



EXECUTIVE SUMMARY

OCTOBER 2021

Water for a Growing Bay Area

How the region can grow without increasing water demand

Read the full report at spur.org/bayareawater

The San Francisco Bay Area is at a crossroads. The region is projected to add 2 million jobs by 2070, attracting millions more people. To prevent housing from becoming even more unaffordable, the region needs to build 2.2 million new housing units. But the rivers the Bay Area relies on to supply much of its water are already at a breaking point, upstream communities are suffering from a degraded environment and climate change is likely to make the water supplies even more unpredictable. Can the Bay Area grow and build the housing it needs without taking more water from the environment?

This report (available at spur.org/bayareawater) shows that the Bay Area can add 2 million jobs, 6.8 million people and 2.2 million homes by 2070 and offset all water use from this growth in two ways: through modest improvements in water use efficiency and by locating new growth in areas that are already developed, known as infill locations. This report also lays out key recommendations for how policy-makers can rise to this opportunity, with a focus on managing water demand with conservation

and efficiency, pursuing compact land use strategies with a high share of multifamily housing and strengthening mechanisms for sharing water regionally. With the right planning, water need not be a barrier to the Bay Area's growth.

Overview

The Bay Area has been the beneficiary of abundant and inexpensive water supplies for over a century. But the environment and people have suffered from excess diversions of freshwater from the Bay-Delta ecosystem. The San Francisco Bay lies at the mouth of the state's largest watershed, which includes the Bay, the Sacramento-San Joaquin Delta and the two largest rivers in the state. Withdrawals of water from the ecosystem contribute to declines in native fish species, with three types of salmon listed as threatened. The alteration of the Bay-Delta ecosystem also impacts people who live in the watershed. Harmful algal blooms first began in 2009 and now extend for most of the year in parts of the Delta, concentrated in and around the predominantly low-income city of Stockton. When harmful algal blooms are present, residents cannot swim, boat or fish in their waterways.

FIGURE A
The San Francisco Bay-Delta watershed is the largest in the state.

More than half the rain and snow that reaches California falls within the boundaries of the Bay-Delta watershed.

Source: Redrawn from a U.S. Government Accountability Office map, San Francisco Bay-Delta Watershed, 2018. See: <https://www.gao.gov/products/gao-18-473>

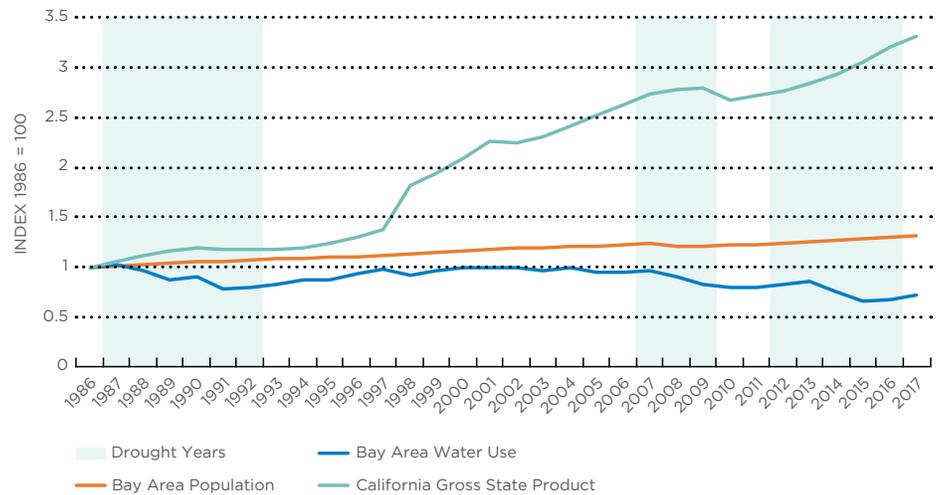


While the Bay Area's people and economy need freshwater to prosper, that does not necessarily mean that the region needs as much water as it has used in the past. Water use peaked in the early 1980s, and since then water demand has decreased even as the population and economy have grown (see Figure B). People have learned to accomplish the same goals with less water by changing their behavior, upgrading appliances, fixing leaks, watering less outdoor space and installing drought-tolerant landscaping.

