



SAN FRANCISCO PLANNING DEPARTMENT

MEMO

DATE: October 24, 2019
TO: Planning Commission
FROM: Lisa Gibson, Environmental Review Officer
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RE: Water Supply Planning

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This memorandum provides an overview of the city's water supply planning process and implementation of related local, regional, and state plans, policies, and regulations.

The planning department works in close coordination with the city's water supply agency, the San Francisco Public Utilities Commission (SFPUC), to assess the ability of the city's water supply system to meet the demands of anticipated growth in San Francisco in compliance with the California Urban Water Management Act and the California Environmental Quality Act (CEQA) as summarized below.

SFPUC Responsibilities

- Manage and operate the city's Hetch-Hetchy regional water system to supply water to 2.7 million people
- Update San Francisco's Urban Water Management Plan every five years
- Prepare water supply assessments for larger development projects in the city

Planning Department Responsibilities

- Provide household and employment data and growth projections to the SFPUC for the five-year urban water management plan updates
- Address the analysis and findings contained in the SFPUC's water supply assessments and urban water management plan as part of the environmental review for proposed development projects and land use plans
- Evaluate environmental impacts from the development of new or expanded water supply facilities

URBAN WATER MANAGEMENT PLAN

The California Urban Water Management Planning Act requires urban water supply agencies to prepare urban water management plans to plan for the long-term reliability, conservation, and efficient use of California's water supplies to meet existing and future demands. The act requires water suppliers to update their plans every five years based on projected growth for at least the next 20 years.

San Francisco's Urban Water Management Plan was last updated in 2015.¹ The plan presents information on the SFPUC's retail and wholesale service areas, the regional water supply system and other water supply systems operated by the SFPUC, system supplies and demands, water supply reliability, Water Conservation Act of 2009 compliance, water shortage contingency planning, and water demand management. The 2015 update presents anticipated water supplies and demands from 2015 through 2040. The next update will evaluate anticipated supplies and demands for the period from 2020 through 2045.

PLANNING DEPARTMENT GROWTH PROJECTIONS

The planning department provides household and employment growth projections for San Francisco to the SFPUC for the urban water management plan updates. Accordingly, San Francisco's projected 2040 water demand pursuant to the 2015 Urban Water Management Plan update is based on projected population growth from 857,508 persons in 2015 to 1,085,700 in 2040.² This corresponds to an increased from 358,772 households and 714,700 jobs (2017) to 483,695 households and 872,510 jobs by 2040. These growth estimates are based on Plan Bay Area projections (see discussion below) as refined by the planning department to reflect the city's adopted land use plans, including area plans, redevelopment plans, and priority development areas. Notably, all cumulative (past, present, and reasonably foreseeable future) development, and all development in the planning department's pipeline are fully encompassed within these projections. This includes all of the growth allowed under the city's major multi-phased redevelopment plans, including the Candlestick-Hunter's Point Redevelopment Plan, the Treasure Island Redevelopment Plan, the Park Merced Plan, the Pier 70 development, the Hope SF Potrero and Sunnydale projects, the India Basin development, the Schlage Lock development, the Mission Rock development, the Potrero Power Station development, and the Balboa Reservoir project. Buildout of all of these major multi-phased projects in combination with all other projects in the city's current development pipeline³ represents 72,565 of the remaining approximately 125,000 net new housing units projected for San Francisco through 2040 under Plan Bay Area and as reflected in the 2015 urban water management plan update. To reach the projected 2040 population, the city would need to add about 6,000 housing units per year for the next 20 years, which would be twice the average rate of housing production between 2010-2018.⁴ Thus, the growth projections

¹ San Francisco Public Utilities Commission, *2015 Urban Water Management Plan for the City and County of San Francisco*, June 2016. This document is available at <https://sfwater.org/index.aspx?page=75>

² *Ibid.* p. 3-11

³ San Francisco Planning Department, *Housing Development Pipeline*, September 2019. Available at <https://sfplanning.org/project/pipeline-report>

⁴ U.S. Census Bureau, American FactFinder, *Annual Estimates of Housing Units for the United States, Regions, Divisions, States, and Counties: April 10, 1, to July 1, 2018*. Available at <https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF>

that the SFPUC used to determine future water demand for the 2015 urban water management plan update included all growth that is occurring or that is likely to occur in San Francisco between 2015 and 2040.

