- Develop a portfolio of renewable energy credits available for purchase by Central SoMa's property owners (e.g. CleanPowerSF, et al).
- Consider using Plan development impact fees and taxes to develop, generate, distribute, purchase, and invest in onsite and offsite renewable energy that can be effectively used in Central SoMa.

Energy Strategy #4 – Build Green Energy Infrastructure:

- Work with the Department of Public Works and SF Public Utilities Commission to plan, map, design, and implement a district-wide renewable energy and/or low-carbon district energy distribution system so that buildings can be designed to be “system ready” and plug-in to systems when clean district energy becomes available for distribution.
- Consider opportunities for incorporation of renewable energy generation in the transportation-related public right of way, in collaboration with DPW, SFMTA, CalTrans and the Federal Highway Administration (FHA).
- Develop and include a renewable energy infrastructure component in the Capital Improvement Program (CIP) of SoMa, to determine and establish renewable energy impact fees from infrastructure costs for generation and distribution.
- Develop and implement an Infrastructure Clean Energy Plan for traffic lights, street lights, and water and wastewater pumps, to achieve a 15% annual energy reduction below an estimated baseline energy use by 2020 for this infrastructure.³⁹

More Intelligent Use of Water

The persistent and potentially ongoing drought conditions in California only exacerbate the need to address the extreme inefficiencies of our current patterns of water use. The Central SoMa Plan Area is well positioned to lead the City's effort towards a more sustainable water policy, due to factors such as:

- Large amount of new development, that can implement the latest technologies and best practices, such as water efficient toilets and showers, and create an infrastructure of on-site water capture, storage and re-use systems, and
- The large number of streetscape projects, which will provide numerous opportunities to implement technologies and best practices in the public right of way, including stormwater retention and treatment facilities and piping for water recycling.

Given this opportunity, the Central SoMa Plan is currently working with the SF Public Utilities Commission to explore aspirational water targets in the area including:

- Reducing potable water use in existing and new buildings through efficiency and re-use.
- Exploring the potential feasibility of creating a Low to Zero Wastewater District.

³⁹ Source: LEED for Neighborhood Developments (LEED ND), Credit GIB 13, USGBC, 2009.

Implementing water goals will require participation by both the public and private sector in adoption of water efficiency technologies and systems. Fortunately, a number of these exist today, and are in practice in many buildings with San Francisco already⁴⁰. If projected water shortages lead to increased prices, these technologies will also become more imperative.

The Planning Department envisions developing a “Central SoMa Water Plan” that identifies a clear path for implementing greater water efficiency and recycling goals, including priorities and projects. This Water Plan would be developed in consultation with other City agencies such as the SFPUC’s Water and Wastewater Enterprises, SF Department of the Environment, Department of Building Inspection, and Department of Public Works, as well as the private sector. The following are strategies for consideration and potential inclusion in such a Water Plan.

Water Strategy #1 – Increase Efficiency:

- Implement existing City and State Requirements for water efficiency and conservation.

Water Strategy #2 – Diversify the Water Supply:

- Reduce potable water demand by encouraging and incentivizing building and multi-building onsite water systems that can collect, treat, and reuse alternate water sources for toilet flushing, building cooling and irrigation.⁴¹
- Support the design and construction of the SF Public Utilities Commission’s future Eastside Recycled Water Plant to provide recycled water for non-potable uses to buildings in Central SoMa and other areas.⁴²

Water Strategy #3: Explore the possibility of a Low to Zero Wastewater District

- Work with SFPUC to determine the potential capacity for district-wide stormwater capture, infiltration and re-use within streetscapes and other planned public realm projects in Central SoMa.

Habitat Creation & Ecosystem Function

Over the last century, the urbanization of SoMa has largely been responsible for the disappearance of the area’s indigenous ecosystems and habitat. In fact, there’s extremely limited natural habitat of any kind in the Plan Area. While the original habitat may not coming back, the Central SoMa Plan envisions a neighborhood where locally-

⁴⁰ [San Francisco’s Non-Potable Water System Projects](#) (SFPUC 2014).

⁴¹ Alternate water sources include: rainwater (precipitation collected from roofs or surfaces), stormwater (precipitation collected from at or below grade surfaces), graywater (wastewater from bathroom sinks, showers, and washing machines), blackwater (graywater and wastewater from kitchen sinks and toilets) and foundation drainage (groundwater that intrudes and is pumped from building basements).

