BRINGING **WATER** AND **LAND USE** TOGETHER

Final Report to the Community Foundation Water Initiative on the Equitable Integration of Water and Land Use

Prepared by
The Local Government Commission

January 2019

Local Government Commission
Leaders for Livable Communities

SMART GROWTH CALIFORNIA

funders' network
FOR SMART GROWTH AND LIVABLE COMMUNITIES

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EXECUTIVE SUMMARY

California is moving toward a more holistic approach to managing our water and land resources as the 21st century unfolds. This perspective recognizes the interconnectivity between two traditionally fragmented sectors.

In 2005, the California Legislature passed new laws that enable communities to join together to adopt Integrated Regional Water Management (IRWM) policies and practices. This comprehensive planning approach considers water resources in the context of an interconnected watershed with a network of regional governance, rather than as a combination of fragmented parts. Unfortunately, the IRWM program is dominated by the water sector and in most regions has not pursued alignment with land use.

Similarly, the Sustainable Communities Strategies (SCS) mandated through [legislation] establish a framework for aligning land use practices (predominantly housing and transportation) across jurisdictions within a larger geographic region. Yet very few SCSs have taken water resources into account.

While water management and land-use planning remain highly fragmented across the state, we are making progress toward a more integrated approach, especially when setting new state-level policies, regulations and guidance. The 2014 Sustainable Groundwater Management Act (SGMA) is a leap forward in this direction. For the first time, local land use agencies have an opportunity to be full partners with water agencies in shaping groundwater governance. It is too soon to determine how well these two sectors are integrating under SGMA, but early results are promising.

Defining The Challenge, Identifying Opportunities

Our current system is failing us. The disconnect between how our communities are organized and how our natural resources are managed is not only inefficient, but harmful to people and nature. Reconnecting water and land use will ensure vibrant, resilient communities for all. Unfortunately, the disconnect is far more common across the country than the integrated approach we so desperately need.

The obstacles to better alignment are varied. Population growth and economic development drive political boundaries, institutions and policy. Water supply is critical for economic development, but water management tends to run on shorter cycles and in response to – not in collaboration with – economic and land-use planning.[1] Strong political forces behind housing, production and energy industries often conflict with ecological water supply and water quality needs.[2] Those political boundaries and institutions are often at odds with interdependent hydrologic and ecologic functions.[3] Despite the importance of integrated water management and land-use planning, these factors illustrate the difficulty in accomplishing this goal.

Policies that favor sprawl development, along with a lack of attention to the natural functions and limits of our environment, often lead to degraded ecosystems, unsustainable communities and exacerbated, disproportionate impacts on communities already experiencing disadvantages.

Disregard for interconnected systems has led to segregation of land-use planning agencies and water management agencies statewide. Yet, there is a growing awareness and interest in alternative approaches, such as smart growth, integrated regional water management, green infrastructure and “multisolving.”

"Multisolving" – also known as "multiple benefit solutions" – refers to finding solutions that address multiple issues or priorities with one intervention or action, in which multiple sector or interested parties are needed, and each voice matters equally. Multisolving is flexible – it can start small, then scale up in size or out in geography.

Climate Interactive, an NGO based in Washington, DC, coined this term as a way to describe acting on climate change while making your community more attractive, livable and equitable.[4] This term will be used throughout this report in place of "multi–benefit" or "multi-purpose."

Equity Considerations

The negative impacts of segregated and misaligned planning are not distributed evenly across California's communities. Integrating water management and land-use planning is critically important to the resilience of our state, but must be achieved through actions that enhance equity.

Inequities arise in the context of all public services – here, they often include toxic pollution that hovers over some neighborhoods because zoning codes allowed residential development next door to industrial facilities; residential water and wastewater pipes skirt a community because the city that provides the water and wastewater services chose not to annex the neighboring community; new towns sprout up where existing communities lack basic infrastructure.

Equitable planning and management can help existing communities thrive by giving them a voice in decision-making processes and providing neighborhood amenities such as parks and green spaces for all residents.

Statewide Challenges

Leadership For Integrated Solutions

Overlapping jurisdictional boundaries and authority creates tension between sectors and limits the implementation of integrated solutions. Public and private entities compete with one another, instead of coordinating efforts to maximize overall and shared benefits. Developing a coalition of leaders for integration, both within and across each of California's major regions, will help realign priorities, shift behavior, and change the existing segregated approach to planning.

Limited Natural Resources

California's economy and population continue to grow at alarming rates. Natural resource availability so far is keeping up with demand, much thanks to human ingenuity and advances in technology. But these resources are finite, and must be carefully managed.

Water is a limited resource. California's complex hydrology coupled with its incredibly fragmented water governance system limits how much water is available to each community at any given point in time. Conservation, efficiency and reuse enable regions to grow without increasing water demand and still provide a reliable supply to most of the state's residents. Yet many underserved California communities face regular water shortages or water quality disruptions. If current water infrastructure is not adequately meeting the needs of all Californians, this begs the question of how the state will meet future demand.

Land is also a limited resource. Much of the state's developable acreage is in high demand for future growth, which threatens the protection of agriculture, open space and natural ecosystems. Smart-growth practices and infill development, on the other hand, provide significant long-term benefits for community resilience and vibrancy.

Reaching A Shared Perspective

A critical component for effective coordination is establishing a set of shared principles, knowledge and thinking about problems and opportunities. Technical terminology can stand

in the way of meaningful conversations, as shared language is essential to more informed decision-making. Although water and land use are intrinsically connected, they are often distinctly separate sectors among government agencies and officials who each have their own vocabulary, perspectives and beliefs. Traditional sector–based approaches threaten equitable, efficient water and land-use planning. This mindset is passed down through institutions, continuously impeding integrated planning efforts.

Regional Diversity

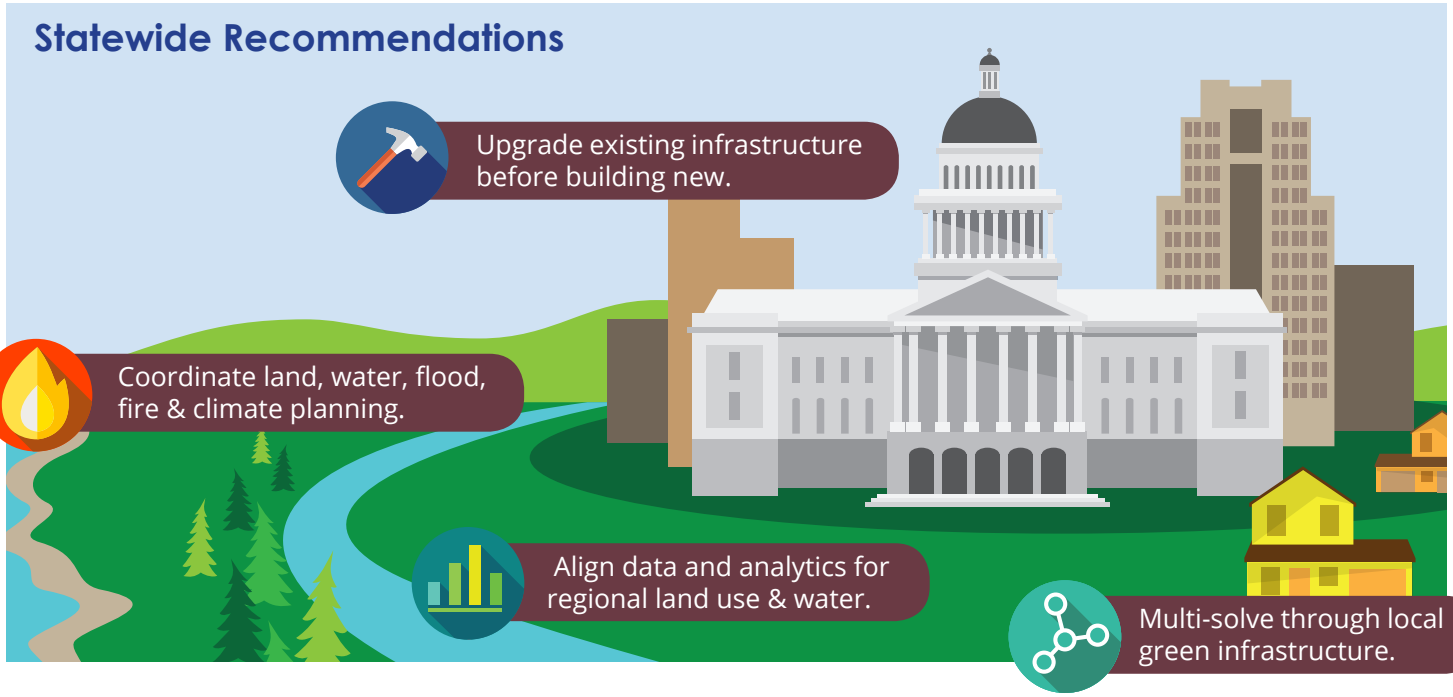
Efforts to integrate water and land use must be tailored to the specific needs and priorities of each region. No single, one-size-fits-all approach will succeed in every region. Important distinctions exist between regions that will affect the guiding principles and best practices of local water and land-use integration. The greatest variations between regions that impact water and land use integration include the following:

- population density influences on housing strategies;
- overall cost of living;
- local water quality and supply factors; and
- current status of coordinated planning.

Each of these components are expanded on in the full report; these factors must be considered when determining the best opportunity for integration or specific recommendations to pursue.

Statewide Recommendations

This report is based on a review of existing literature, analysis of various policies, conversations with countless water and land-use experts, and an evaluation of the principles and opportunities outlined above. Four general recommendations emerged to provide opportunities that can significantly affect the potential success of integrating water management and land-use planning, while also being politically feasible in a number of situations:



1. Prioritize infrastructure investments that support existing communities, especially underserved communities, before new development.
2. Ensure state and local investments are directed toward multi-solving through green infrastructure projects developed at local scales with robust community engagement.
3. Incentivize or require cross-sector, coordinated planning and management of land use, water, fire prevention, flood mitigation and climate adaptation.
4. Require additional sophistication and alignment (better data and analytics) of growth projections and coordinated regional planning for both land-use planning and water-management agencies at the watershed scale.

Specific action at multiple scales is necessary to achieve progress on these four recommendations. More context and activities for each recommendation are outlined further in this report.

Regional Recommendations

Some actions are more effective when applied at the local or regional scale. Recommendations for community foundations, local agencies and other interested parties to implement at the local level to achieve better integration of water and land use include:

- Advocate for water access and affordability for community members facing disadvantages.
- Provide venues for local leaders in both the water and land-use sectors to interact with one another (to build relationship, share ideas, and eventually collaborate).
- Develop regional leaders in both the water and land-use sectors and provide opportunities for them to interact with one another.
- Build local political will and understanding around water and land-use integration by convening and educating local leaders.

A Strategy For Achieving Integration

Despite the many challenges and barriers to integration, opportunities abound in the Golden State. Policymakers and practitioners are beginning to acknowledge that something needs to change in our state's collective water management and land-use planning.

California's community foundations, NGOs and advocacy groups have proven experience in building partnerships and developing political will to address local challenges. Interested stakeholders can leverage these existing skills to foster water and land-use integration.

The most effective strategy will be a three-pronged approach: (1) engage local elected officials (city councils and county commissions) who have the decision-making authority, using state-government guidance and regulatory frameworks; (2) educate and empower local residents and businesses to push for better integration; and (3) endow water and land-use practitioners with funding and incentives to do the difficult work of collaborating and integrating their operations

V. INTRODUCTION

Impetus For The Project

In 2015, the S. D. Bechtel, Jr. Foundation launched the Community Foundation Water Initiative to build the capacity of local foundations to better engage in water issues within their communities. A handful of community foundation partners agreed to participate, working individually and collectively to advance sustainable water management solutions.

The Community Foundation Water Initiative's partners currently include The San Francisco Foundation, the Silicon Valley Community Foundation, the Central Valley Community Foundation, California Community Foundation (Los Angeles) and The San Diego Foundation.

These foundations have been advancing social equity, community education and civic engagement, youth empowerment, economic opportunity, public health and environmental sustainability within their communities for decades. They possess the credibility and capability to advance progress on complex issues within their region and across the state.

Building on this record, these five foundations, in partnership with the Bechtel Foundation, are striving to build durable capacity and institutional knowledge within the philanthropic sector to engage in sustainable water management efforts throughout California.

Each partner foundation recognizes the varied effects that water has on their communities, and approaches the topic from their unique institutional perspective. Some focus on climate adaptation programs, while others emphasize equity, agriculture, land-use or housing priorities.

Foundation partners connect in person on a quarterly basis to share progress and lessons learned from their individual efforts, and explore ways to connect local and regional efforts for broader statewide impact.

Integrating water management and land-use planning emerged as a shared interest area among the Community Foundation Water Initiative members. The cohort commissioned this report to help identify and pursue opportunities at the intersection of integrated water management and land-use planning that advance equity, regional economic development, climate adaptation, housing and transportation planning.

Through this effort, the Community Foundation Water Initiative and its members are gaining a robust understanding of water management needs and opportunities for improved integration with land-use planning at local, regional and statewide levels. By advocating for and investing in efforts that

effectively integrate water management and land-use planning, local community foundations will help make all of California's communities more equitable and resilient.

This report identifies strategies for community foundations and other local leaders to leverage the multiple benefits of an integrated, collaborative planning approach. These results benefit the project's community and agency stakeholders, and will have a "scaling up" effect to influence regional and statewide practices.

Rather than replicate existing reports and analyses, we seek to connect all of the work already being done at the regional and state level. This situation analysis and strategy development will help position local community foundations to ignite better integration of watershed-scale land-use planning and water management.

Background On The Issue

History: How We Got Here

Many experts see the disconnect between water resources management and land-use planning as a significant barrier to long-term community resilience. This divide has a long history, beginning with post-World War II-era community design that emphasized accommodating cars and widespread migration to sprawling suburbs.[5]

Natural resources management and planning accommodated this urban shift by segregating into unique specialties, and regulatory structures followed suit.[6] An era of decentralization resulted in a multiplicity of specialized agencies, departments and bodies of law for each domain – ranging from water supply and wastewater to transportation, housing and urban planning.