PLAN BAY AREA

The Sustainable Communities and Climate Protection Act adopted in 2008 through Senate Bill 375 requires all metropolitan regions in California to complete a sustainable communities strategy as part of a regional transportation plan. The sustainable communities strategy is a land use planning and growth strategy for the region which, in combination with transportation policies and programs, strives to meet the California Air Resources Board's greenhouse gas reduction targets for the region. The Bay Area Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG) are jointly responsible for Plan Bay Area, the region's sustainable communities strategy.

One of Plan Bay Area's key strategies for achieving the region's greenhouse gas reduction targets is the Jobs-Housing Connection Strategy. This strategy seeks to reduce per capita vehicle miles travelled by concentrating both population and employment growth in the region's priority development areas, with the largest shares of growth directed to San Francisco, Oakland, and San Jose.⁵

As discussed above, the water demand projections contained in the city's 2015 Urban Water Management Plan Update are derived from Plan Bay Area population and employment projections for San Francisco. These projections are in turn based on the Plan Bay Area Jobs-Housing Connection Strategy.

WATER SUPPLY ASSESSMENTS

Under sections 10910 through 10915 of the California Water Code, urban water suppliers like the SFPUC must prepare water supply assessments for certain large projects (water-demand projects), as defined in CEQA Guidelines section 15155.⁶ Water supply

⁵ ABAG, MTC, *Plan Bay Area Jobs-Housing Connection Strategy, Executive Summary*, May 2012, available at: <http://files.mtc.ca.gov/library/pub/29722.pdf>

⁶ Pursuant to CEQA Guidelines section 15155(1), "a water-demand project" means:

- (A) A residential development of more than 500 dwelling units.
- (B) A shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.
- (C) A commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor area.
- (D) A hotel or motel, or both, having more than 500 rooms, (e) an industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.
- (F) a mixed-use project that includes one or more of the projects specified in subdivisions (a)(1)(A), (a)(1)(B), (a)(1)(C), (a)(1)(D), (a)(1)(E), and (a)(1)(G) of this section.

assessments rely on information contained in the water supplier's urban water management plan and on the estimated water demand of both the proposed project and projected growth within the relevant portion of the water supplier's service area.

The SFPUC prepares water supply assessments for all water-demand projects based on the city's urban water management plan. As discussed above, the urban water management plan assesses the ability of the city's water supply system to meet both existing and future demand consistent with household and employment growth projections for the city that fully account for planned growth consistent with Plan Bay Area and the city's land use and redevelopment plans. Thus, the water supply assessments for individual development projects address the water supply for the specific project, as well as the cumulative effects of the individual project and anticipated future development on the city's water supply.

BAY-DELTA PLAN AMENDMENT

In December 2018, the State Water Resources Control Board adopted amendments to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, which establishes water quality objectives to maintain the health of the rivers and the Bay-Delta ecosystem.⁷ The plan amendment requires increasing flows in the Stanislaus, Tuolumne, and Merced rivers to 40 percent of unimpaired flow⁸ from February through June every year, whether it is wet or dry. During dry years, this would result in a substantial reduction in the SFPUC's water supplies from the Tuolumne River watershed. If this plan amendment is implemented, the SFPUC would experience supply shortages of up to 50 percent in a sustained drought based on 2040 projected demand.

At this time, whether the December 2018 Bay-Delta Plan Amendment in its current form will be implemented, and if so, when, is uncertain for several reasons: the plan amendment is not self-implementing and is subject to other regulatory approvals and adjudicatory proceedings; adoption of the amendment is the subject of over a dozen lawsuits that are pending in state and federal courts; and, at the direction of the state water board, state agencies, the SFPUC, and other affected parties are currently engaged in developing "voluntary agreements" as an alternative to the December 2018 adopted amendment, which would achieve the conservation goals of the plan amendment while reducing effects on water suppliers.

(G) A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.

⁷ State Water Resources Control Board Resolution No. 2018-0059, *Adoption of Amendments to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary and Final Substitute Environmental Document*, December 12, 2018, available at https://www.waterboards.ca.gov/plans_policies/docs/2018wqcp.pdf.

⁸ "Unimpaired flow" represents the water production of a river basin, unaltered by upstream diversions, storage, or by export or import of water to or from other watersheds.

