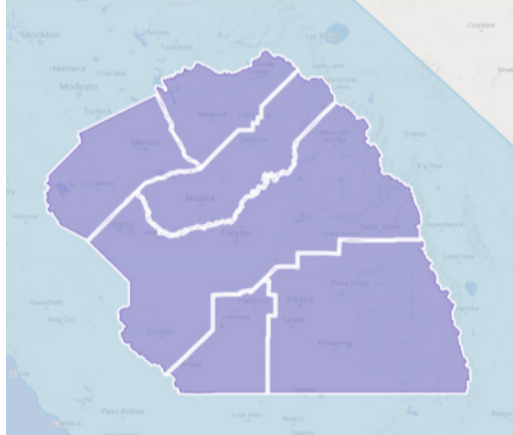


Equitable Integration of Water and Land Use

CENTRAL VALLEY REGION



DEFINING THE REGION

For the purposes of this project we use the Central Valley Community Foundation's geographic definition of the Central Valley. The region comprises 6 counties: Fresno, Madera, Mariposa, Merced, Tulare, and Kings. There are 34 incorporated cities within this region, the largest of which is the City of Fresno with over 527,000 people. The region's unique climate enables the Central Valley to grow over 230 different crops and provide agricultural products worldwide.

Demographics

The Central Valley region is home to over 2 million people dispersed across nearly 18,000 square miles. It is a diverse region with a large immigrant population, which contributes to its cultural richness. The per capita income in each Central Valley county is lower than the statewide average, and the poverty rates of each county are higher than the statewide average. This is due in part to agriculture being the driving industry for the region's economy. Madera, Merced, Tulare, and Fresno counties are growing, while population in Mariposa and

Kings Counties is declining. As cost of living continues to rise, particularly in the Bay Area and Southern California, population trends are expected to increase significantly throughout the Central Valley.

WATER MANAGEMENT

Watersheds



Two watersheds drain the Central Valley region: the San Joaquin River watershed, which is 15,800 square miles, and the Tulare Lake Basin watershed, which is 13,670 square miles. Countless small streams and rivers flow into the San Joaquin River, most notably the Merced, Tuolumne, and Stanislaus. The Kings, Kaweah, Tule, and Kern Rivers (among other smaller streams) used to flow into the Tulare Lake Basin, but now are all dammed for irrigation and urban waters supply.

Integrated Regional Water Management

Integrated Regional Water Management is a voluntary program managed by the CA

Department of Water Resources, in an effort to incentivize coordination of water management and planning efforts at a watershed scale. Seven separate Integrated Regional Water Management (IRWM) groups operate within the Central Valley Region. Each IRWM group is made up of various water and planning authorities within their geographic range. Yet portions of Kings, Fresno, and Merced counties are not included in any IRWM plans.

Water Supply

The majority of the region's water supply comes from groundwater. In the rural areas of the Valley, landowners pump water from private wells. The State Water Project, the Central Valley Project, and local water projects make up the remainder. The Central Valley Project is a federally owned water infrastructure system that stores and transports 7 million acre-feet of water each year. Most of this goes directly to agricultural contractors in the Central Valley region.

The City of Fresno, which is the fifth largest city in the state, only recently started metering their residents' water use. The recent drought and increasing water stress initiated a shift to metering – and thus more efficient water use. Yet the region's agricultural sector and rural regions continue to operate as before. Many are on private, independent wells. Lack of coordination between the urban core and rural parts of the region will perpetuate unsustainable water management challenges.

Water Providers

There are over 50 water providers throughout the Central Valley including water agencies, irrigation districts, public utilities, and more. The fragmentation of these entities makes regional coordination extremely difficult.

Groundwater

The Central Valley aquifer is California's largest groundwater basin and is estimated

to hold 800 million acre-feet. This seemingly endless supply of water, coupled with the region's 270 days of sun a year, enabled the Central Valley to become an agricultural powerhouse.

Overreliance on the aquifer and lack of regulation led to groundwater overdraft, subsidence, and soil compaction which diminishes recharge ability. Central Valley groundwater challenges were a major contributor to passage of the 2014 Sustainable Groundwater Management Act. SGMA requires all groundwater basins identified as high or medium priority to form new Groundwater Sustainability Agencies (GSAs) and develop Groundwater Sustainability Plans (GSPs) by 2020 or 2022, and achieve sustainability by 2042. 65 GSAs formed to manage the Region's groundwater – adding additional layers of governance to the region's already complex water management system.



Water Quality & Affordability

Access to clean, safe, reliable and affordable water is a major challenge for Central Valley residents. Much of the groundwater is contaminated with nitrates from legacy agriculture, leaving it unsafe to cook with or drink. Other manmade and naturally-occurring chemicals — including arsenic, coliform bacteria, pesticides, disinfectant byproducts, and uranium — also diminish local water quality. Although recent legislation failed to create the Safe and Affordable Drinking Water Fund, conversations are occurring at the state level to ensure equitable access to water for all.