⁴² The SFPUC is developing plans for both an Eastside and Westside Recycled Water Plant intended to save millions of gallons of drinking water per day currently used for non-drinking purposes. Estimated completion date 2019-21. http://sfwater.org/bids/projectDetail.aspx?prj_id=311 and http://sfwater.org/bids/projectDetail.aspx?prj_id=310

appropriate flora and fauna thrive in abundance. To create such an environment, the Plan proposes the following quantitative and qualitative targets and accompanying implementation strategies:

- Double Central SoMa's tree canopy by 2030. Implementing this target will be achieved through the Planning Code's existing street tree requirements and additional public and private investment in trees along sidewalks in front of existing buildings and in new open spaces.
- Central SoMa's overall greenery should double by 2030. Implementing this strategy will require the creation of additional habitat along sidewalks and in open spaces. It will also require habitat on the roofs on many new and existing buildings. The Planning Department will continue working with the SF Public Utilities Commission and Department of the Environment to develop specific proposals for green roofs, which could potentially be implemented through the Plan adoption process or a reasonable timeframe thereafter.
- Central SoMa' permeable surfaces should increase by 100% by 2025. This target could be met through the same greening strategies discussed above, as well as the increased use of permeable paving surfaces.
- Central SoMa should have a vast increase in high quality habitat. Implementing this strategy will require that new greening projects utilize locally appropriate species, both in the public right of way and on buildings such as green or living roofs and walls.

To achieve the Plan's habitat goals, the Planning Department envisions developing a "Central SoMa Habitat Plan" that identifies a clear path for implementation, including priorities and projects. This Habitat Plan would be developed in consultation with other City agencies such as the SF Department of the Environment, Department of Building Inspection, SF Public Utilities Commission and Department of Public Works, as well as the private sector. The following are strategies for consideration and potential inclusion in such a Habitat Plan.

Habitat Strategy #1 – Integrate the Built and Natural Environment in Central SoMa:

- Create a designation of Central SoMa as an "Urban Biodiversity Hotspot" with corresponding program to support this function of the neighborhood.
- Pursue opportunities for adjacent, scaled ecological synergy, e.g., between streets, open spaces and roofs.
- Establish a green roof pilot program in Central SoMa.
- Maximize permeability of streets and open spaces for capturing stormwater and redirecting into the area's groundwater supply.
- Design for appropriate food-bearing trees and other plants, taking into account public health concerns and integrating pollinator habitat for healthier food production.

Habitat Strategy #2 –Plant to Create Wildlife Habitat, Water Conservation and a Greener, Cooler Urban Environment:

- Develop guidelines and planting suggestions for the use of drought-tolerant climate-appropriate native plants that support habitat and biodiversity for use in Central SoMa's streetscapes, POPOSs (privately-owned public open spaces), public open spaces and other relevant areas. Landscape design should promote diverse bat, bee, bird and butterfly habitat. This benefits the animals as well as people's experience and provides pollination and other ecosystem services.
- Increase the urban forest tree canopy on the public right-of-way and in private spaces where feasible and appropriate.
- Connect significant urban habitat areas (Mission Channel, the Bay, "Market Street Canyon").

Habitat Strategy #3: Connect Residents to Local Nature to Engender a Deeper Sense of Place and Community Stewardship:

- Integrate interpretive elements or demonstration areas that recognize and connect people to the historical and current ecological landscape.

Sustainable Implementation

For most aspects of the Central SoMa Plan, there is a known path to implementation. For example, buildings being proposed under newly adopted zoning controls will still be reviewed and entitled through existing processes and regulations. By contrast, the implementation of an environmental sustainability focused neighborhood organization or "eco-district" will be an unprecedented process in San Francisco. What is known is that this will require an organization that has dedicated funding and staff tasked with implementing the Plan. Its roles and responsibilities will likely include the ongoing coordination between multiple public and private entities, and vigilance for new policies, regulations, and technologies that will make it possible to reach the Plan's targets. As discussed above, the City is currently researching the best way to create, fund, and organize such an implementation entity, including such fundamental questions as to funding and organizational structure (public, private or public-private partnership). The results of this analysis are expected in the summer of 2015.