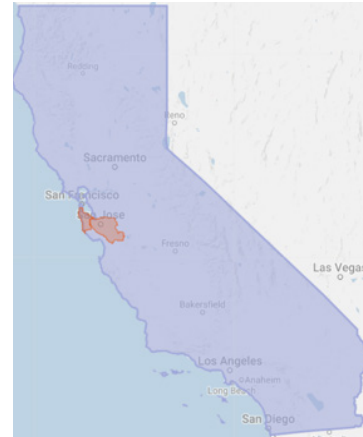


Equitable Integration of Water and Land Use

SILICON VALLEY REGION



DEFINING THE REGION

For the purposes of this project, the Silicon Valley Region is defined as **San Mateo and Santa Clara Counties**. It includes 35 incorporated cities.

Demographics

This region is home to nearly **3 million people**. The Silicon Valley's population is projected to grow to 9 million by 2040, but existing housing stock is inadequate to meet demand. Although the counties of San Mateo and Santa Clara have some of the highest median household incomes in the nation, the gap between the

wealthy and the low-income is significant. Due to the disparity of low-wage earners and their increasing costs of living, many current residents are expected to leave the region and move to other parts of California or out of state as housing rates continue to skyrocket.

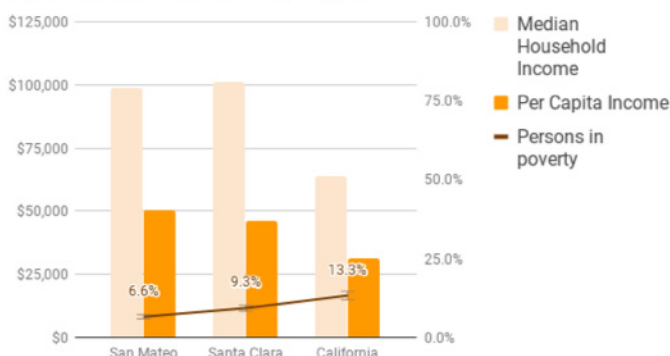
WATER MANAGEMENT

Watersheds



The Silicon Valley region is comprised of watersheds and complex water systems. Both of the region's counties are encompassed within the San Francisco Bay watershed. Many local streams and tributaries, as well as urban and suburban stormwater runoff drain into the Sacramento - San Joaquin Delta, a confluence of two large rivers, which then flow into the Pacific Ocean via the San Francisco Bay. This watershed is part of a vast, complex estuary ecosystem of great importance to the entire state – for both its ecological value and its role in statewide water conveyance.

Income in the Silicon Valley Region

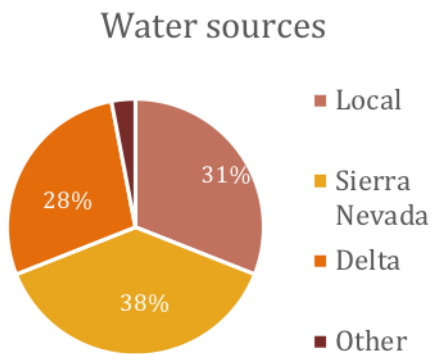


Integrated Regional Water Management

The Bay Area IRWM group – a voluntary planning collaborative - overlaps the same geographic boundaries of the Silicon Valley region. Nineteen public agencies and NGOs participate in collaborative planning efforts and project identification for competitive funding. The IRWM group updated their plan in September 2014, with an emphasis on regional collaboration and integration of water resource management.

Water Supply

The Silicon Valley region relies on both surface water and groundwater. In addition to local supplies, the region receives “south of Delta” deliveries from the State Water Project and Central Valley Project. It is important to note that these surface water supplies originate in Sierra Nevada snowpack. A very small portion of the region’s water is provided by recycling, water transfers, and other supplies. The risk of salt water intrusion due to sea level rise threatens the region’s groundwater supply and overall supply reliability for the region, as well as most Californians reliant on Delta water deliveries.



Water & Wastewater Agencies

Two collaborative groups represent water supply and wastewater services in the Silicon Valley region. The Bay Area Water Supply and

Conservation Agency (BAWSCA) unites 24 cities, water districts and two private utilities, to collectively purchase water from the regional wholesaler, the San Francisco Regional Water System. Collective membership enables the group to achieve economies of scale otherwise out of reach for each individual water retailer. BACWA, the Bay Area Clean Water Agencies, is a Joint Powers Authority of the five largest wastewater treatment agencies. Together, BACWA members are able to provide better services to their customers and achieve greater goals for the region’s natural ecosystems impacted by wastewater operations.

Groundwater

Much of the Silicon Valley region relies on groundwater supplies. The region overlies multiple groundwater basins, nine of which are designated by SGMA as medium priority. The 2014 Sustainable Groundwater Management Act (SGMA) requires all groundwater basins identified as medium priority to form new Groundwater Sustainability Agencies (GSAs) and develop Groundwater Sustainability Plans (GSPs) by 2022, and achieve sustainability by 2042. Fourteen new GSAs formed to manage the Region’s groundwater – adding additional layers of governance to the region’s already complex water management system. The groundwater basins in this region are especially at risk for saltwater intrusion due to their proximity to the bay and the threat of sea level rise. Saltwater intrusion into groundwater aquifers diminishes water quality and threatens overall water supply reliability.