CASE STUDY

Preserving Land for Natural Groundwater Recharge City of Fresno General Plan

Until very recently, the city of Fresno has been dependent on groundwater for about 88% of its water supply. Unfortunately, the rate of groundwater recharge has been inadequate to keep up with the amount being withdrawn. Over the past 100 years, the city has lost 100 feet of water from the aquifer.

The City of Fresno recently struck an agreement to use Fresno Irrigation District canals to distribute water to Fresno Flood Control District Basins throughout the city for groundwater recharge during dry months, the city has budgeted over \$850,000 for constructing the connections and making necessary improvements such as flow monitoring to allow for efficient recharge. The city has had ongoing projects with the neighboring city of Clovis, the Fresno Irrigation District and the Fresno Metro Flood Control District for groundwater recharge. This partnership is delivering an average of about 60,000 acre-feet of water to underground storage every year.

According to the city's Urban Water Management Plan, as urbanization covers once open land with pavement, roads and buildings, an ever increasing volume of rain water can no longer soak through the soil to the groundwater aquifer. While there is enough storage capacity in the aquifer to serve the city's needs, natural recharge is no longer able to keep pace. To replace the loss of natural

recharge capacity, more intentional recharge facilities need to be created.

The city's 2014 General Plan supports the use of a natural drainage system in new development to capture and infiltrate water on site. This may be paid for by the city alone or in partnership with the Fresno Irrigation and Flood Control Districts. Most importantly, the new City general plan and development code, for the first time, limits the expansion of growth on undeveloped areas and redirects it to existing areas. This is accomplished through policies that support infill development and that establish minimum rather than maximum densities. These policies are projected to slow the urbanization of the city's sphere of influence and protect lands currently available for natural recharge for an additional 25 years.

Because current groundwater recharge efforts are not keeping up with the current drinking water needs and are seriously depleted, the city is preparing to augment existing groundwater and surface water supplies by bringing water from the Kings River to a newly constructed southeast surface water treatment facility. The new water treatment plant will soon supply 53 percent of Fresno residents needs from treated water drawn from the San Joaquin and Kings River. It is expected that this will enable Fresno to meet requirements of the Sustainable Groundwater Management Act.

LAND USE PLANNING



The Central Valley region is characterized by rural agricultural communities and sprawling suburbs fanning out from urban centers as agricultural land cedes to housing development. Strategic land use planning is critical to ensuring the Central Valley has adequate natural resources to support its population growth. Development should continue in urban centers and already developed areas, leaving agricultural and natural lands available to provide ecosystem services. Regional planning provides opportunities for counties to work together in determining how and where to grow while preserving their own unique character.

Landscape Features

The Central Valley's most defining characteristic is likely its vast acreage of agriculture; it is one of the most productive regions in the world. This vast floodplain is the flattest place on Earth. The valley is bordered by the Coastal Range to the west and the Sierra Nevada to the east, and is transected by

many rivers. The Central Valley region is also home to iconic geographic features: forests of Giant Sequoia, Kings Canyon, and the granite monoliths of Yosemite Valley.

Flooding

Historically, the Central Valley region's many rivers would flood every year. Urban development in this flood prone region threatens human safety and property, particularly during large storm events. Outdated infrastructure and continued population growth near flood-prone areas increases residents' vulnerability, especially with future climate projections of larger, more frequent storms punctuating extensive drought periods. Widespread adoption of green infrastructure techniques to capture, treat and infiltrate stormwater, as well as setback levees that allow rivers to swell, will help alleviate some flood risk.

Development Patterns

As cost-of-living continue to rise in other regions, more people are moving to the comparably affordable Central Valley. Population growth is placing development pressure on the region's traditional farm lands. The Valley's characteristic low-density housing and patchwork development away from urban centers overburdens natural resources and prevents conservation of open space. Better planning that encourages economic development in existing urban centers and concentrates housing of mixed densities and affordability in already developed areas will improve the region's sustainability and social equity.

Transportation

Characteristic of the region's low-density development, many residents live further away from urban centers and jobs. Public transit is very limited, due in part to the low population density, sprawling development pattern, and vast geographic area of the region. The



Image from USGS California Water Science Center

planned high speed rail line will transect the Central Valley region, which may spark additional transit development.

EQUITY



The Central Valley region faces many equity issues relevant to water and land use. A large proportion of the region's population is Latino families in low-wage agricultural and service industry jobs. Increased demand for housing pushed costs up, pricing many families out of their neighborhoods. These same community members must travel long distances to get to work, increasing their transportation costs and impacting their health. Many of the region's communities are unincorporated, and thus lack adequate land use infrastructure and maintenance, such as parks, roads, sidewalks, and stormwater management.

Access to safe, reliable, affordable drinking water and wastewater infrastructure is also a major issue in the region. Communities served by small rural water systems are paying their monthly water utility bill – for water they can't use – and then also paying out-of-pocket for bottled water. These small water agencies lack the economies of scale to maintain or upgrade their infrastructure, and their customer base

cannot support rate increases. These factors contributing to water quality and supply reliability challenges.