This formal differentiation between planning and management philosophy and practice inhibits collaboration and mechanisms for reaping co–benefits. The inefficiencies, duplications, conflicting policies, and wasteful actions that result have been well documented.[7]

The past half-century of segregated planning and management efforts have led to innumerable negative impacts to our natural resources, community health, social well-being and collective resilience in the face of climate change.[8]

As the volume and distribution of water supply, in particular, becomes a more pressing resource-management issue both locally and regionally (across the state and around the nation), more attention to integrated planning is needed.

Current Status: How Things Look Now

The disconnect between water and land use is often framed as a technical problem. However, it is also a political and cultural problem in many parts of the state.

The authority of cities and counties to regulate land use in their own jurisdiction is deeply anchored in California history and cherished by local communities. Local governments focus on sustaining a strong economy through land-use decisions that contribute to development, which in turn generates local government revenue to cover the costs of community services.

Meanwhile, water-management agencies operate within their own authority, making decisions about water-infrastructure investments, pricing and other elements within their purview to maximize their ability to deliver water and/or treat wastewater (and thus generate revenue to cover their service costs). Despite overlapping jurisdictions and competing priorities, few governance structures or regulatory requirements currently exist to align water management and land-use planning.

The benefits of water and land-use coordination are as numerous as the negative impacts of the existing fragmented approach.

Prior research has demonstrated two key benefits: (1) improved cost-effectiveness and outcomes for planning and management of water quality and supply, and (2) better distribution of water between ecosystem and consumptive uses.[9]

In recent years, however, the land-use planning and natural-resources management sectors have undergone a cultural shift toward integrated, collaborative planning. Leaders in water resources and urban planning are calling for a return to the holistic management of our water and land resources. "Water should be a core planning theme if we are to be effective in addressing the needs of communities in today's world," according to the American Planning Association's Water Task Force.[10]

This approach is gaining momentum and recognition in California, due in part to a heightened sense of urgency as a result of climate change, the state's growing population, and mounting equity concerns. Integrated solutions are being implemented across the state, both arising organically and in response to new policy drivers, such as the Integrated Regional Water Management, Sustainable Groundwater Management Act and the environmental-justice element of city and county General Plans.

Moving Forward: Where We're Headed

Despite recent advancement toward integration, there is still a lot of work to be done. A comprehensive planning approach at the watershed scale is needed to address our natural and built environment as a socio-ecological system rather than a collection of disjointed parts.[11] Water and land-use management inherently reflects geographic differences, dominant ideologies, political preferences, economic conditions and available technology. Thus, the appropriate scale for change is at local and regional levels. Implementation strategies that reflect watershed-scale processes and conditions will be far more effective than a standardized top-down approach mandated by state agencies or completely bifurcated between specialized sectors.

The current political and cultural atmosphere favors a myopic view of challenges and single-issue immediate solutions. As a result, we need additional capacity-building in leadership, education and policy change.

Deeply intertwined issues require an integrated-systems approach to solutions. Through collaboration and integration, practitioners can gain a better understanding of water availability and impacts of development (population growth, economic development and urbanization). They will then be more likely to choose smarter urban-planning options to decrease negative impacts on our natural resources, such as infill development, urban water use efficiency, conservation and reuse structures, and preserving open space.[12] Local integration can then inform state policy.

Now is the time for community foundations to embrace opportunities for advancing integrated water management and land-use planning. There is no simple solution or single approach to accomplish this goal. It will take a collection of many actions at multiple scales to equitably integrate water management and land-use planning. As leaders in the integrated water-management are fond of saying, "There's no silver bullet, but a lot of silver buckshot."

Water, Land Use And Equity

The Local Government Commission uses the broad definition of "equity" based on work by the D5 Coalition, Racial Equity Tools Glossary and UC Berkeley:

"Equity is the fair treatment, access, opportunity, and advancement for all people, while at the same time striving to identify and eliminate barriers that have prevented the full participation of some groups."

The equity lens in the context of the report's situation analysis involves each community's access to resources, a meaningful voice in decision-making, and the fair distribution of both benefits and negative impacts from the jurisdiction's water and land-use practices. Equity considerations are especially focused on changing water and land-use consequences for historically disenfranchised and underrepresented communities.

California acknowledges that government action, at both the state and local level, is necessary to mitigate the potentially catastrophic impacts of climate change and ensure our communities are resilient enough – and equitably resilient – to adapt to changing conditions. While climate leadership at the federal level is stalled, Californians and their elected leaders are embracing the need for strong climate policy.

California continues to experience strong economic growth while maintaining its ambitious climate policies. Yet, this economic growth is not evenly distributed across the state or its communities. The income gap is growing, and cost of living is increasing at an alarming rate.

Although the average Californian earns 11% more than their counterparts in the rest of the nation, the state's cost of living is also disproportionately higher, including mortgage payments that are 44% higher.[13]

Income disparities and affordability are at the forefront of social justice, and closely tied to water and housing affordability. Economic development is heavily influenced by available resources and decisions governing how those resources are used. Who benefits from water management and land-use decisions, and the economic development associated with these decisions, is the heart of the water/land-use/equity nexus.

Land-use and water-management decisions have been influenced by bias and institutional racism for generations. Those factors limit the access of some groups to natural resources, social capital and decision-making, while disproportionately benefiting others.

Planning and decision-making through an equity lens helps ensure that all communities are represented in the planning and decision-making process, and that they will share in the benefits from the results. Decisions that should include an equity lens include (but are not limited to) development patterns, affordable housing, fair zoning, infrastructure investments, and adequate water and wastewater services.

State agencies, local governments, and engaged stakeholders must work together to address persistent inequities from past decisions, and the subsequent inequitable burden these decisions place on underrepresented communities. State agencies can improve equity by establishing policies that direct benefits to communities facing disadvantages through funding and technical assistance. For example, we must prioritize workforce development that benefits residents and policies that prevent displacement.

Increasing access to opportunity will decrease the equity gap and help create a resilient future for all of California's residents. Perhaps the two greatest inequities facing California are: the housing-affordability gap and the human right to water.

Communities across California, large and small alike, are in a housing crisis. Experts say California must build 100,000 more houses per year to meet demand. Affordable housing is especially lacking in the state, most acutely in economic centers such as the San Francisco, Silicon Valley and Los Angeles regions. Statewide, California is 1.5 million

housing units short of what it needs, a deficit that makes it extremely difficult for low-income community members to find housing they can afford. As their cost of living increases for housing, transportation, food and other basic needs, many residents can no longer afford to live in the communities they've called home.

Local governments are struggling to recruit developers to build more affordable housing in their communities. As public agencies and developers rush to meet housing demand, there is a significant risk that this new housing stock will follow a sprawl-development pattern, rather than meeting the sustainability targets needed to ensure community resilience – such as development that is compact, infill, walkable and close to transit, and preserves permeability and green spaces.

Sprawl patterns reinforce existing inequities by contributing to longer commute times, poor air quality, increased flood risk from stormwater runoff and increased water costs. Here, we see how housing and water are inextricably linked. Communities can't grow without reliable water supply, while communities with inadequate housing often also have inadequate water and sewer services.

California was the first state in the nation to legislatively acknowledge the "Human Right to Water." Assembly Bill 685 requires safe, clean, affordable and accessible drinking water for the state's nearly 40 million residents.

Though state law recognizes this basic human right, it does not codify how to meet the needs of California's more than one million residents currently lacking access to safe and reliable drinking water, or the 1.7 million Californians who don't have complete plumbing facilities.

Not surprisingly, the people without water access often live in the same communities that have been historically disenfranchised or underrepresented. African Americans are more than twice as likely as whites to live without adequate plumbing. Rural, unincorporated and tribal lands, in particular, often lack basic water and wastewater infrastructure.[14]

> *"Those already burdened by economic, environmental, or health challenges are especially vulnerable. Typically, low income, communities of color, children, and the elderly. The impacts of water stress on physical and mental health, child development, and economic mobility are cumulative, and often compounded by underlying challenges such as poverty and unemployment – two other common symptoms of institutionalized racism and injustice."*
>
> *– U.S. Water Alliance*[15]

Communities cannot recruit new businesses to promote economic growth or expand their supply of affordable housing to accommodate population growth without an adequate and reliable water supply. Communities that lack financial resources to invest in water infrastructure or purchase water supply from other regions will continue to struggle, while communities with sufficient funding to ensure adequate water for growth will continue to grow and thrive.

Communities with restricted resources – disproportionally rural or communities of color – also struggle to invest in land-use projects like creekside parks or stormwater infrastructure that will improve the quality of life for residents and preserve clean water for the ecosystem's flora and fauna. Elsewhere, California's affluent urban and coastal communities have the resources and the political will to invest in water-infrastructure projects to ensure continued economic growth and meet their housing demand.

The housing-affordability crisis and the disparities of water access are closely intertwined inequities that will require great effort and better coordination between community advocates, local governments, state agencies and policymakers across the state.

The imperative for equity is gaining emphasis in both public policy and social consciousness.

This shift is exemplified through California's Human Right to Water Bill (AB 685), the addition of environmental justice as a requirement of the General Plan guidelines (SB 1000) and CEQA's Tribal consultation requirements (AB 52).

Despite this progress, more resources and cultural shifts are needed to reverse institutionalized bias and inequities, and more adequately meet the needs of disadvantaged, underserved communities. Low-income communities and communities of color are at greatest risk for economic and health consequences of climate change. Policymakers must be purposeful in working through an equity lens to implement climate-resilient policies that don't exacerbate existing inequities.

California has an opportunity to address these historic inequities. Water and land-use decisions are critical components to ending the cycle of poverty and injustice, and can be primary catalysts for change. State policy that requires equity in all policies (especially water and land-use policy), along with guidance to implementing local and regional agencies, will help prevent inequitable policymaking in the future.

Scaling out local equity campaigns and grassroots projects, such as the Community Water Center's Community Water Leaders Network will help hold local institutions accountable, while also identifying existing inequities that must be resolved. The Community Water Leaders Network has coordinated a leadership cohort of local water boardmembers to address the Human Right to Water in the San Joaquin Valley. This model could be used at the statewide level to improve transparency and accountability of decision-makers, encourage information sharing, and ensure active participation in the processes that directly affect communities throughout the state.

Efforts like these help ensure accountability, while also identifying existing inequities that must be resolved. Successful implementation will require building trust among historically underrepresented and underserved communities, building broad coalitions, and investing in water and land-use projects that reflect the voices of all affected parties.

Situation Analysis Methods

Purpose And Goals

Beyond conducting a situation analysis and providing recommendations to the Community Foundation Water Initiative, our ultimate goal in conducting this work is to establish integrated water and land-use planning as the norm across California. This effort can help create a bridge between regional situation analyses, best-practice case studies and scaling-up integration to statewide action.

The Local Government Commission followed a mixed-methods applied research approach to identify the primary challenges and barriers that prevent integration across sectors, and to develop recommendations with the greatest potential for improving integration between water management and land-use planning in California.

Research Approach

Our approach begins with a literature review and synthesis of the best available ideas about integrated water management and land-use planning, as well as known implementation obstacles. With this foundation of knowledge, we conducted interviews and focus groups with water and land-use experts across

the state to further identify specific local challenges, exemplary case studies and a menu of potential solutions. We then distilled the most effective tools and strategies for overcoming the key challenges to integration at both regional and statewide levels.

Background Research

The Local Government Commission used the existing body of literature, including the organization's own institutional knowledge, to inform each phase of the project, such as determining interviewees, developing interview questions, evaluating planning documents, and identifying themes for data coding and analysis. As part of the literature review process, we created a compendium of more than 50 documents relevant to water and land-use integration.

This resource, which includes research reports, journal articles and guidance documents, is organized by media type and subject area, and provides a description of the content and a weblink to the item. This free, curated database will be available as a public resource to help advance water and land-use integration across the state, making it easier to share on foundation websites and other digital media.

Evaluating Planning Documents

The Local Government Commission compiled a database of all the counties and municipalities within each of the five community foundation regions. This database will also be available to the public as a reference document. In each region, one representative county and three representative cities were selected to conduct an evaluation of major planning documents.

We used CalEnviroScreen 3.0 scores to identify communities that are disproportionately burdened by, and vulnerable to, multiple pollution sources.

CalEnviroScreen analyzes environmental, health and socioeconomic information to produce scores for every census tract in the state. The tool allowed us to select cities that included the most burdened census tracts (95-100th percentile), least burdened (in the 1-5th percentile) and average areas (50-55th percentile).

The planning-document database includes links to relevant water management and land-use planning documents for each of the selected "representative" communities. Each planning document was reviewed to evaluate the degree of collaboration, the degree of alignment and to identify opportunities for integrated planning. The results were incorporated into the "current status of integration" and "strategies, opportunities, and recommendations" sections of this report, as well as the five regional profiles.

Our more detailed analysis is included in the appendix for reference.

Creating Regional Profiles

The Local Government Commission compiled key features of each part of the state into five regional profiles – one for each community foundation partner – as well as online story maps. These documents include local demographics, water-management and land-use planning data, and information gleaned from expert interviews and focus groups about inequities, integration challenges, strategies and opportunities, and key recommendations.

Information from these profiles is integrated throughout the report, and they also supplement this report as stand-alone documents. Brief case studies are included in both the regional profiles and this report; they highlight positive examples of water, land-use and equity integration across the state. These case studies illustrate real-life scenarios that address integrated planning, and add context to this research.