FIGURE B

In the Bay Area, water use has declined even as the population and economy have grown.

Changing behavior, upgrading appliances, fixing leaks and installing drought-tolerant landscaping have all contributed to a reduction in water use since the 1980s.



Source for Water Use and Population: Vorster, Peter, and Greg Reis, 2019, <https://www.sfestuary.org/wp-content/uploads/2019/10/SOTER-Combined-Technical-Appendix.pdf> Source for Gross State Product: State of California Department of Finance, 2021, https://www.dof.ca.gov/forecasting/economics/indicators/gross_state_product/

Source for Drought Years: California Department of Water Resources, 2021, https://water.ca.gov/-/media/DWR-Website/Web-Pages/Water-Basics/Drought/Files/Publications-And-Reports/DroughtBrochure2021update_ay11.pdf

While the Bay Area has succeeded in growing despite a limited supply of water, some places have not. Nearly 40 towns and cities in California have at one time halted new construction because of water shortages (see Figure 9 on page 13 of the report at spur.org/bayareawater). Marin Municipal Water District in the North Bay is contemplating a moratorium on all new construction in the face of the district's driest year on record in nearly a hundred years. These experiences stand as a warning that water scarcity, if not carefully managed, can put a hard stop to growth.

There is a common perception that some communities use a lack of water as a bad-faith argument to oppose any new development. While that can be the case at times, the tradeoff between water supply and new development is more complex. In the short run, a sudden and acute drought can mean that a water system must decide between meeting the core needs of its existing customers and serving new ones. In the long run, the keys to growing within the limits of finite water supplies are careful planning and investment in conservation, efficiency and resilient supplies. The people already living and doing business in a community must be willing to make personal changes and invest in their water infrastructure so that newcomers can join them.

Water for a Growing Bay Area envisions how the region can meet its greatest challenges in water management over the next half-century. It is part of SPUR's Regional Strategy, a vision for the Bay Area of 2070.¹ Change is hardly new for the region's water supply and demand. Fifty years ago, the average Californian used 40% more water each day at home. The extreme droughts of 1976–77 and 2012–16 were yet to occur, and just a few scientists had begun to speculate about the impact human pollution could have on the climate.² Had people known the extent of droughts, climate change and population growth that were on the horizon, they might have predicted disaster for California and its water supplies. But the Bay Area and the state adapted, and cities have managed to thrive despite using less water.

¹ Explore the complete SPUR Regional Strategy at spur.org/regionalstrategy

² Cooley, Heather, *Urban and Agricultural Water Use in California, 1960–2015*, Pacific Institute, 2020, <https://pacinst.org/publication/urban-agricultural-water-use/>

Chapter 1 of this report examines six alternative scenarios for water demand in 2070. We arrived at these alternatives by crossing two scenarios for growth with three options for water use: inefficient, efficient and highly efficient. SPUR first introduced the two growth scenarios in the report *A Civic Vision for Growth*,³ which projected where growth will likely occur without much change to current policies versus where it would go under new policies that furthered equity and sustainability goals. The Business as Usual scenario projects that the Bay Area will grow as it has in the recent past, with new development concentrated in new single-family homes in the suburbs. The New Civic Vision scenario models growth with a greater proportion of dense, infill, multifamily housing and no new growth in open space, agricultural land or areas at high risk of sea level rise, flooding or wildfire.

We used scenario modeling to understand two key questions:

- What would water demand be in 2070 for six scenarios of land use and efficiency?
- Will water demand inevitably increase if the Bay Area economy grows as predicted and adds the housing it needs by 2070?

Findings and Recommendations

The Bay Area could add 2.1 million jobs, 6.8 million people and 2.2 million homes by 2070 and offset all water use from this growth through modest improvements in water use efficiency and more compact land use (see Figure C).