Seemingly affordable water rates 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. 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.

INTEGRATION



The Central Valley region is a prime locale for integrating water management and land use planning. If communities across the valley coordinate efforts to identify inter-connected priority development areas away from the flood plain and with adequate water supply infrastructure they will reduce costs for public agencies and residents. Communities should also map priority groundwater recharge and water treatment areas, preserving those lands for agriculture and multi-benefit open space.

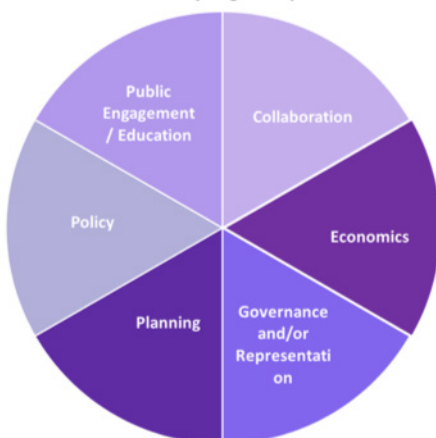
Expert Perspectives

Water and land use experts from the Central Valley Region elevated 6 themes for improving integration.

Challenges

- **Lack of a shared vision and leadership** for the future of the Central Valley region stifles integration.

Central Valley Region Top Themes



- **Competition** for development funds and natural resources **prevents collaboration** between jurisdictions and levels of government
- **Coordination and alignment** across sectors and between jurisdictions is difficult due to the region's vast number of water management and land use planning agencies.

Strategies & Opportunities

- **Multi-benefit projects** can bring traditionally competitive groups together around a shared vision, such as on-farm flooding for groundwater recharge.
- **Strong partnerships and effective community engagement** efforts will foster innovative and integrated solutions to water and land use.
- **Job training and education programs** emphasizing collaboration skills will prepare the workforce for more integration between the water and land use sectors.
- **Compliance with SGMA** provides a perfect opportunity to integrate groundwater management with future land use decisions.

RECOMMENDATIONS

\$ Engage local communities in long-range planning and visioning. The Central Valley region lacks a sense of shared vision and path toward a resilient future in the face of development pressure. Without this vision, the region will continue to face difficulty integrating between water and land-use sectors. Bringing communities together across jurisdictions to determine what the Central Valley's future will look like is the first step toward collaborative, integrated planning.

\$\$\$ Provide technical assistance to help communities evaluate agency consolidation. The Central Valley is plagued with failing small water systems. New legislation (AB 2050) establishes a path to consolidate smaller agencies, but many of these agencies – and the communities they serve – lack the capacity and technical skill to adequately evaluate whether consolidation is the best option. Additional support to facilitate community-engaged consolidation evaluations will have a tremendous long-term impact for the region.

CASE STUDY

Interactive Mapping for Regional Solutions San Joaquin Valley Greenprint

The San Joaquin Valley Greenprint project grew out of the San Joaquin Valley Blueprint – after the Blueprint revealed the need for better regional mapping of the Valley’s non-urban areas to assist land use and resource management decisions. The project is funded by a grant from the California Strategic Growth Council to the San Joaquin Valley Policy Council, managed by the Fresno Council of Governments, and guided by the San Joaquin Valley Greenprint Advisory Committee. The goal of the project is to promote regional collaboration by providing more sophisticated planning data to water and planning professionals – with a focus on sustainability and economic development strategies for the San Joaquin Valley region.

“The SJV Greenprint is primarily a collection of maps, assembled as a comprehensive, interactive database that catalogs current conditions and trends related to the region’s resources. The maps and data collected for the SJV Greenprint are publicly available, and are presented in an interactive, easy-to-use online tool” (UC Davis, 2015). The collection of maps shows how resources are interrelated across political boundaries and how they are changing under the influence of population growth, changing land use practices, resource limitations, and changing climate.

Phase I of the Greenprint focused on identifying and mapping Valley resources for the eight counties that comprise the

San Joaquin Valley, including Kern, Tulare, Kings, Fresno, Madera, Merced, Stanislaus, and San Joaquin Counties. The compiled information includes over 100 datasets related to agriculture, biodiversity, energy, and water resources, as well as supplemental datasets including land use planning, transportation, soils, and land cover. Phase II of the Greenprint built on the work in Phase I by demonstrating the real world utility of this information, as well as finding an appropriate platform for these curated resources, specifically a host that could provide a user-friendly interface as well as the capacity to update and maintain the data. The San Joaquin Valley Gateway, hosted by Data Basin, was identified as the best platform.

The San Joaquin Valley faces many challenges and opportunities associated with the management and conservation of water, agricultural, energy, and biological resources. The SJV Greenprint project was developed to provide reliable data in support of the State and Federal agencies; non-governmental organizations; community-based organizations; universities and colleges; and individuals who are working to address these issues. The Greenprint was also intended to provide a forum for elected officials, agencies, local business leaders, and other stakeholders to collaborate on issues that affect the rural areas of the Valley.