TABLE 1: CODES USED IN DEDOOSE ANALYSIS

Categories		
Case Study	Opportunity	Strategy
Challenge/Barrier	Recommendations	
Need	Resource	
Themes		
Accountability	Governance and/or Representation	Multiple Benefits
Capacity	Incentives	Planning
Collaboration	Infrastructure	Policy
Coordination	Integration/Alignment	Public Engagement/Education
Data and Information/Research	Jurisdiction	Regulation
Disadvantaged Communities/Equity	Language	Relationships
Economics	Mindset/Conceptual Understanding	Technical Assistance
Topics		
Affordability	Growth	Schools
Agriculture	Habitat	Skills
Climate	Housing	Specific Plans
Conservation and Efficiency	Implementation	Stormwater
Development	Monitoring	Transportation
Dialogue/Communication	Jobs	Unincorporated Areas
Drought	Land Use	Wastewater
Economic	Leadership Development	Water Quality
Flood	Legislation	Water Supply
Groundwater	Reliability	

Please note: Some case studies showcase examples from outside the geographically designated region, but were included because the strategy and context are relevant to several regions. These too will be available on our website (www.lgc.or/water-land-use) as a free resource to further advance water and land-use integration.

Conducting Expert Interviews And Focus Groups

The Local Government Commission conducted interviews with 29 water and land-use experts and practitioners from across the state to gain in-depth insights into local water-management and land-use conditions for each region, as well as to explore primary challenges and possible solutions to improve integration.

We talked with two water experts and two land-use experts in each region. Interviewees included practitioners from jurisdictions with exemplary programs and processes that can serve as models for other communities, as well as from communities needing additional support to encourage equitable integration.

Three focus group discussions supplemented these interviews, and were held during important statewide events to leverage opportunities to bring together many community leaders around this topic.

Analyzing The Data

All interview and focus group data were imported into Dedoose, a sophisticated qualitative-research application, and analyzed using coding methods to identify commonalities across regions, recurring themes and possible strategies for improving integration. Coding criteria were informed by the literature review, background research and institutional expertise.

We were open and receptive to the voices of foundation representatives when determining coding criteria and analyzing the results. Data was first coded into general categories, then recurring themes, and finally into specific granular topics (see Table 1 below).

Categories, themes and topics are completely independent of each other, rather than corresponding to one another in a hierarchy. This approach allowed for the greatest complexity in analysis.

Codes were analyzed for several factors, including high and low frequencies, ratios, co–occurrences and descriptors. This analysis generated case studies, challenges/ barriers, opportunities, strategies and recommendations to highlight for each region and the state as a whole. We then relied on institutional knowledge and expertise gained through our research to interpret and present the research findings.

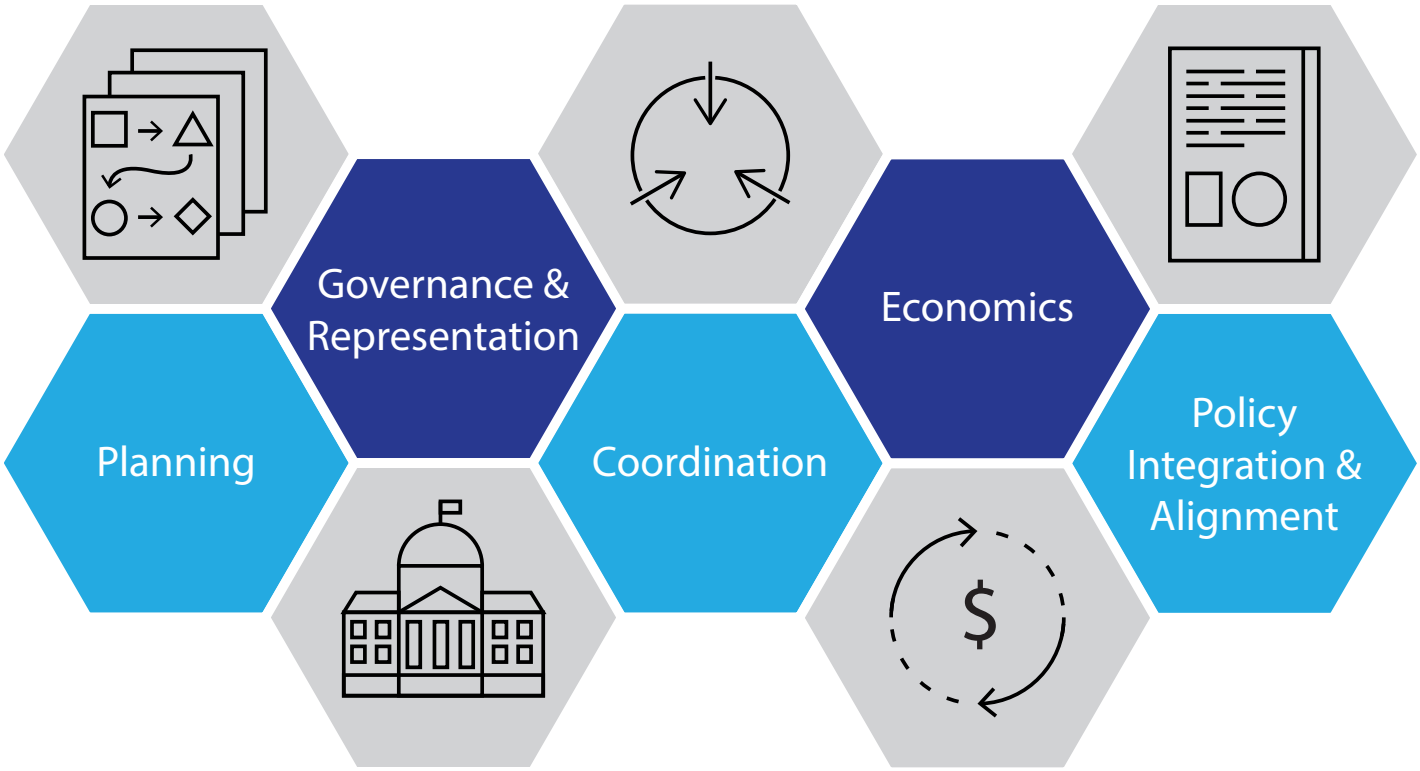


Figure 1. Top 5 themes from all data analysis

Data exports from Dedoose (charts, tables and plots) are included in the appendix for reference transparency.

The same five themes emerged across all data sources in our analysis, including planning; governance and representation; coordination; economics; and policy integration and alignment. These themes offer the greatest challenges or need for water and land-use integration. Conversely, these themes also provide the greatest opportunities for positive impacts if the integration of water and land use is to be achieved. These are the areas in which foundations and other stakeholders at the state, regional and local scale should focus their efforts.

Although "equity" was highly recurring in the analysis, this is primarily due to the Local Government Commission's guiding questions. Most interviewees didn't raise the topic unless first prompted by the interviewer. Responses sometimes revealed a lack of awareness or inclusion of equity considerations. Thus, it can also be inferred that more education and advocacy is needed in both the water and land-use sectors to better inform practitioners and stakeholders of relevant equity considerations.

Within these themes, the highest-ranking topics – in order of priority – were water supply, development, land use, water quality, groundwater, growth, housing, affordability, dialogue and conversation, and implementation and monitoring. Many of the report's recommendations center around these topics.

VI. STATUS OF CURRENT WATER AND LAND-USE INTEGRATION

California is moving toward a more holistic approach to managing our water and land resources as the 21st century unfolds. This perspective recognizes the interconnectivity between two traditionally fragmented sectors.

In 2005, the California Legislature passed new laws that enable communities to join together to adopt Integrated Regional Water Management (IRWM) policies and practices. This comprehensive planning approach considers water and related land resources as an interconnected regional system rather than as a combination of fragmented parts.

Local jurisdictions across the state convene as Regional Water Management Groups to implement their plans. Anticipated and realized benefits of IRWM include improved cost effectiveness and outcomes for planning and management of water quality and supply, as well as better distribution of water between ecosystem and human uses.

While water management and planning remain highly fragmented across the nation, several states are moving toward this more integrated approach, especially when setting new state-level policies, guidance and regulations. At least 20 states currently have some sort of watershed-oriented organizational structures,[16] and others are following suit. In California, examples include the Integrated Regional Water Management program and the Sustainable Communities Strategy processes. These efforts have been successful in at least some regions. SGMA is still in its early stages of implementation, so results are yet to be seen.

Challenges And Barriers To Statewide Integration

Integrating water and land-use decisions may easily be misconstrued as simply a matter of cross-sector collaboration. However, integration (or the lack thereof) are deeply rooted in past decision-making that purposefully divided water and land-use management conversations. This has set the stage for a deeply decentralized system in which water and land use are systematically isolated from one another.

For example, discussions with various state experts noted that there are contrary attitudes

about the effectiveness of General Plans among water and land-use planners. Local governments who adopt the plans tend to view them favorably as dynamic tools for planning and land use because city councilmembers or county supervisors have the ability to approve general plan amendments.

On the other hand, local residents and environmental advocates often voice frustration with their local government not implementing the general plan, and amendments are made without adequate representation of all affected stakeholders.

Some interviewees even sited the negative impacts on their communities from strong relationships between decision-makers and particular developers, and the political maneuvering that ensues. This illustrates the importance of more effective governance and representation.

Four primary areas of difficulty currently prevent effective integration of water and land use: the need for strong leadership; constraints caused by limited natural resources; the socio-political mindset of water and land-use practitioners; and limitations in funding to support integration.

The Need For Leadership

Achieving social, economic and environmental equity while integrating water management and land-use planning requires a commitment from leaders at all levels – and a commitment in spirit and a tangible application of capacity, education, resources and incentives.

Collaboration and coordination between sectors is not adequately incentivized, which prevents important and necessary conversations from occurring. Overlapping jurisdictional boundaries and authority creates tension between sectors and limits the implementation of integrated solutions.

Public and private entities compete with one another, instead of coordinating efforts to maximize overall and shared benefits. Developing a coalition of leaders for integration – both within and across each major region of the state – will help realign priorities, shift behavior, and change the predominant institutional culture of California's water managers and land-use planners.

Constraints Of Limited Natural Resources

Growth is outpacing resource availability in both the water and land-use sectors across the state. Communities tend to forget that water is a finite resource: Only 1% of the freshwater in the world is readily available for use. In addition to the geologic limitation of water, California's complex hydrology coupled with its incredibly bifurcated water-governance system limits how much water is available to each community at any given point in time. California's current water infrastructure is not adequately serving the state's current population, which begs the question of how the state will meet its future residential, commercial and ecological needs.

Conservation measures and efficiency improvements have decreased per-capita water use, but overall demand still challenges supply. Improved efficiency often raises concerns of "demand hardening" – the concept that water use has been cut to the minimum, so there is little flexibility to reduce demand further. For example, a farmer is so efficient with her water use that she is only using the exact amount her crop needs. If she is forced to reduce water use, her crop will die and she will lose her economic investment. Yet research and experience to date counterargues this concern. Water conservation and efficiency efforts reduce waste in the system and set more realistic water use targets.

Diminishing resource availability due to population growth and human-induced pollution restricts access to a basic human necessity – safe drinking water. Concurrently, water agencies set water rates based on

projected demand. If less water is used, the water agency experiences a revenue loss.

California's water-finance system therefore creates a disincentive to conserve. If water agencies then increase rates to cover their deficit, these costs are distributed evenly across their customers, regardless of ability to pay, causing significant affordability inequities.

Land is also a limited resource. California encompasses more than 163,000 square miles of mountain, foothills and flat plains, all of which are depended on for ecosystem services, industry and urban development. Much of the state's developable acreage is in high demand for future growth, which threatens the protection of agriculture, open space and natural ecosystems.

Short-term planning may seemingly relieve the immediate pressure on cities to meet critical housing needs and increase revenue from development. Smart-growth practices and infill development, on the other hand, provide significant long-term benefits for community resilience and vibrancy.

Much of California's current development is occurring inland, far from the coastal areas where most of the state's job growth is occurring. This jobs-housing imbalance increases urban and suburban sprawl, and the myriad negative impacts associated with it: threats to groundwater recharge, overburdened water and transportation infrastructure, degraded air quality, and impaired quality of life for residents.

Sprawl-style, low-density development is particularly vulnerable to wildfire, as often occur along the urban fringe and near natural resources prone to fire. Drought conditions exacerbate wildfire risk, as dry forests burn much hotter and faster. Fire management capabilities are also affected because it's more difficult to protect sprawling infrastructure than compact infrastructure.

The growing intensity and urgency of wildfires further accentuates the divergence between water and land use, as communities grapple with the challenge of rebuilding and water agencies must provide water infrastructure for those communities.

Without equitable institutional controls in place, the limitations on California's natural resources will further divide water management from land-use planning.

Reaching A Shared Perspective

A critical component for effective coordination is establishing a shared perspective. Technical terminology stands in the way of meaningful conversations, as shared language is essential to informed decision-making. Although water and land use are intrinsically connected, they are distinctly separate sectors that each have their own vocabulary, perspectives and beliefs. Traditional sector-based approaches threaten equitable and efficient water and land-use planning. This perspective is passed down through institutions, continuously impeding integrated planning efforts.

Patchwork development illustrates the effect of conflicting perspectives or priorities. A common perception among land-use practitioners is that quick development of green space is easier and cheaper than infill development. Not only for technical reasons, but because developers often face less backlash from neighbors who oppose growth in their neighborhoods.

Yet, the numerous unintended consequences of green field development far outweigh the perceived benefits, including increased greenhouse gas emissions from residents commuting to city centers for work; increased infrastructure costs; and more intense consumption of natural resources.

While developers pay the upfront costs to build the new infrastructure, it is left to cities and other local government entities to maintain that infrastructure in perpetuity. Despite

similar goals among water and land-use professionals, uncoordinated development occurs largely due to a misalignment in socio-political perception. Misalignment also exists between who benefits from investments, and who bares the costs – especially external costs. Local governments raise revenue from sprawl development, but the impacts of air pollution, congestion, and diminished ecosystem function are born by all.

Funding Limitations

Limited financial resources are the root of many challenges facing our communities. This is also true in water management and land-use planning. Local governments often lack adequate funding to better plan and integrate across departments. Public agencies often lack adequate financial resources to build the integrated projects they envision. State agencies lack adequate funding to provide necessary technical assistance to help communities better plan and integrate.