Water Affordability

Water rates across the Silicon Valley are relatively consistent. Yet necessary infrastructure investments to ensure water supply reliability in the future, these costs will go up. Water rates which seem affordable to most community members can be extremely burdensome on low-income families who have to pay more than 2.5% of their income

on water – a threshold set by the EPA to determine affordability of the resource. These are the same community members who are easily overlooked in discussions around water and equity, due in part to the false assumption of ubiquitous wealth in the Silicon Valley region. Communities already facing disadvantages have less capacity to engage in governance discussions via public meetings or forums, and are also less likely to vote on rate increases. This is especially true of undocumented residents, those for whom English is a second language, and individuals who rent rather than own their homes.

LAND USE PLANNING

Landscape Features



The Silicon Valley is known for its unique picturesque locale, bordered by the San Francisco and San Pablo Bays and the California Coastline. Land use planning decisions must account for the constraints the region faces due to its proximity to the water. Many communities in the region are close in proximity, but disconnected from one another by the water. Several large bridges unite these regions.

Several major fault lines run through the two-county region, making the area highly susceptible to earthquakes. Communities closest to the bay rest on water-saturated soils, which are much more prone to damage from post-earthquake liquefaction.

Flooding

Flooding is a serious threat to many areas of the Silicon Valley region, particularly those in low lying areas. Flooding occurs as a result of poor drainage during heavy storms as well as sea level rise impacting the Bays and coastline. During large storm events reservoirs and water smaller waterbody levees are overtopped. Low-income communities tend

to be most impacted by flooding, as their neighborhoods are often in greater need of infrastructure improvements, and they are least able to repair damage caused by flooding. The ratio of costs and benefits for projects that would minimize risk are dependent on property value. Additionally, low-income communities often lack the economies of scale to adequately prepare for the risk of sea level rise. Minimal communication of risk for residents in flood prone areas further threatens the health and safety of residents in these communities.

Development Patterns

The Silicon Valley region is a mix of large urban centers, sprawling suburbs, and rural agricultural areas. Despite this mix in development patterns, the region as a whole does not have adequate housing stock to meet its growing demand. As more people move into the Silicon Valley region for job opportunities, the gap between supply and demand widens and drives up costs. This is especially problematic for lower income residents.

Densely developed urban communities in the Silicon Valley region have greater areas of impervious surface – paved or structural areas where water cannot soak into the soil and percolate down into the groundwater aquifer. This could impact the resilience of their local water supply, but the region has the benefit of its less densely developed suburban and rural agricultural areas. The Silicon Valley region can ensure its resilience by protecting existing undeveloped areas for recharge, focusing future development in already urbanized areas, replacing impervious surfaces with permeable paving options where possible, and using green infrastructure to capture and treat stormwater.

Transportation

Mobility within and between cities in the Silicon Valley region is limited by its geographic

boundaries of its bays and coastline. Many people commute into the region for work from other more affordable communities, which contributes to traffic congestion. Most of the region is served by BART (Bay Area Rapid Transit) - a complex network of trains, busses, and light rail. Yet demand for transit is outstripping BART's ability to serve its patrons, leading to congested trains and long wait-times. The Region's Plan Bay Area 2040 includes short and long-term transportation investments, focusing on existing infrastructure maintenance and improved transportation efficiency.

Roadways serve a dual purpose as flood management infrastructure and stormwater conveyance. They also contribute significantly to surface water pollution. Integrated solutions such as green infrastructure to capture and treat stormwater can maximize a region's transportation investments

EQUITY



Access to affordable housing is the most prominent equity challenge in the Silicon Valley region. The gap between income and cost of living creates a serious dilemma for Silicon Valley residents. A lack of mixed use and infill development exacerbates the issue. Residents facing disadvantages – especially low wage earners – are priced out of the local housing market. Displacement and homelessness are major threats to individuals and families within the San Francisco region. Displaced individuals must then face higher costs for transportation and temporary housing.

Access to safe, reliable, affordable drinking water and wastewater infrastructure is another equity issue in the Silicon Valley Region. Both water quality and water supply infrastructure varies widely across the region, depending on the local water agency. Lower-income communities are more likely to have aging infrastructure with deferred maintenance.

INTEGRATION

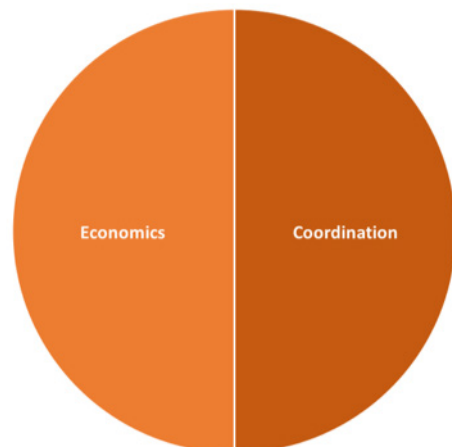


The unique geography and demographics of the Silicon Valley region highlight the importance and value of water-land use integration to ensure the region can adequately bear the impacts of a changing climate. Plans for additional housing do not currently take into account water supply or affordability. Only by closely aligning future development plans – for housing, transportation, and open space – with accurate water demand forecasting and investments in water supply reliability – will the region be able to meet the needs of its community members without overburdening those individuals already facing the greatest disadvantages.