Since the December 2018 adoption of the Bay-Delta Plan Amendment, all SFPUC water supply assessments have included project-level water supply evaluations under three potential water supply scenarios: (1) no implementation of the Bay-Delta Plan Amendment (i.e., no significant changes to the water supply assumptions contained in the 2015 Urban Water Management Plan⁹); (2) implementation of a voluntary agreement as an alternative to the Bay-Delta Plan Amendment, resulting in no greater than 20 percent system-wide rationing in dry years; and (3) implementation of the Bay-Delta Plan Amendment, resulting in up to 50 percent rationing in years seven and eight of the 8.5-year design drought based on 2040 demand.

CEQA REVIEW OF ENVIRONMENTAL IMPACTS RELATED TO WATER SUPPLY

Pursuant to CEQA Guidelines section 15155, the planning department includes the findings of the water supply assessments for all water-demand projects in the CEQA environmental review documents for those projects. For all projects, the planning department evaluates whether significant environmental impacts could occur from the construction or operation of new or expanded water supply facilities required to meet the demand of the proposed project in combination with anticipated cumulative development. The planning department bases this project-level and cumulative analysis on the data and analysis contained in the SFPUC's project-level water supply assessments and the urban water management plan. Since the December 2018 adoption of the Bay-Delta Plan Amendment, the planning department's CEQA documents have considered the same three potential water supply scenarios evaluated in the SFPUC's water supply assessments.

In all cases, the planning department's CEQA documents have determined that sufficient water supplies would be available to meet the demands of existing development in combination with anticipated cumulative development through 2040 unless the December 2018 Bay-Delta Plan Amendment is implemented. In that case, the SFPUC will need to impose higher levels of rationing than its regional water system level of service goal of no more than 20 percent rationing during drought years by 2025 and for the next several decades. Implementation of the plan amendment would result in a shortfall beginning in years two and three of multiple dry-years in 2025 of 33.2 percent, and dry year shortfalls by 2040 ranging from 23.4 percent in a single dry year and year one of multiple dry years to up to 49.8 percent in years seven and eight of the 8.5-year design drought.

The department's CEQA analysis has also determined that both direct and indirect environmental impacts could result from high levels of rationing that would be required

⁹ Recent project-level water supply evaluations also consider the potential for relatively small shortfalls resulting from implementation of amendments to the 2009 Water Supply Agreement between the SFPUC and its wholesale customers, approved by the SFPUC Commission on December 11, 2018 in Resolution No. 18-0212.

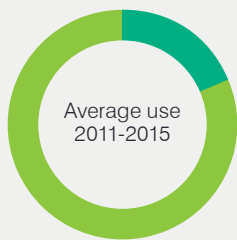
under the Bay-Delta Plan Amendment. This could include impacts from the construction and operation of new or expanded water supply facilities, as well as loss of vegetation cover due to restrictions on irrigation. The department's CEQA analysis also determines that the high-levels of drought-year rationing required under the Bay-Delta Plan Amendment could contribute indirectly to increased urban sprawl, which in turn could contribute to significant cumulative impacts on air quality and climate change through increased greenhouse gas emissions. However, the small increase in water demand attributable to individual development projects compared to overall citywide demand would not substantially affect the levels of dry-year rationing that would otherwise be required throughout the city. Even the largest multi-phased development projects evaluated would contribute less than 1 percent to the total water demand in San Francisco, and most projects would contribute less than 0.06 percent to projected citywide demand in 2040. If the Bay-Delta Plan Amendment is implemented, high levels of rationing will be required during dry years with or without the incremental increase in water demand that would result from even the largest development project. Thus, no individual development project would make a considerable contribution to the cumulative environmental impacts caused by implementation of the Bay-Delta Plan Amendment.

CONCLUSION

The planning department and the SFPUC work in close coordination and rely on each department's respective expertise and knowledge to assess the city's water supply resources as they relate to land use, development, growth, water conservation, and climate change consistent with local, regional, and state plans, policies, and regulations. This process fully accounts for the future water demand of projected growth and incorporates regular updates to reflect the latest population, employment, land use, water conservation, water use, and water supply data and projections. Population and employment growth in San Francisco and resulting water demand are currently tracking within forecasted levels, and the city's water supplies are sufficient to serve existing and expected future demand through 2040. However, if the 2018 Bay-Delta Plan Amendment is implemented, the city will experience water supply shortfalls during drought years with or without additional demand from new development.