The complexity of California's system of public finance can create substantial barriers to integrated projects that span multiple funding agencies. The current fragmentation of grant and long-term funding programs available to local communities further exacerbates the disconnect between water and land-use decisions. Bridging this gap requires communication between cities, water agencies, developers and public stakeholders to identify opportunities for alignment in funding streams, and advocate for the policy changes needed to do so.

Furthermore, if funding mechanisms require equity considerations and integration of water and land use, the outcomes would maximize benefits for everybody. Financial investments are needed at all levels of California's governance and infrastructure to ensure a vibrant future. The more investments are integrated, the better potential outcomes.

Regional Integration

California is incredibly diverse – in its geography, climate, culture, governance and infrastructure. The report's five regions – represented by the five partners in the Community Foundation Water Initiative – are unique. Indeed, there is great diversity even within each region. While each region is made up of a collection of cities, counties and unincorporated areas, each with similar authority and governance structures, the specific character of local governance and decision-making within each region varies greatly. Similarly, each region faces its own unique water and land-use challenges.

Below are brief summaries of the status of integration within each region and the primary barriers to integration unique to each area.

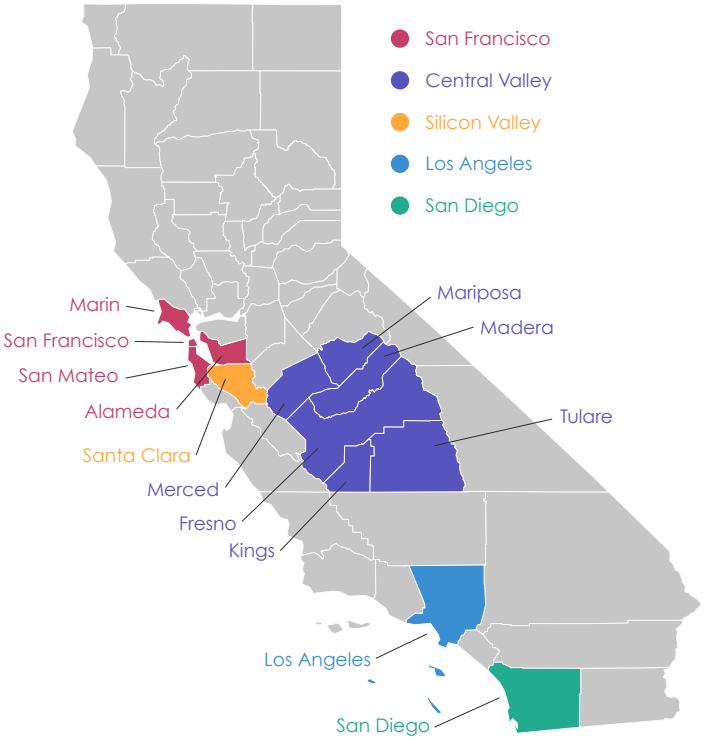


Figure 2. Five regions represented in this study, as defined by the Community foundation water initiative cohort

The San Francisco Region

For the purposes of this project, the San Francisco region is defined by the area of impact by the San Francisco Foundation. The region comprises the following five counties: Alameda, Contra Costa, Marin, San Francisco, and San Mateo; and encompasses 65 incorporated cities. All data presented herein refers to these geographic boundaries.

Integration In The San Francisco Region

While city councilmembers and county supervisors generally have the greatest influence over land-use decisions, two organizations that advocate for land-use planning initiatives in the San Francisco region are quite influential: Shore Up Marin Coalition and the Bay Area Climate Adaptation Network. Regional water decisions are made predominantly by the San Francisco Public Utilities Commission and the Bay Area Water Supply and Conservation Agency, which is a collective of several water districts. General Plans stand as the most important planning documents for land-use decisions in the region, with a particular emphasis on the plans' zoning ordinances.

Some integration is occurring in the San Francisco region, such as with the Shore Up Marin Coalition, the Bay Area Water Supply and Conservation Agency, and Plan Bay Area 2040. Moving forward, the San Francisco region should focus on aligning future development plans with increased housing, transportation and open-space needs, while also accounting for accurate water demand forecasting and reliability for population growth.

WATER AND LAND-USE CHALLENGES IN THE SAN FRANCISCO REGION

Limited staff capacity within agencies inhibits regional integration of water and land use, as does the sheer number of local public agencies operating within each jurisdiction. Uncertainty about the future reliability of the water supply contributes to fear, and a protectionist mentality, thus eroding the trust needed for cross-sector collaboration.

Little flexibility exists within the San Francisco region's water supply and demand, as previous success in reducing water use "hardened" demand. In an urban context, "demand hardening" refers to the community and water agencies already implementing the "low hanging fruit" conservation and efficiency mechanisms, thus making future water-use reductions more difficult. San Francisco has not yet reached the state of hardened demand, and continues to lead the state in water use efficiency and reuse. Limited physical space due to dense urban development also hampers the application of large scale landscape green infrastructure projects to integrate water and land use. The region will have to turn to other multisolving strategies more suited to water and land-use integration in an urban setting, such as onsite purification and direct non-potable reuse.

The quality of water-service infrastructure varies widely from community to community within the region. Lower-income communities are more likely to have aging infrastructure with deferred maintenance. This can degrade water quality and result in higher rates of leaks at the household scale – which means some communities pay the same price for lower quality water and wastewater service, or water they are not receiving at all (due to pipe leaks on the customer's side of their water meter).

The Silicon Valley Region

For the purposes of this project, the Silicon Valley Region is defined by the area of impact from the Silicon Valley Community Foundation. The region comprises San Mateo and Santa Clara Counties, and encompasses 35 incorporated cities. All data presented herein refers to these geographic boundaries.

Integration In The Silicon Valley Region

In the Silicon Valley region, the county planning commissions, city councils, city planning

departments, and the City/County Association of Governments of San Mateo County are all key land-use decision-makers. Water decisions are made by the Santa Clara Valley Water District, San Francisco Public Utilities Commission, the Bay Area Water Supply and Conservation Agency, private water companies and various water districts.

Local experts have identified cross-agency collaboration as the most important tool for improving integration of water and land use. Some integration is occurring between water agencies in the region, but this does not extend to local land-use planning efforts.

Both San Mateo and Santa Clara counties engage in some land-use planning integration activities. For example, the San Mateo County Resource Conservation District shares staff with the county, and are able to provide input on land-use planning with a strong water resource perspective. In many parts of the region, however, there is a lack of emphasis or interest in integrated planning. Developing leaders interested in integration, and strengthening regional collaboration, will help Silicon Valley meet current and future needs for all residents.

WATER AND LAND-USE CHALLENGES IN THE SILICON VALLEY REGION

Similar to the San Francisco region, the Silicon Valley region's water supply and governance system is incredibly complex, which hinders multi-agency coordination and alignment. The variability in water-supply reliability across the region and between agencies generates a protectionist mentality, particularly among the agencies with the greatest certainty in their water supply. Trust is lacking, thus preventing cross-agency collaboration. Population growth further strains infrastructure systems and increases pressure on water agencies to meet future demand.

Land-use planning and decision-making in Silicon Valley is highly politicized due to quick-paced economic growth and accompanying population growth that adds stress on an already critical housing shortage near urban centers and mounting housing unaffordability. Gentrification is occurring rapidly as lower-income and middle-class residents are being priced out of the skyrocketing rental market. Competition over land and resources for housing, agriculture and open space causes significant tension between jurisdictions, further inhibiting integration.

The Central Valley Region

For the purposes of this project, the Central Valley Region is defined by the area of impact from the Central Valley Community Foundation. The region comprises six counties: Fresno, Madera, Mariposa, Merced, Tulare, and Kings and encompasses 34 incorporated cities. All data presented herein refers to these geographic boundaries.

Integration In The Central Valley Region

The Central Valley includes several important land-use decision-makers, such as city councilmembers, county supervisors, the Local Agency Formation Commission, city planning departments and developers. Key water decision-makers include water districts, private water companies, the agriculture industry and state entities such as the Department of Water Resources.

General plans are the most important documents in the region – with community plans being the most important for unincorporated communities. Local experts also highlighted transportation plans, including the Sustainable Communities Strategy element, as important in the planning process.

There is a historic disconnect between water professionals and city planners in the Central Valley region, which makes integration difficult.

Some coordination does occur, though, mostly in Fresno County. Current initiatives such as regional transportation planning and General Plan revisions actively encourage integrated planning.

The Central Valley must also consider the effects that its planning process will have on the agriculture industry and the region's significant open space. Several organizations have become more active in the environmental-justice movement and want to play a greater role in the planning process, particularly on the issue of drinking water quality, and the lack of development to support existing communities.

The creation of Groundwater Sustainability Agencies provides the Central Valley region with an opportunity to connect water supply and allocation to population growth and development boundaries. As a result, local experts identified planning and coordination as the most important integration activities needed in the region.

WATER AND LAND-USE CHALLENGES IN THE CENTRAL VALLEY REGION

Lack of a shared vision and leadership for the Central Valley region's future stifles integration. Coordination and alignment across sectors and between jurisdictions is difficult due to the region's myriad water management and land-use planning agencies, which is especially apparent in groundwater management. Many of the region's groundwater basins are contaminated with nitrates from past agricultural practices, leaving it unsafe to consume. Other man-made and naturally occurring chemicals – including arsenic, coliform bacteria, pesticides, disinfectant byproducts and uranium – also diminish local water quality. According to the State Water Resources Control Board, contaminated groundwater is the source of drinking water for more than one million residents in the Central Valley region.

Competition for development funds and natural resources frequently prevents full collaboration between jurisdictions and levels of government. Like other regions, increased housing demand has 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 affecting their health.

Many of the region's communities are unincorporated, and often lack adequate land-use infrastructure and maintenance, such as adequate parks, roads, sidewalks and stormwater management.

The Los Angeles Region

For the purposes of this project, the Los Angeles Region is defined by the area of impact from the California Community Foundation. The region comprises the entire geographic boundary of the County of Los Angeles, and encompasses 88 incorporated cities. All data presented herein refers to these geographic boundaries.

Integration In The Los Angeles Region

Land-use decisions are made by the county supervisors, city councilmembers, planning commissions and planning departments in the Los Angeles region. Those decisions are often influenced by nonprofit organizations, such as Climate Resolve, the Mayor's Office and a number of active homeowner associations. Water decision-makers include water agencies, regional water quality boards and local public-works departments. General plans drive most of the planning discussion in this region, with significant importance placed on zoning, transportation and significant ecological areas.

With more than 200 water agencies and overlapping jurisdictions, integration in the Los Angeles region is complex. However, the Los Angeles region has made progress toward integrated planning, as evidenced by plans completed by the Mayor's Office and the Los Angeles Regional Collaborative. The region's

next step is to ensure that these plans are implemented with collaboration and equity in mind.

WATER AND LAND-USE CHALLENGES IN THE LOS ANGELES REGION

Fragmented governance and lack of representation impact already overburdened communities in the Los Angeles region. The region contains more than 200 small water agencies, and there is no continuity in governance or management between neighborhoods. Seven in 10 residents in the city of Los Angeles rent their homes, with water bills sent to property owners. Local water boards are elected by the property owners, who are not necessarily city residents themselves. This system tends to discourage low-income residents from participating in elections, which means water agencies tend to be more responsive to property owners – who may not be representative of all the people who live in the community.

Affordable housing is the most prominent equity challenge in the Los Angeles region. Like many communities, LA County has not met its Regional Housing Needs Allocation. Due to the LA region's extremely high cost of living (and high development costs), local developers are challenged to design projects that meet subsidy and funding program requirements to maintain economic feasibility.

Displacement and homelessness are major threats to individuals and families in the area.

The market demand for single-family homes encourages more sprawl development and drives up costs. Water projects in low-income neighborhoods often don't pass feasibility analysis, so water agencies are forced to pass infrastructure costs onto residents through metering and increased rates – even through the region's poorest households already have some of the region's highest water bills.

The San Diego Region

For the purposes of this project, the San Diego Region is defined by the area of impact from the San Diego Foundation. The region comprises the entire geographic boundary of the County of San Diego, and encompasses 18 incorporated cities. All data presented herein refers to these geographic boundaries.

Integration In The San Diego Region

San Diego's land-use decisions are made by city and county officials, but is heavily influenced by regional planning through the Sustainable Community Strategy. Planning does not occur at the neighborhood level, which is where inequities are most often manifested. Most water decisions are made by city departments, where there is a fragmentation of water agencies, and it's extremely difficult to keep track of jurisdictions and responsibilities.

Like most regions in California, general plans are the most important planning documents, and conversations surrounding integrated planning occur during plan updates and revisions. Local experts have identified planning as the most important step towards integrated planning in the region. Regional land-use planning is occurring, but there is very little integration at the local level.

Regional climate collaboratives, in particular, are trying to move integrated planning beyond city fragmentation. The San Diego region should continue to develop strong leaders and build political will for integration, while working to streamline and consolidate the planning process to improve local integration.

WATER AND LAND-USE CHALLENGES IN THE SAN DIEGO REGION

Fragmented governance and overlapping jurisdictions with disparate planning processes inhibits integrated planning and management. San Diego County has 24 retail water

agencies serving 19 jurisdictions. Individual jurisdictions are not integrating water and land-use planning at the local level, despite their regional land-use planning alignment. To achieve regional-scale resilience, all jurisdictions' plans must be aligned.

Political pressure to develop, combined with notable apathy toward smart-growth priorities in parts of the region, threaten the region's long-term resilience and affordability. The San Diego region is already facing a housing supply and affordability crisis. Despite a laudable general-plan update with urban growth boundaries and water-efficiency targets, some local jurisdictions continue to allow (or even promote) sprawl through general-plan amendments and variances.

Limited funding availability and misalignment between funding programs for all services – but especially water infrastructure and affordable housing – contributes to the tension between public agencies and the community.