Expert Perspectives

Water and land use experts from the Silicon Valley Region elevated 2 primary themes for improving integration: Economics and Coordination. Water agencies in the Silicon Valley region collaborate quite well with one another, but are not coordinating with local land use planning efforts. As water and housing prices rises throughout the region, the questions of financial impacts and equity surface. These two themes go hand in hand as addressing the economic factor of integration requires serious coordination across sectors and jurisdictions.

Silicon Valley Region Top Themes



CASE STUDY

Creating Partnerships To Solve a Water Crisis City of East Palo Alto

In 2016, the city of East Palo Alto issued a moratorium on development because the city couldn't guarantee that there would be enough water for new projects. East Palo Alto, which has been a historically low-income community, had only just been incorporated as a city the year before. Additionally, the city's water needs were managed by a county agency that later dissolved. The tech boom of the Bay Area then created demands for housing and office space that saw East Palo Alto become a desirable place for development once again. In order to address this issue, city officials began the hunt to find new water sources - which would result in new, groundbreaking partnerships.

East Palo Alto has always been a good water steward. In 2015-16, the gross per capita water consumption in the city was 58 gallons a day, one of the lowest in the region (indeed, the state). The city doesn't have many attractions that are big water users, such as big parks or golf courses. Therefore, any gains made by increasing water conservation targets would be very minimal.

City officials began searching for outside partnerships. They knew that other cities in the region had more water than they needed. They hoped to find two municipalities to agree to transfer their water to East Palo Alto - something that had never been done before

in the region. They eventually focused their attention on two cities: Mountain View and Palo Alto.

East Palo Alto's partnership with Mountain View was beneficial to all. Mountain View hadn't used their daily allotment of water in 30 years, so they had water to spare. For a one-time fee of \$5 million, Mountain View transferred 1 million gallons of their water daily to East Palo Alto. Mountain View saw an advantage in selling some of their water because they had contracts with SFPUC that stipulate purchasing a minimum of 8.9 million gallons of water per day, and the city was only using 7 million gallons a day.

East Palo Alto city officials then struck a deal with Palo Alto to collaborate on three different projects, one of which was a water transfer agreement of half a million gallons a day from Palo Alto's own allocation of water. The other two projects were a bridge project and traffic signal synchronization. Palo Alto did not seek payment for the water transfer because the water deal was part of multiple cooperative projects between the cities.

By creating these unique and co-beneficial projects with their neighbors, the city of East Palo Alto can now move forward with the sustainable growth plans envisioned in their General Plan.

Challenges

- **Coordination and alignment** between agencies is difficult due to the **incredible complexity** of the region's water supply and governance system.
- **Uncertainty** about future water supply reliability contributes to fear and protectionist mentality, thus eroding the trust necessary for cross-sector collaboration.
- Land use planning and decision making in the Silicon Valley region is **highly politicized**.

Strategies & Opportunities

- **Existing institutional infrastructure** – especially multi-jurisdictional collaboratives such as BAWSCA, BAWCA, and the San Francisco IRWM – can be leveraged to increase water/land use integration.
- The Silicon Valley region is a hub of advanced technology that can be used to discover water conservation and efficiency solutions to
- **Maximizing local water supply** (e.g, groundwater, seawater, and surface water) **through technology and innovation**, especially for new property development, is well within reach for the tech-hub Silicon Valley region.
- **Improving transportation options** that allow people to move across the region more efficiently will improve overall equity as well as water/land use integration.

RECOMMENDATIONS

\$ Work with jurisdictions in Santa Clara County to **implement the county-wide climate adaptation guidebook** (Silicon Valley 2.0) and replicate the guidebook for other jurisdictions in the region. The Guidebook maps out explicit steps for the region to achieve resilience, but success will depend on effective collaboration, alignment, and accountability.

\$\$ **Provide venues for local leaders in both the water & land use sectors to interact** with one another. Participants should include department heads from city and county planning, public works, community and economic development, stormwater, and local and regional water supply and wastewater utilities. Effective models include the Sonoran Institute "Growing Water Smart" program and the Local Government Commission's Alliance of Regional Collaboratives for Climate Adaptation (ARCCA).

\$\$\$ Partner with technology companies, policy hubs, and community-based organizations to **establish workforce development opportunities** within the housing and water sectors to provide living-wage jobs within the community and increase diversity across the profession. Positive models include the Governor's Initiative AmeriCorps program CivicSpark; Eastern Municipal Water District's Youth Ecology Corps, and Fresno Economic Opportunities Commission Local Conservation Corps.