The region could grow and use even less water than today if it took some more ambitious but still achievable steps toward greater water efficiency.

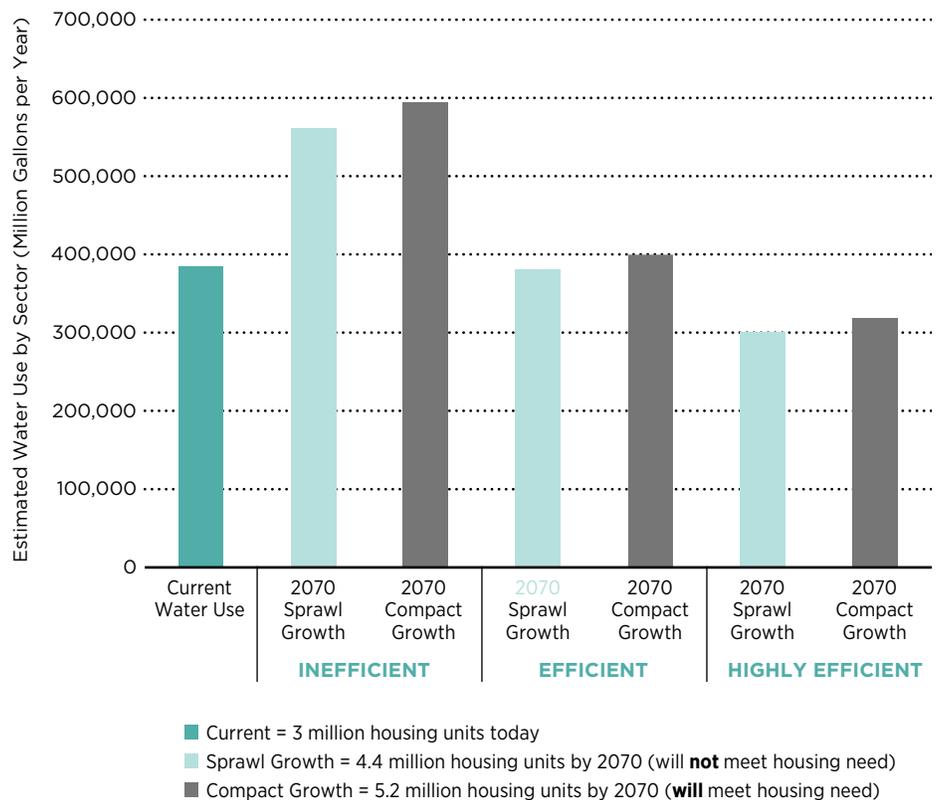
Compared to sprawl growth, compact growth doesn't decrease *total* water use, but it decreases per capita consumption dramatically. In the compact growth scenarios, the region is able to fully address housing demand and yet uses about the same amount of water as in the sprawl scenarios.

In some areas, growth will outstrip the potential to offset demand with local conservation and efficiency. Meeting the demand for every part of the Bay Area will require transferring water within the region or identifying alternative supplies.

³ Szambelan, Sarah Jo, and Sarah Karlinsky, *A Civic Vision for Growth*, SPUR, 2021, <https://www.spur.org/civicvisionforgrowth>

While the Bay Area as a whole can fully offset the increase in water demand from new growth, parts of the region with high concentrations of jobs and transit and little exposure to natural hazards should grow more. For example, allowing water supply to constrain new housing in areas rich in transit would be counterproductive, since one of the most important strategies to reduce the region’s carbon emissions is to create transit-oriented housing. The Bay Area should plan regionally to ensure that water supply is available in the places where it is most sustainable to build. That may mean engaging in more water transfers, in which water utilities enter temporary or long-term agreements to share water with each other, and/or investing in alternative supplies such as reuse in high-growth areas.