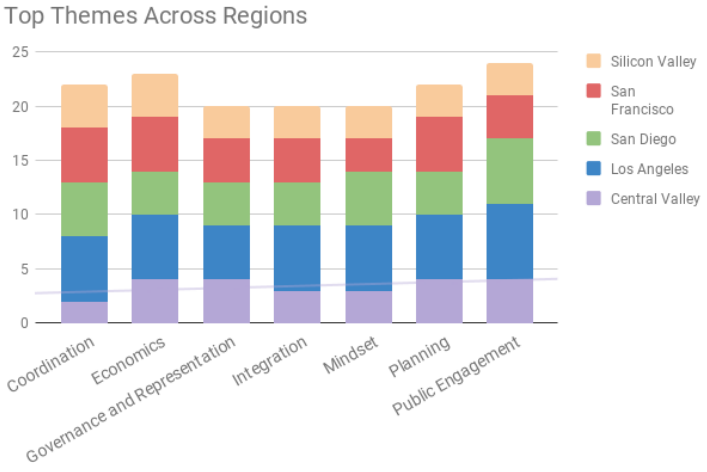


Figure 3. data analysis of top themes highlighted in each region

Some agencies try to "build their way out of the problem" and pass costs on to their already overburdened constituents. Opponents of San Diego's new Poseidon desalination plant, for example, site the high infrastructure price tag coupled with the increased cost of desalted water adding pressure to community members already burdened by some of the highest water bills in the state, if not the nation. San Diego's residential water bills are expected to increase as a result of the desal plant, when other more affordable methods of increasing water supply reliability are yet available.

VII. CASE STUDIES

This report offers nine different examples of collaboration and applied integration solutions, with a specific focus on integrated water and land-use planning. These case studies cover past, current and upcoming projects identified through interviews and focus-group discussions from around the state and our general research and literature review. The case studies are organized into five themes: community engagement, collaboration, planning, funding and infrastructure. The case studies offer models that can be used in other regions across the state.

Community Engagement

Designing Our Own Solutions For Resiliency Planning, The People's Plan (P+Set)

RESILIENT BY DESIGN BAY AREA

Every community has residents with the skills, experiences and strategies needed to solve the local and regional problems they face. As part of the Resilient by Design Bay Area challenge, the Permaculture + Social Equity team (P+SET) created a social design process which builds community capacity and climate change literacy to address the challenges of coastal adaptation and resilience planning, particularly in vulnerable communities that have experienced generations of marginalization and exclusion.

The P+SET design concept approach is a "Community Partnership Process" to establish local leadership across generations by partnering with residents. This process specifically designs programs for individual

communities based on their unique assets and needs. In this process, community members are actors with political will and influence.

Local residents, organizations and institutions each bring their unique knowledge, skills and passion to the process. This diversity in expertise influences land use decisions that reflect culture, history and community vision. Based on community perspectives, P+SET provided the technical expertise and education to give stakeholders the skills needed to interpret and solve immediate challenges (such as flooding in a particular location). Small-scale projects will be implemented first, leading to larger, more complex collaborative designs.

P+SET piloted this capacity-building program in Marin City, which resulted in a "People's Plan" that reflects the residents' aspirations and priorities. Participants became "designers" and identified six priority projects to help solve challenges in the watershed, including an intergenerational garden, erosion mitigation and creek enhancement, rain gardens and bioswales.

This people-powered design process also allowed the community to enhance their existing advocacy practices and literacy to more effectively engage with municipal, regulatory and regional stakeholders to finance and implement these projects.

For more information on the People's Plan, visit www.resilientbayarea.org

Collaboration

Creating Partnerships To Solve A Water Crisis[17]

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 were already good water stewards. 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.

For more information about the East Palo Alto water crisis, visit https://currentwater.co/2017/08/21/water-shortage-east-palo-alto-construction-on-hold

Innovative Partnerships And Initiatives

SAN DIEGO REGIONAL CLIMATE COLLABORATIVE

The San Diego Regional Climate Collaborative (SDRCC) was launched in 2012 as a network designed to support public agencies with preparing for the impacts of climate change and mitigate greenhouse gas emissions. The San Diego region faces a number of threats exacerbated by climate change, including diminishing water supplies, increasing wildfire risks, rising temperatures, and increasing coastal flooding and erosion due to sea-level rise.

SDRCC supports local governments and regional agencies across San Diego County to respond to these impacts, reduce emissions, and foster a clean energy and vibrant economy and community. SDRCC was initially formed by five public agencies (the Cities of Chula Vista and San Diego, the County of San Diego, the Port of San Diego, and the San Diego Association of Governments, or SANDAG); the University of San Diego (USD); the region's energy utility, San Diego Gas & Electric (SDG&E); and The San Diego Foundation (TSDF).

The collaborative's mission is to create regional partnerships between the region's residents, local businesses, public service agencies, and private companies. The collaborative also works to create a network for public agencies to learn from each other and to plan for the impacts of climate change.

SDRCC also provides a venue for cross-jurisdictional and cross-sectoral dialogue. The collaborative organizes regular workshops and trainings for local decision-makers on climate-related topics of interest, as well as provides direct technical assistance to jurisdictions in the region. In addition to coordinating stakeholders and providing networking opportunities, SDRCC has also helped build new innovative partnerships in furtherance of specific climate-related goals and initiatives, such as the Climate Science Alliance.

For more information on the San Diego Climate Collaborative, see www.sdclimatecollaborative.org

Interactive Mapping For Regional Solutions[18]

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 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 Greenprint are publicly available, and are presented in an interactive, easy-to-use online tool. 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.

For more information on the San Joaquin Valley Greenprint, see www.sjvgreenprint.ice.ucdavis.edu

Planning

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 recently struck an agreement to use Fresno Irrigation District canals to distribute water to Fresno Flood Control District basins throughout Fresno for groundwater recharge during dry months. The City has budgeted more than $850,000 to construct the connections and make 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 its Urban Water Management Plan, an ever-increasing volume of rain water can no longer soak through the soil to the groundwater aquifer as urbanization covers once open land with pavement, roads and buildings. There is enough storage capacity in the aquifer to serve the city's needs and natural recharge is not able to keep up with pumping. More active recharge facilities – such as Managed Aquifer Recharge – are needed to replace the loss of natural recharge capacity.

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 General Plan and development code, for the first time, limit 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% of Fresno residents' needs from treated water drawn from the San Joaquin and Kings rivers. It is expected that this measure will allow Fresno to meet its Sustainable Groundwater Management Act requirements.

Connecting Cities To Nature, Ballona Wetlands

CULVER CITY

Numerous studies of the hydrology of wetlands have shown that they are a central focus of groundwater recharge. The Ballona Wetlands sit on land owned by the State of California, just south of Marina del Rey. They were once a 2,000-acre area overflowing with fish and waterfowl. Almost 100 years ago, Ballona Creek was transformed into a nine-mile concrete flood protection channel, which blocked the flow of saltwater, and reduced the amount of freshwater in the wetlands. Today, the topography is mostly cement, leaving only a very small percentage of wetlands in this watershed. Cemented streets have lead to increased runoff and pollutant infiltration, which ultimately makes its way to the Ballona Creek, and eventually to the Pacific Ocean.

Today, more than 95% of Southern California's wetlands have been lost due to human development – the largest loss of any region in the nation. Wetlands are important for many reasons - they are a rest stop for birds, shelter for young fish, a water filtration system, a source of groundwater recharge, air purifier, and great source of local pride and beauty.

After the State acquired the land, they released a study that explored a range of potential infrastructure improvement projects, new structures and more access and activities for the public. Partnership were formed in order to investigate the feasibility of features such as bike trails, community centers, outdoor classroom and walking paths.

Stakeholders have witnessed progress being made since then, such as the Milton Street Park project (a $3MM linear park) adjacent the bike trail, which has added aesthetic appeal and a much needed rest stop for users of Ballona Creek trail. Significant bike path improvements in recent years include native landscaping, artist-designed gates, benches, drinking fountains, murals and other projects by public agencies and local non-profit organizations. Other opportunities include the integration of an educational component to the creek, i.e., using the creek as an outdoor classroom. This is the sort of necessary measures which must be pursued, in order to ensure that the younger generation better understands and appreciates what the creek has to offer to their neighborhood, but even more importantly to the region at large.

For more information on the Ballona Creek Revitalization Plan, see www.ballonarestoration.org

Funding Strategies

Recharge Net-Metering Pilot Program

UC SANTA CRUZ

In 2016, the University of California-Santa Cruz, the Pajaro Valley Water Management Agency (PV Water) and the Resource Conservation District of Santa Cruz County partnered to test a program that would help address the economic challenges of groundwater recharge projects. The result of that partnership is a five-year pilot program to incentivize local landowners to build a managed aquifer recharge (MAR) system on their property – where it can recharge underground water aquifers.

PV Water agreed to issue said landowners rebates to help offset the costs of installing and operating such a system. Initiated in 2016, the first year of the recharge net-metering program was tested on a five-acre parcel of farmland. It was highly successful, and has since been replicated on other properties.

The strategy was well-received, as Pajaro Valley relies heavily on groundwater, and is currently experiencing high levels of overpumping and saltwater intrusion. The pilot program could serve as a model for other regions experiencing similar groundwater challenges.

This innovative program has occurred through the agency's partnership with the Resource Conservation District of Santa Cruz County and UC Santa Cruz Professor Andrew Fisher.

Fisher's team has mapped the lands in the district that have the hydrologic and geologic conditions needed to absorb stormwater and recharge the aquifer.

Some property owners in these areas are being offered a reduction in the Water District's groundwater pumping fees proportional to the volume of water that they have captures and percolated into the aquifer. This program is called "Recharge Net Metering (ReNeM)."

The Resource Conservation District has contracted for the management of the program with UC Santa Cruz providing the technical information needed to perform the recharge net-metering calculations.

Infrastructure

East Los Angeles Sustainable Median Stormwater Capture[19]

LOS ANGELES DEPARTMENT OF PUBLIC WORKS

The East Los Angeles Sustainable Median Stormwater Capture Project is located in the unincorporated area of East Los Angeles. This project will capture and treat approximately 232 acre-feet (AF) of stormwater in an average rainfall year from a 3,000-acre tributary area. The water will be captured, then infiltrated to remove pollutants such as metals and various bacteria from reaching the Los Angeles River. Updates to the medians will include drought tolerant landscaping, and other amenities such as jogging paths and benches – providing benefit to the nearby residential community. A portion of the funding comes from the State's Water Quality, Supply, and Infrastructure Improvement Act of 2014 (Proposition 1), and the project partners are Los Angeles County Supervisor Hilda Solis, California the Natural Resource Agency – Urban Greening Grant Program, the State Water Resources Control Board – Proposition 1 Stormwater Implementation Grant Program, and the Los Angeles County Flood Control District. As part of meeting the Proposition 1 requirements, the Proposed Project would include educational signage at the project site. Construction is expected to begin in Fall 2018 and last for approximately 12 months.

This multi-benefit project will improve water quality, increase water supply and enhance recreation and the community. Infiltration wells and low impact development, such as bioswales, will divert and infiltrate stormwater runoff to help improve the water quality of our rivers, channels, and ocean. Wells will also divert stormwater runoff into underground

aquifers, replenishing our local groundwater supply. Over 300 trees will be planted and drought tolerant landscaping will enhance the community space and reduce the effects of greenhouse gases. Furthermore, passive recreation and educational signage will enhance the community space and increase public awareness on sustainable development.

Multi-benefit projects can help to identify project partners as projects with multiple benefits can help to leverage funding. There are opportunities for collaboration and partnering between the County of Los Angeles and other cities within the watershed area.

For more information on the East LA Sustainable Median project, see: www.dpw.lacounty.gov

Kellogg Park Green Lot Infiltration Project[20]

CITY OF SAN DIEGO

Green infrastructure and other low impact development techniques help manage stormwater runoff and provide important co-benefits to communities that can align with climate-action planning priorities.

La Jolla hosts two Areas of Special Biological Significance (ASBS), as designated by the California State Water Resources Control Board, to prevent pollution of biologically diverse and pristine sections of the California Coast. These two areas include large portions of the La Jolla Shores, and prohibit waste discharge and other pollution under the regulation of the California Ocean Plan.

Kellogg Park in La Jolla Shores was identified by the City of San Diego as an opportunity site for a project to address runoff in the ASBS. The Kellogg Park Green Lot project was designed to remove 18,000 square feet of asphalt concrete – replacing it with permeable pavement that will allow the city to capture large amounts of surface water. They also included elements that allowed them to capture runoff from the parking lot and nearby public right-of-way. The captured water was then filtered to minimize pollutants. A "vegetated bioswale" and filter bed were also added to further capture and infiltrate runoff.

Other project benefits include a reduction in the volume of storm water and water-borne pollutants that could potentially reach the adjacent beach, enhanced aesthetics through new landscaping features and trash enclosures, new curb ramps for improved accessibility and improved drainage near current storm-drain inlets.

The $982,000 project was funded with City of San Diego Storm Waste Capital Improvement Plan Funds. Construction was completed in 2011.

For more information on the Kellogg Park Green Lot Project, see: www.sandiegocounty.gov

VIII. OPPORTUNITIES AND RECOMMENDATIONS FOR IMPROVING WATER AND LAND-USE INTEGRATION

The vast majority of strategies, opportunities and recommendations from statewide focus-group participants and the community foundations engaged in this project reference "infrastructure." This illustrates that the need for infrastructure investment is one of the state's most pressing issues. Inadequate infrastructure impacts communities already facing disadvantages more acutely than other communities.

Identifying and addressing infrastructure needs is also the "low hanging fruit." While costly, there is a more direct path to infrastructure solutions to more ambiguous challenges of softer skill development and institutional change.

Expert interviewees, in contrast with

focus group participants, emphasized "planning" and "regulations" as top themes. Recommendations to address governance and representation, as well as financial recommendations also ranked high. Topically, recommendations addressed water supply over any other concept. Many recommendations also addressed land use, development, and the need for better dialogue and communication.