Understanding Water Demand

CALIFORNIA



■ Agricultural 81%
■ Urban 19%

Average Annual Water Use¹

Agricultural net water use ²	%
Orchards and vines	34
Alfalfa	18
Other field crops	14
Irrigated pasture	11
Rice	8
Corn	7
Truck and speciality	4
Cotton	4

Population



2019³ **39.9** Million 2040⁴ **46.5** Million

Sources of population growth (2010-2018)⁵

	million[s]
Births vs. Deaths	+1.98
Net International Migration	+1.04
Net Domestic Migration	-0.71



92

gallons per person per day⁶

SFPUC REGIONAL WATER SYSTEM



Daily Deliveries⁶

	Million gallons per day
■ In-City Retail*	64
■ Suburban Retail*	4
■ Wholesale	129

Retail refers to individual water sales accounts, not retail land use.

The San Francisco Public Utilities Commission provides water to wholesale and retail customers, including the City and County of San Francisco, throughout the regional water system.⁶

85%

of water sourced from Tuolumne River

15%

from local watersheds and groundwater



55

gallons per person per day⁷

Customers served

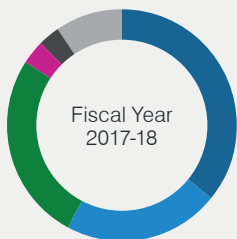
27

wholesale customers (cities, water districts, and private utilities)

2.7

million residents and businesses

SAN FRANCISCO



Average Daily Water Use⁶

	Million gallons per day
■ Multi-family residential	23
■ Single family residential	14
■ Commercial/Industrial	17
■ Municipal	2
■ Dedicated Irrigation	2
■ Other Systems Uses	6

2018 **64** 2040 **85** Million gallons per day

Population



2019³ **883,869** 2040⁸ **1.04** Million

Growth of water demand

	2017 ⁹	2017+Pipeline ¹⁰	2040 ⁸
Households	358,772	426,184	483,695
Jobs	714,700		872,510

Sources of population growth (2010-2018)⁵

Births vs. Deaths	+25,701
Net International Migration	+55,042
Net Domestic Migration	-2,876



42

gallons per person per day⁶



FOOTNOTES:

- 1 California Department of Water Resources, California Water Plan Update 2018, <https://water.ca.gov/Programs/California-Water-Plan/Update-2018>. Accessed August 2019.
- 2 Public Policy Institute of California, Water Policy Center, Water for Farms, October 2016. Truck and specialty includes non-tree fruits, vegetables, flowers, and garden plants. Based on 2010 California Department of Water Resources (2010 water use).
- 3 California Department of Finance, E-1 Population Estimates for Cities, Counties, and the State with Annual Percent Changes, January 1, 2018 and 2019. <http://www.dof.ca.gov/Forecasting/Demographics/Estimates/>.
- 4 California Department of Finance, Demographic Projections. <http://www.dof.ca.gov/Forecasting/Demographics/Projections/>.
- 5 US Census Bureau, Estimates of the Components of Resident Population Change: April 1, 2010 to July 1, 2018, California and San Francisco County. <https://census.gov/>. Net international migration for the United States includes the international migration of both native and foreign-born populations. Specifically, it includes: (a) the net international migration of the foreign born, (b) the net migration between the United States and Puerto Rico, (c) the net migration of natives to and from the United States, and (d) the net movement of the Armed Forces population between the United States and overseas. Net international migration for Puerto Rico includes the migration of native and foreign-born populations between the United States and Puerto Rico.
- 6 SFPUC, Water Resources Division Annual Report, Fiscal Year 2017-2018. <https://www.sfwater.org/index.aspx?page=75>; the amount shown is for residential per capita uses only.
- 7 Calculated from residential demand and population data published in SFPUC Water Resources Division Annual Report 2017-2018 and Bay Area Water Supply and Conservation Agency (BAWSCA), Annual Survey FY 2017-2018, March 2019. http://bawasca.org/uploads/userfiles/files/BAWSCA_Annual_Survey_FY17-18_Final.pdf.
- 8 Metropolitan Transportation Commission and Association of Bay Area Governments, Plan Bay Area Projections 2040, <http://projections.planbayarea.org/>.
- 9 San Francisco Planning Department, 2017 Commerce and Industry Report, <https://sfplanning.org/news/2017-commerce-industry-inventory-report-published>. Accessed August 2019.
- 10 San Francisco Planning Department, SF Development Pipeline 2019 Q1, <https://data.sfgov.org/Housing-and-Buildings/SF-Development-Pipeline-2019-Q1-Map/8ag9-hmiq>. Accessed August 2019.