FIGURE C
Projections indicate that water efficiency and compact land use can offset new water demand from growth.
 When compared with today, water use in 2070 could either grow dramatically or decline depending on increases in water efficiency and the density of new growth.
 Source: Pacific Institute and SPUR analysis



Recommendations for How the Bay Area Can Grow Without Increasing Water Demand

To achieve the goal of growing without increasing water demand, SPUR and Pacific Institute make 18 recommendations across three strategies: conservation and efficiency, land use, and increasing mechanisms to share water and develop alternative supplies.

Strategy 1: Manage Demand With Conservation and Efficiency

Increasing Conservation and Efficiency for All Sectors

RECOMMENDATION 1

Continue to raise public awareness on water conservation with public education, regular feedback to customers on water use and technical support.

RECOMMENDATION 2

Reduce leaks for all sectors.

RECOMMENDATION 3

Price discretionary uses high and essential uses low. Use rate structures that charge more per gallon of water as a customer's usage increases.

RECOMMENDATION 4

Increase enforcement and compliance with California's Model Water Efficient Landscape Ordinance by simplifying the requirements and increasing oversight and technical support.

RECOMMENDATION 5

Increase funding to incentivize property owners to install water-efficient landscaping in existing properties.

RECOMMENDATION 6

Ban nonfunctional turf.

Increasing Conservation and Efficiency for Indoor Residential Water Use

RECOMMENDATION 7

Update California's legal definition of "non-compliant" water fixtures, and address leaks during alterations and improvements.

RECOMMENDATION 8

Require that alterations and improvements requiring a building inspection also trigger an inspection for compliant fixtures and leaks.

RECOMMENDATION 9

Make incentive programs for water-wise home improvements more accessible to low-income households.

Increasing Conservation and Efficiency for Commercial, Industrial and Institutional Water Use

RECOMMENDATION 10

Develop a local baseline understanding of CII water use and estimate conservation and efficiency potential in the CII sector.

RECOMMENDATION 11

Establish local programs to encourage CII conservation and efficiency.

Strategy 2: Pursue compact land use strategies with a high share of multifamily housing.

RECOMMENDATION 12

Change land use laws to encourage denser development in infill areas and stop sprawl development in existing open space.

RECOMMENDATION 13

Prioritize conservation, efficiency and alternative supplies over moratoriums on new connections. Only apply building moratoriums to infill housing as a last resort.

RECOMMENDATION 14

Require communities to demonstrate low water use and investment in alternative supplies before they can lower housing allocations based on water limitations.

Strategy 3: Invest in alternative water supplies, strengthen mechanisms for cooperation to share water regionally and ensure a portion of water saved through conservation and efficiency is returned to ecosystems.

RECOMMENDATION 15

Invest in alternative supplies and new storage, with a focus on the most resilient, cost-effective and sustainable options.

RECOMMENDATION 16

Grow and strengthen mechanisms for water transfers and exchanges.

RECOMMENDATION 17

Look for opportunities to invest in efficiency in agricultural districts to facilitate transfers or exchanges of excess water.

RECOMMENDATION 18

Strengthen mechanisms to ensure that a portion of water saved through conservation and efficiency is restored to the environment.

Conclusion

The report findings offer a challenge — and hope. The region can grow without increasing water demand. But doing so will require better education of customers, better incentive programs, more resources invested in alternative supplies, greater cooperation and resource sharing between agencies, and a commitment to compact land use and a higher share of multifamily housing. Ensuring that lower water demand actually translates to more water in ecosystems will require everyone with access to Bay-Delta water to agree to leave more water for the environment.

If we do so, the region could resolve many of its current conflicts over water. Imagine the Bay Area 50 years from now: People use water more efficiently. Advanced metering infrastructure alerts them to leaks within a day. Climate-appropriate plants grow abundantly, with lawns used judiciously for places where people gather and play. With measures taken to ensure that enough water remains in the rivers of the Bay-Delta watershed, aquatic ecosystems recover. Fishermen catch salmon and trout along the Sacramento and San Joaquin rivers, and residents of the Delta can boat and swim in the water year-round. There is, it turns out, enough for all.

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