Interestingly, more strategies and recommendations came from land-use experts than water experts. While only conjecture, this may illustrate that land-use planners will be the easier party to catalyze integration between the two sectors. This is further illustrated by the American Planning Association hosting a "Water and Planning Connect" conference for this exact purpose. Furthermore, it's far more common to encounter water-themed topics at planning events than land use-themed topics at water forums.

Clearly, a "carrot" and a "stick" approach are both necessary to achieve integration. Both top–down legislative mandates and community-level organizing and citizen-driven political engagement are needed to hold decision-makers accountable.

The following subsections outline recommendations that are considered most important and supported by the broadest range of participants from this study. Strategies, opportunities and recommendations are arranged by statewide or regional actions. All other recommendations identified through this project are included in the Appendix.

Statewide Opportunities

Data collection and analysis for this project elicited many opportunities for improved integration of water management and land-use planning. While the appropriate strategies needed to achieve integration may vary from region to region, opportunities noted here are applicable statewide.

California now has a new governor, as well as several new legislators. Community foundations and water and planning professionals have a rare opportunity to engage at the state-policy level early on to gain traction with the new administration.

In the early stages of the administration is the perfect time to influence the new governor and highlight integrated water and land-use planning as a priority for California. The Strategic Growth Council, in particular, composed of members appointed by the governor, is an ideal agency to integrate water management into land-use planning statewide.

Alignment in stakeholder engagement is an important strategy for achieving integration. Interest groups and public-service providers alike are constantly competing for the same "mindshare" or mental capacity for attention from their customers. Community members are constantly bombarded with competing messaging via social media and other more traditional marketing avenues.

A unified message from multiple sources, targeted to complement rather than compete with one another for mindshare, is far more effective in reaching its intended audience. Collaboration between agencies for a shared-messaging public-engagement campaign is an "easy win" to start building cross-agency, cross-jurisdictional and cross-sector relationships. These relationships can then form the foundation toward greater integration.

Shared data and leveraging resources or joint financing of shared technology and innovation provide the next steps in building collaborative partnerships that will help foster integration. This alignment will also help avoid unnecessary duplication of efforts and is a more competitive approach for grant funding.

The American Planning Association held its "Water and Planning Connect" conference in September 2018. The gathering was the first of its kind, bringing together water and land-use planning professionals from the public and private sectors. The conference sought to help shape dialogue around the intersection of land-use planning and water resource management, recognize significant water issues facing the nation (contamination, drought and sea-level rise), and provide participants the opportunity to explore new ways to approach water and land-use planning issues. The APA closed the conference with a commitment to regularly hosting these conversations in the future. This conference was an important first step in encouraging more collaboration between water and land-use planning.

Statewide Recommendations

Through review of existing literature, analysis of various policies and conversations with countless water and land-use experts, and review of the above strategies and opportunities, three primary needs emerge as the greatest potential solutions to achieving the equitable integration of water and land use.

These three recommendations are complex and historically controversial. While there is general consensus from both water and land use experts that each is necessary, the mechanisms by which they are implemented remain contentious – especially whether each should be optional or compulsory:

1. Each hydrologic region should establish a regional water budget (similar to those being developed for groundwater basins), reviewed and approved by the state, which the region as a whole must maintain in balance.
2. Establish stronger guidelines and incentives for regional planning agencies (Councils of Governments, Metropolitan Planning Organizations) to ensure alignment between development decisions at the city and county level and recommendations in their respective Sustainable Community Strategy.
3. Amend the State Constitution to address water financing; including Proposition 218 reform to enable more flexibility in addressing our water needs, and a statewide public-goods charge on water to assure the supply of safe drinking water and sanitation to all Californians.

Additional recommendations that are perhaps more politically feasible and will still have a significant impact on water and land-use integration – the lower hanging fruit – also emerged:

1. Require greater sophistication and alignment (through better data and analytics sharing) in growth projections and coordinated planning for both land-use planning and water management agencies.
2. Promote cross-sector coordinated planning and management of land use, water management, flood mitigation and climate adaptation.
3. Direct state and local investments toward multisolving through groundwater recharge and green infrastructure projects developed at local scales with robust community engagement
4. Prioritize infrastructure investments that support existing communities, especially underserved communities, before new development.

Specific action at multiple scales is necessary to achieve progress on these four recommendations. Each initiative will be less controversial if resources are provided to support the activity, and if all parties involved are assured they will retain their existing authorities.

Additional context and activities for each are outlined below, but a more comprehensive strategy for implementation should be developed for each.

Require greater sophistication and alignment (through better data and analytics sharing) in growth projections and coordinated planning for both land-use planning and water management agencies.

- One of the primary barriers to interagency coordination is limited institutional capacity. State (especially the Department of Water Resources and the Governor's Office of Planning and Research) and local agencies (city and county planning, stormwater and transportation, local water agencies) should invest in increased staffing dedicated to land-use planning and water management integration. A unique model is the Los Angles Mayor's Office of Sustainability hiring a staff position funded in part by a local philanthropic organization and the Los Angles Department of Water and Power. Similarly, the Statewide Energy Efficiency Best Practices Coordinator is funded by the California Energy Commission, and managed jointly by three relevant NGOs (Local Government Commission, Institute for Local Government and ICLEI).
- Historic inequities in development and investments are perpetuated today by failing to integrate planning efforts. The Strategic Growth Council, Housing and Community Development, and the Governor's Office of Planning and Research should provide guidance for regional alignment in planning and housing development, to ensure equitable and sustainable distribution of increased housing and growth. Density should be distributed in accordance with available local resources and existing local context (urban, suburban, exurban, rural).
- Population allocations used by local and regional planning agencies (cities, counties, Councils of Governments, Metropolitan Planning Organizations, Joint Powers Authorities) should include water availability and reliability analysis, as well as other relevant regional factors (sea-level rise for coastal communities, flooding). This will help prevent unsustainable growth where there is inadequate water supply or water management infrastructure.
- Additional improvements to accurate growth projections could be made through Sustainable Communities Strategies and General Plans using Urban Footprint or a similar scenario planning tool; Urban Water Management Plans relying on real-time water-use efficiency data and Sustainable Community Strategies growth projections to establish demand forecasting.
- To ensure cross-sector engagement and better alignment between planning efforts, local and regional agencies should provide dedicated seats for planning staff on water committees, and vice versa. Each agency must also allocate adequate staff time for meaningful participation. For example, amended Urban Water Management Plans could stipulate who needs to participate, and revisions to the Sustainable Groundwater Management Act could require land use planners sitting on technical advisory committees for Groundwater Sustainability Plan development.
- State agencies and/or philanthropic organizations should provide technical assistance for communities needing additional support to implement the activities proposed above.

Promote cross-sector coordinated planning and management of land use, water management, flood mitigation and climate adaptation.

- State and local investments (grants, loans and bond financing) should be directed toward multisolving – integrated planning and projects developed at local scales with robust community engagement that address more than one need and provide a range of public benefits.
- State funding agencies (Department of Water Resources, the State Water Board, and California Fish and Wildlife; Strategic Growth Council, Caltrans, and Housing and Community Development) should first integrate across their own programs, and then prioritize funding for local and regional multisolving. This was attempted under the Schwarzenegger administration, but failed due to constraining bond language and statute. A more successful approach will be to educate legislators and advocates about the value of flexible funding language that focuses on outcomes and not process. Any new funding legislation should provide agencies flexibility in implementing their grant programs so long as the intended outcomes are being realized.
- Grant programs should require collaborative, integrated planning for funding eligibility, and metrics for tracking collaboration in grant reporting. Department of Water Resources Integrated Regional Water Management Program already does this to some extent, particularly through their Disadvantaged Community Involvement Program. These same agencies should fund technical assistance and decision support tools to identify benefits and allocate costs accordingly, for integrated projects. The Proposition 84 Strategic Growth Council grants are an excellent example of this type of support.
- The Governor's Office of Planning and Research should provide leadership, guidance, and technical assistance to support local jurisdictions in conducting a full analysis of their development codes and regulations, seeking opportunities to integrate and streamline permitting processes, so as to enable development of cost-effective, sustainable, equitable projects that integrate water and land use.
- The State Legislature should amend Urban Water Management Plan requirements to be consistent with Groundwater Sustainability Plans. Protocols should be established for determining imported water, surface water and groundwater supplies are based on the water basin. This change will help to integrate agricultural and urban water planning for more accurate analysis and consistency.
- The State Legislature should appropriate adequate budget for the Governor's Office of Planning and Research to: provide leadership, guidance, and technical assistance to support local jurisdictions in conducting a full analysis of their development codes and regulations, seeking opportunities to integrate, streamline permitting process, to enable development of cost-effective, sustainable, equitable projects that integrate water and land use. Local jurisdictions across California should proactively seek to do the same, in the absence of state leadership, while also advocating for this support.
- Many local and regional agencies across the state are eager to better integrate their water management and land-use planning efforts, but are unclear where to start. State agencies and relevant NGOs should compile existing local structures and best practices for water/land use integration into a centralized statewide framework and resource guide. This framework should include guidance for state agency

alignment, policy and regulatory alignment, local integration between sectors, regional integration across jurisdictions, and best practices for collaboration. Developing such a framework should follow a similar yet more robust process as the research resulting in this report, or that which was followed to develop the general-plan guidelines.

Direct state and local investments toward multisolving through groundwater recharge and green infrastructure projects developed at local scales with robust community engagement.

- Stormwater green infrastructure projects are often "low hanging fruit" to achieve water/land-use integration, and to gain community buy-in. Statewide advocacy and education about the value of multisolving, through projects that address stormwater compliance while providing other benefits, ensures that new public investments provide the greatest range of benefits possible to the communities funding them.
- Natural infrastructure is now mandated as an adaptation strategy in General Plan safety elements (SB 379). Local and state agencies should ensure they are using the same terminology, and expanding the definition of "green infrastructure" beyond stormwater to include all natural approaches.
- There is also new and substantial opportunity for alignment between water management and land use planning within our forested communities. Forestry management is one particular multisolving approach with significant benefits.
- State and local regulations are often the primary barrier to implementing strong integrated green-infrastructure projects. State and local public agencies should streamline their respective regulations and establish "umbrella" or "programmatic" permitting for integrated, multisolving projects.
- The State should invest in a comprehensive ecosystem services and groundwater recharge agenda developed at local and regional scale to statewide standards. Agencies involved in establishing standards should include Department of Water Resources, State Water Resources Control Board, California Fish and Wildlife Service, Strategic Growth Council, and the Governor's Office of Planning and Research. The statewide agenda can build on work already developed by The Nature Conservancy and CA Department of Fish and Wildlife. This approach should include a manual of compiled and refined best management practices, decision–support tools and pilot demonstration projects.
- Local and state agencies should incentivize or require the identification and protection of groundwater recharge and stormwater infiltration areas. This can be achieved by cities, counties, regional, and state commissions (such as Coastal Commissions) setting aside more land as habitat conservation area and preventing expansion in those areas; or by mandating general plans and groundwater sustainability plans coordinate efforts to identify and zone these areas to prevent development in priority recharge zones. Guidelines should be strong enough to prevent unsustainable development, but flexible enough to adapt to changing information. Butte County is an excellent example of a region studying the issue, identifying high recharge areas, and then having to adjust their decisions as they discovered some of their assumptions were incorrect.
- Rural communities should adopt an ordinance that prevents land zoned for agricultural purposes from being converted to urban development to protect

floodplain and groundwater recharge areas. Establishing a fund or trust for purchasing agricultural lands from willing sellers at a fair market value and converting these lands to open space or other passive use will protect the economic interest of existing agricultural land owners.

Prioritize Infrastructure Investments That Support Existing Communities, Especially Those Experiencing Disadvantages, Before New Development.

Infrastructure investments are often subsidized by federal, state and local funding sources. Projects that are not aligned with state water and climate goals should not receive public funding. Under AB 2800, the legislature commissioned an Infrastructure Resilience Report that evaluates the state's exposure to risk. Results from the AB 2800 working group should be used to prioritize future infrastructure investments. The state should codify the working group as a standing Water and Land-Use Infrastructure Sustainability and Coordination Commission responsible for preventing unsustainable sprawl development.

This commission would establish evaluation criteria as well as monitoring and reporting requirements for local and regional agencies to follow in considering infrastructure needs and analyzing development proposals. The commission could serve as a funding and technical assistance provider to support local implementation, and also serve as a regulatory backstop if the public feels local investments are inconsistent with Sustainable Communities Strategies, General Plans, Groundwater Sustainability Plans and other state policies.

- Local agencies (cities and counties) should conduct more stringent review of project siting to ensure better alignment with General Plans, Sustainable Communities Strategies and Regional Transportation Plans, and Groundwater Sustainability Plans to ensure equity in investments, and prevent environmental injustice and negative water and land-use impacts. This can be accomplished by requiring additional community benefits and a higher level of community engagement or public participation prior to approving development projects.
- Legislatively establishing an oversight agency with strong incentives (such as state funding eligibility) to ensure adequate alignment and consistency among plans and actions will also help ensure equitable and sustainable infrastructure investments. For example, the Alluvial Fan Taskforce recommends the local government (city or county) Planning Department as lead, in partnership with local water and flood management agencies. State entities should continue to administer the Affordable Housing and Sustainable Communities Program, provide technical assistance to local agencies interested in infill development, and distribute best practices statewide.
- Department of Water Resources created an Alluvial Fan Task Force in 2010, which recommended a Model Ordinance approach to protect priority groundwater recharge areas. Cities and Counties should adopt this Model Ordinance approach, which does not challenge the existing and use authority of local governments.
- Gentrification and displacement are real threats to existing communities when infrastructure investments are made. To ensure existing residents receive the benefits of infrastructure investments, local agencies (cities, counties, water districts) should establish "Community Stabilization Teams" to work directly with communities anticipating development to ensure they continue to receive adequate services (water, wastewater, transportation, housing) while also preventing

displacement. The Mission Action Plan 2020, produced by the City of San Francisco, is an excellent model. A Community Water Sustainability Planning Task Force based on Urban Water Management Plan review and implementation would be an effective adaptation of this model.

- Funding for infrastructure seems to always fall far short of actual need for infrastructure improvements. New finance mechanisms – such as distributed infrastructure bond financing and enhanced infrastructure financing districts – should be supported and encouraged. State and local agencies should explore opportunities to implement these alternative funding strategies, while also striving to overcome existing barriers to smart public investments, such as those presented by Proposition 218 and Proposition 13 requirements.
- Chronically failing water systems place constant strain on local communities. While the state is providing technical assistance and investments to solve chronic water system failures, including consolidation when appropriate under AB 2050, many experts agree that additional support (and possibly stricter enforcement) is still needed.

Statewide Policies For Equitable Integration

In some instances, legislation is needed to make real statewide progress toward the equitable integration of water management and land-use planning. These six policy changes would significantly improve water and land-use integration, and are broadly supported by a wide range of water, land-use and equity experts:

1. Make collaborative, integrated planning a requirement for funding eligibility, and provide technical assistance and decision-support tools for integration in state grant projects.
2. Require alignment of county and city zoning and land use plans with all water management plans, similarly to how fire and flood risks were added to the Safety Element under AB 2140. The state should also consider a new fire bill to integrate fire standards across the entire wildlands-urban interface.
3. Revise General Plan requirements to include analysis of water-supply reliability and vulnerability in the adaptation section, developed in close collaboration with local water agencies. Alternatively, require water agencies to align water supply reliability and vulnerability analysess to local government jurisdictional boundaries for inclusion in Hazard Mitigation Plans and Groundwater Sustainability Plans.
4. Establish collaboration commissions at the watershed scale, in which department heads meet regularly to determine how to better integrate their planning and operations, and report regularly to the state.
5. Update “show me the water” legislation (SB 221 and SB 610) to require more comprehensive analysis when a municipality presents a new development plan (the water agency would explicitly state how it will provide the requested water, where it will come from, and at what cost). As a stopgap measure, grant the State Water Resources Control Board approval/denial authority over all new water systems.

6. Streamline new finance mechanisms for water infrastructure and affordability (such as SB 623, distributed infrastructure financing and enhanced infrastructure financing districts); and overcoming existing barriers to smart public investments (Prop 218 and Prop 13).

Community foundations and other engaged groups are encouraged to advocate for one or more of these policies.

Regional Opportunities & Recommendations

The statewide strategies, opportunities and recommendations described above can also be applied at the regional and local level to help improve integration. Some actions, however, are more effective when applied at a local or regional scale.

This section of the report highlights opportunities and recommendations unique to each region based on each region's diverse challenges, needs and strengths. Presented first are more detailed recommendations that apply to all California regions, followed by general opportunities and specific recommendations that would be most relevant or most impactful for each region.

Recommendations are presented according to rough orders of magnitude in terms of the cost to implement, denoted by one-, two- or three-dollar signs ($). Before implementing any of these recommendations, community foundations or other stakeholders would need to develop a more comprehensive implementation strategy with specific target outcomes, actions and budget.

Recommendations For All Regions

- **$ Advocate for water access and affordability** for community members facing disadvantages. This includes supporting potential legislation similar to the following past efforts:
  - SB 623, SB 844 and SB 845, which would have established a safe drinking-water fund.
  - SB 778, which incentivizes the consolidation of water agencies where appropriate.
  - SB 1000, which requires General Plans for regions that include disadvantaged communities to include an Environmental Justice Element.
- **$$ Provide venues for local leaders in both the water and land-use sectors to interact with one another; and provide resources (funding and/or staff time) to enable their participation.** Key participants include city and county planning and community development departments, COGs and local water agencies. Effective models can be found in the Sonoran Institute's "Growing Water Smart" program (https://sonoraninstitute.org/2017/rcw-program-workshops/) and the Local Government Commission's Alliance of Regional Collaboratives for Climate Adaptation (ARCCA) (arccacalifornia.org).
- **$$ Develop regional leaders in both the water and land-use sectors** and provide opportunities for them to interact with one another. Developing a coalition of informed and passionate local decision-makers will combat this short-sightedness. The Local Government Commission's Capital Region Dinner Forums and Water Education for Latino Leaders UnTapped Fellowship are effective leadership development and coalition-building models. The new Water Solutions Network is also promising.
- **$$ Build local political will and understanding around water and land-use integration by convening and educating local leaders.** Local elected officials in particular have excessive demands on their time and many complex issues competing for their attention.

Without the luxury of time to fully understanding complex issues, robust planning documents and policies to ensure resilience are easily bypassed in favor of quick fixes in the form of inequitable sprawl development and big infrastructure projects. Developing a coalition of informed and passionate local decision-makers can help combat this short-sightedness. The same models listed above for regional leadership development can be applied here.

San Francisco Regional Opportunities And Recommendations

OPPORTUNITIES

The San Francisco region has several successful multi-jurisdictional collaboratives, such as the Bay Area Water Supply and Conservation Agency and the San Francisco IRWM, that can be leveraged to increase water and land-use integration. Since this significant institutional infrastructure already exists, precious capacity and resources should be used to support and engage in these groups.

The San Francisco region also has a unique opportunity to discover new and exciting water conservation and efficiency solutions as a hub of advanced technology. Imagine H2O, an international startup accelerator founded in 2008 and based in San Francisco, provides early-stage water startups with introductions to investors, potential partners, product users and mentors throughout the early days of their operations to support their quest to solve water challenges. Maximizing local water supply, such as groundwater, seawater and surface water, through technology and innovation, especially for new property development, is well within reach for this tech hub.

Another crucial opportunity in the region is the high cost of living. Much is made of the region's lack of affordable housing (one of the most expensive housing markets in the country), and the high cost of water to communities is an additional financial concern for residents. Equitable water pricing and housing-affordability strategies such as low-income rate assistance and income-based rent structures will greatly assist overburdened residents in the region.

RECOMMENDATIONS

- **$$$** 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. Excellent models include the Governor's Initiative AmeriCorps program CivicSpark; the Eastern Municipal Water District's Youth Ecology Corps, and the Fresno Economic Opportunities Commission's Local Conservation Corps.

Silicon Valley Regional Opportunities And Recommendations

OPPORTUNITIES

The Silicon Valley region also has the opportunity to leverage existing institutional infrastructure such as regional collaboratives and integration-focused nonprofits organizations and community service agencies. Being neighbors to the San Francisco region allows them to participate in collaborative initiatives such as the Bay Area Water Supply and Conservation Agency and the San Francisco IRWM. The City/County Association of Governments of San Mateo County also works on several environmental issues, including housing and transportation. They encourage cities and counties to collaborate, and even though there isn't much collaboration between water and planning professionals yet, they are well-placed and well-suited to lead the way toward more integrated planning.

Public transportation options in the Silicon Valley region are too few, and not enough residents take advantage of these

systems. Improving convenient, affordable transportation options that allow people to move across the region more efficiently will improve overall equity and foster more integrated planning, reduce traffic congestion, and encourage smart growth.

Like the San Francisco region, the Silicon Valley region is a hub of technology and innovation. Silicon Valley can encourage progressive research and development of technologies for water conservation. Utility and water-conservation experts can work with technologists and entrepreneurs to develop a wide range of different types of solutions. Silicon Valley investments could draw more attention to water and energy conservation and the changing business models of utility companies, and lead to real change in the energy sector.

RECOMMENDATIONS

- **$** Work with jurisdictions in Santa Clara County to **implement the countywide climate-adaptation guidebook** 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.
- **$$$** 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. Good models include the Governor's Initiative AmeriCorps program CivicSpark, the Eastern Municipal Water District's Youth Ecology Corps, and the Fresno Economic Opportunities Commission's Local Conservation Corps.

Central Valley Regional Opportunities And Recommendations

OPPORTUNITIES

Multi-benefit projects can bring better coordination and integration to the Central Valley region, where there are so many different interest groups – from cities and counties to environmental-justice and agriculture coalitions. Multi-benefit projects can bring traditionally competitive groups together around a shared vision. For example, some Central Valley farmers use on-farm flooding for groundwater recharge, which is significantly more cost-effective than dedicated groundwater basins – making this a cost-saving strategy for many farmers.

Along with more access to multi-benefit projects, strong partnerships and effective community engagement efforts are required for project implementation and long-term monitoring and sustainability. Engaging all affected and interested communities in the region will foster innovative and integrated solutions to water and land use by using the historical and institutional knowledge of residents who have been living on the land for many generations.

Workforce development in the form of job training and education programs emphasizing collaboration skills will prepare the workforce for more integration between the water and land use sectors. Improvements and investment in Central Valley communities has the potential to displace current residents. Investment in the people and anti-displacement policies should always accompany investment in the infrastructure.

Compliance with the Sustainable Groundwater Management Act provides a perfect opportunity to integrate groundwater management with future land use decisions. The act can be a wonderful tool for

integration if planners, water managers and residents convene to consider the potential opportunities. In particular, the required creation of a Groundwater Sustainability Agency can create a bridge between other agencies in the region.

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 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.

Los Angeles Regional Opportunities And Recommendations

OPPORTUNITIES

The Los Angeles region has an immediate opportunity to capitalize on potential local legislation. In November 2018, Los Angeles County residents will vote on a proposed property tax that would fund stormwater capture, treatment and infiltration – dubbed the "Safe Clean Water Program." Passing the stormwater fee will catalyze integrated multi-benefit projects and provide a steady revenue stream for necessary operations and maintenance. The initiative could help protect creeks and streams, build parks, liven up concrete landscapes, and create green space for the community.

The Los Angeles region possesses tremendous political power, as well as institutions with deep technical expertise and capacity. Its leaders have an opportunity to catalyze cross-regional and inter-disciplinary partnerships to advance integration. Implementing the human right to water and addressing housing affordability are the two most pressing issues requiring significant political power.

Cities in the Los Angeles region have an opportunity to ensure equitable, water-smart development through stronger incentives and constraints within their general plans and zoning codes. Similar to Measure JJJ, cities can provide generous financial and process incentives for priority redevelopment and infill areas, affordability, aggressive permeability and on-site stormwater capture and reuse, highly water-efficient buildings and other positive features.

RECOMMENDATIONS

- **$$$ Invest in grassroots organizing for self–advocacy** to provide opportunities for the lowest-income, most-vulnerable communities to have a real voice in planning processes. This will require deep engagement to educate the community about the value of integrating water management and land-use planning, while also teaching political engagement and self-advocacy skills. The Community Water Center and Self Help Enterprises provide successful models for building local capacity to ensure equity in decision-making.

San Diego Regional Opportunities And Recommendations

OPPORTUNITIES

The San Diego region has some excellent planning documents, especially the City of San Diego's General Plan update, the Climate Adaptation Plan, the IRWM Plan and the Habitat Conservation Plan. These plans represent a significant opportunity to ensure regional resilience by holding local jurisdictions accountable to implementing them. A local measure proposed in San Diego would have required a public vote to approve any proposed amendments that would change the General Plan or increase density in undeveloped areas of the county did not make it on the November 2018 ballot. This would have been a strong mechanism for the community to better hold its leaders accountable.

SANDAG's technical working group is an ideal venue for the region's planners to convene, share ideas, and potentially converge around a more resilient shared vision for the region's water and land use. Similarly, San Diego Coastkeeper is convening the heads of the city's water and planning departments to align decision-making.

Many San Diego residents share an interest in open space and natural habitats. Leveraging these shared principles provides an opportunity to engage and educate the community about the value and importance of integrating water management and land-use planning.

RECOMMENDATIONS

- **$** Advocate for strong, local legislation that promotes affordable, efficient and anti–sprawl development and integrated water management. This includes ensuring

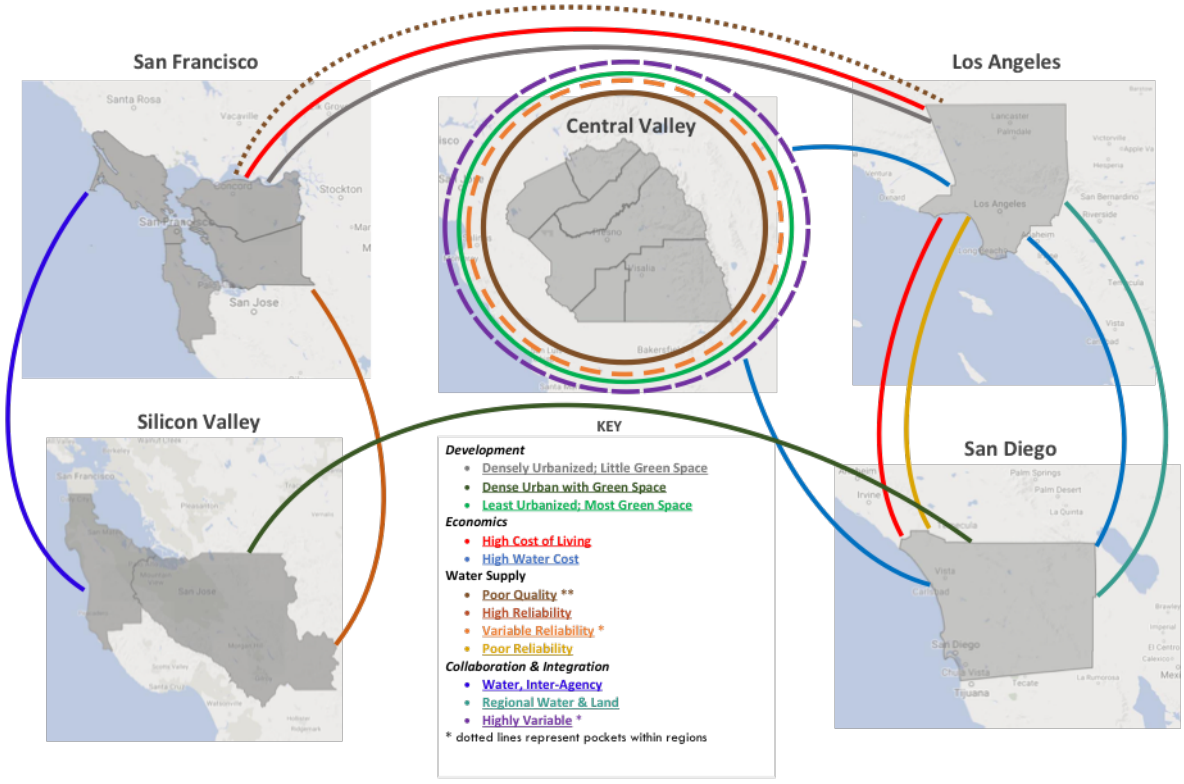


Figure 4: Commonalities across regions

equitable local implementation of the new Water Use Efficiency Standards (AB 1668). Facilitating equitable local water agency consolidation through SB 778 will also support long-term integration and alignment. The San Diego Region can ensure a sustainable water future through its land use decision–making.

- **$$$ Invest in existing integrated planning efforts** (such as SANDAG's regional planning technical working group, San Diego County IRWM and the San Diego Climate Action Plan); and ensure plans are implemented. The Sonoran Institute's "Growing Water Smart" program is an excellent model for bringing multiple jurisdictions through the integrated planning and implementation process. If an unbiased third–party (non–advocacy) organization tracks plan implementation through metrics and communicates key findings to community stakeholders, jurisdictions will also be held more accountable for their decisions.

IX. BRINGING WATER AND LAND-USE TOGETHER: HOW TO MAKE IT HAPPEN

California is extremely diverse. Each of the five regions represented in this study has its own unique geography, economy, culture and politics, and each area faces its own unique challenges with solutions that work best for it.

California infrastructure varies by region, as does their primary water supply. Yet, each region is working within the same system of state laws and regulations, and dependent on the same statewide hydrologic system. Each region has its own unique microclimate, which will influence their vulnerability to climate-change impacts, but the state as a whole is facing the same changing climate.

While priorities vary from region to region and strategies for overcoming challenges must be tailored to each unique region, the same common themes emerge regardless of the specific context in which we are striving to integrate water and land use. The general barriers to integration and the best practices for overcoming those barriers exist regardless of the specific issues we are trying to address through that integration.

Similarities And Common Ground Across Regions

Commonalities across regions can help unify efforts to integrate water and land use. The following factors that impact water management and land use planning are shared across all five regions – indeed, all of California.

Virtually every community in California is facing a housing crisis. They lack sufficient housing stock – especially affordable housing – to meet current demand and future growth projections. This is especially problematic from an equity perspective, as communities already facing disadvantages are even more vulnerable to increasing costs. These residents are displaced from their neighborhoods, and then must travel farther distances to their workplaces, thus increasing their transportation costs and putting greater stress on their health and well–being.

Communities statewide must also face mounting costs and potential disruption from failing infrastructure. Years of deferred maintenance and lack of investment at the local, regional and state level have left us with a $500-billion price tag statewide. Regional and local agencies can reduce costs and service disruption by coordinating infrastructure investment across sectors.

California is made up of thousands of jurisdictions and special-purpose agencies. Various policy and cultural factors contributed over the years to the vast web of overlapping and often misaligned governance structures, the result of which is inefficiency, complexity and an over–abundance of plans. This is a challenge for every region across the state.

California's regulatory and policy framework is equally complex to its governance system. Our regulatory process results in a plethora of single-purpose laws and policies that rarely align and sometimes counteract one another. This lack of statewide regulatory and policy drivers for integration is a missed opportunity and a significant barrier across the state. A new guidance document, Creating Sustainable Communities and Landscapes[21], can help local communities overcome this challenge

In our increasingly busy and distracted society, Californians' attention and interests are divided among many priorities. It is easier to rally support around more seemingly urgent issues than the concept of water and land-use integration. The difficulty in illustrating the importance of integration results in a lack of local and statewide leadership or public interest in the issue.

Major Variations Between Regions

Water and land-use integration efforts must be tailored to the specific needs and priorities of each region – no single approach will succeed in every region. The following are important distinctions between regions that will impact local water and land-use integration.

Density

The San Francisco and Los Angeles regions are largely built out, with less open space for green infrastructure or additional development. Communities in these regions are challenged to address population growth and increased housing needs within their existing footprint.

The Silicon Valley and San Diego regions are relatively built out, but do still have large swaths of open space available for green infrastructure. These regions are also less densely populated than San Francisco and Los Angeles, and thus can increase housing stock within their existing growth boundaries.

The Central Valley is the least densely developed region and has the most open space. This provides an opportunity for coordinated planning and green infrastructure, and a risk for continued sprawl and patchwork development.

Cost Of Living

Costs vary greatly by region. The overall cost of living is higher in coastal regions than in communities inland, and highest in the Los Angeles, San Francisco and Silicon Valley regions. The overall size of the regional economy, and by extension the region's ability to bear the burden of infrastructure investments, correlates with its cost of living.

Water costs are much higher in Southern California (Los Angeles and San Diego regions) than Northern California (San Francisco and Silicon Valley regions), regardless of the size of the local economy. Overall cost of living is much lower in the Central Valley, but its water costs are relatively high, and the region's smaller economy is overburdened by the need for infrastructure investment.

Water Supply

Drinking water quality is the primary issue in the Central Valley, but is much less of a problem in the other four regions. Pockets of the San Francisco and Los Angeles regions face drinking water quality issues as well, but these are caused by local infrastructure needs, rather than the water supply itself.

Water supply reliability is a major issue in the Los Angeles and San Diego regions, where local waters sources are extremely limited. Costs for importing and treating water are also higher

in these regions than the others. This is less of an issue in the San Francisco and Silicon Valley regions, where a diversified water portfolio increases supply reliability. The Central Valley's water supply reliability is more nuanced than the others. While the region is relatively "water rich," its agriculture-driven economy is highly water dependent and more vulnerable to changes in water supply. An overreliance on groundwater diminishes local water supply and creates competition between demand for residential water use and water for agricultural irrigation.

Coordinated Planning And Integration

Water agencies in the San Francisco and Silicon Valley regions are collaborating more than elsewhere in the state, but these regions are not coordinating with local land-use planning.

The Los Angeles and San Diego regions are integrating water management and land-use planning at the broader regional scale more than other regions, but not at the local level.

Coordination between water management and land-use planning varies greatly from community to community in the Central Valley, with very little regional collaboration.

Greatest Needs Across The State

Despite the variation among regions, several key needs persist statewide. Since water and land use are intertwined, the decisions made about each must consider the other. The question of inequity adds another complex factor to the equation. Since local government are often the ones making the decisions that affect water and land use, their role is essential to ensuring integration.

California's strong political preference for local control can result in misalignment with state priorities. In the absence of regulation or statewide guidance, local communities have little incentive to pursue equitable water and land-use integration. Local communities consequently lack the capacity to push for integration.

Coordination is further complicated by the sheer number of local and regional agencies. California has 58 counties, 482 municipalities and more than 5,000 water-related agencies. Overlapping jurisdiction and conflicting priorities significantly inhibit integration. Incentivizing leaders to coordinate with another and supporting local leaders who act as champions of integration will encourage the breaking down of these barriers. Aligning institutions or consolidating when appropriate can also create opportunities for integration.

Entities throughout the state must make these decisions within the confines of existing resources. This includes natural resources as well as the built infrastructure, which can be used to increase the integration of water and land use. Protecting the available resources to ensure their sustainability is a key factor when integrating water management decisions with land-use planning. To accommodate for these limitations, water agencies should be encouraging water use efficiency and conservation through incentives. On the land use side, local entities should be pushing for infill development using smart growth principles to limit sprawling, patchwork development.

Despite the well-recognized benefits of collaborative and integrated planning, it is hard work. Collaboration is time and resource intensive, requiring significant investment in relationship-building to garner trust between agencies. Integrating across sectors is complicated and requires vulnerability. No one is an expert in everything – that's why we need representatives from multiple sectors to rely on one another to achieve the desired results. Overcoming competing priorities to achieve collaboration requires a serious shift in institutional culture and perspective.

This shared mindset can be achieved through guidance documents and well-publicized best practices that are provided to all sectors for equitable integration of water and land use. This requires rigorous education and outreach with local elected officials, agency leads and the public. Through expanded engagement efforts, integration can become the new "norm" and the accepted approach to decision-making for both water management and land use planning.

Because funding is always an issue in both water management and land-use planning, we need to integrate both. While other challenges are important, the lack of sufficient funding is a consistent, primary barrier that needs to be overcome to adequately address the inequities and lack of integration currently occurring in both sectors. Tangible ways to secure funding include investing subsidies in disadvantaged communities to ensure access to safe, reliable and affordable drinking water. Similarly, in land use, developers would need to be incentivized to build affordable housing that considers clean, safe, reliable and affordable water supply.

Immediate Next Steps

The needs, challenges, opportunities, strategies and recommendations laid out in this report may seem daunting. Achieving equitable integration of water and land use is an ambitious goal, and will take many years of active engagement to reach. The following summary of small steps lays out various stakeholders can take – starting now – to advance this effort.

What The State Can Do

The State of California, its executive leadership and its many agencies and departments, has tremendous power and resources to bear on ensuring equity in integrating water and land use. The State could take these useful actions immediately, without needing new legislation:

1. **Review all existing and upcoming state-funded programs** for opportunities to prioritize integrated planning and multisolving projects developed at local scales with robust community engagement. This can be accomplished by incorporating collaboration and community engagement criteria in all funding eligibility guidelines.

2. **Create a framework and best practices for water/land-use integration**, following a similar process undertaken to develop the General Plan guidelines and Tribal consultation policy guidelines. The framework could be incorporated into the General Plan guidelines to better contextualize water and land use. At the very least, this guidance or framework should include a basic set of overarching "integration" principles applicable to all regions and agencies, as well as specific guidance about which agencies, planning processes and the types of projects are best suited for integration. More robust guidance could include regional analysis and process outline for achieving integration at various scales.

3. **Provide guidance for regional alignment in planning and housing development** to enable development of cost-effective, sustainable, equitable projects that integrate water and land use. This should include technical assistance to help local jurisdictions conduct a full analysis of their development codes and regulations with the goal of integrating and streamlining their permitting processes. Any permit streamlining should ensure equitable and sustainable distribution of increased housing and population growth, based on distributing density in accordance with available local resources and existing local context.

4. **Evaluate all state level regulations that govern water management and land-use planning** and establish "umbrella" or "programmatic" permitting for multisolving projects that integrate water and land use. This approach has been highly successful with CEQA permitting programs for habitat-protection and ecosystem-restoration projects.

5. **Develop a comprehensive ecosystem services and groundwater recharge agenda** for state-managed lands and state-funded projects on non-state managed lands. The Department of Water Resources has already created guidance on measuring ecosystem services, through the California Water Plan process, and some guidance on groundwater recharge through their Sustainable Groundwater Management Act implementation team. The Department of Water Resources, the California Fish and Wildlife Service, California State Parks and the State Water Board should work together on a comprehensive approach to ecosystem services and groundwater recharge. This approach should include a statewide manual with refined best management practices, decision-making support tools and pilot demonstration projects.

What Foundations Can Do

Community foundations can play a significant role in improving water and land-use integration. Community foundations as independent neutral parties are ideal conveners for bringing disparate groups together. As a voice for local communities, community foundations are well equipped to engage in the political arena and advocate for necessary change on behalf of their constituents.

Community foundations as funders can leverage necessary investment in local efforts directly within the communities they serve.

The following recommendations describe next steps for community foundations, grouped into three overarching themes: maintaining collective momentum; advocating for state level policy change; and investing in local integration.

MAINTAIN COLLECTIVE MOMENTUM

The Community Foundation Water Initiative is a successful model of coordinated investment and network development. By working together as a cohort, the Initiative built the group's collective capacity to address interconnected state-level issues while also building individual capacity of each participating foundation to support their own local water-related initiatives. This momentum is just building, and should be nurtured for further impact.

- Current cohort members should continue meeting together and working on collective water/land-use integration projects.
- Community Foundation Water Initiative should share their work broadly and recruit additional California funders to join the network.
- The Community Foundation Water Initiative should also engage with the national Water Funder Initiative to pursue coordination and broader impact.
- Community Foundation Water Initiative members should work together to organize and host convenings of regional thought leaders to share the findings of this report and develop tangible actions for improving integration within their regions.
- The Community Foundation Water Initiative should also develop a coalition of water/land-use integration advocates from a broad range of perspectives, to help continue advancing identified strategies.

ADVOCATING FOR STATE LEVEL POLICY CHANGE

Community foundations can advance water and land-use integration by advocating for changes in state-level policies. Many recommendations surfaced during this research; the six listed in the "Statewide Policies to Push For" section are relatively achievable and would have a significant impact toward equitable integration. The Community Foundation Water Initiative cohort should choose one to three of those policies to develop and launch an advocacy campaign to advance those policy initiatives.

INVESTING IN LOCAL INTEGRATION

Community foundations as grant makers and engagement experts can invest in local integration via leadership development, community education, technical assistance, and project funding. Community foundations can also fund legislation that mandates integrated data sharing, consistency, and management across agencies. The Community Foundation Water Initiative cohort should choose one of the following strategies to work on collectively – through coordinated, statewide initiatives implemented locally within their regions. Once a strategy is selected, the cohort should work with key advisors to develop a more specific implementation plan. Individual cohort members should also consider investing independently in the other strategies.

LEADERSHIP DEVELOPMENT

Community foundations can educate local policymakers about the importance of water and land-use integration, and can convene cohorts of local water and land use leaders to interact with one another. Leadership development should be conducted at the basin or watershed scale, as the first step to integrating water and land use is understanding where your water comes from. Leadership development should also include establishing a basic understanding of the water/land use nexus, shared understanding of one another's sectors (water knowledge for land-use planners; planning knowledge for water managers), as well as basic collaboration skills.

Next steps should include collectively exploring opportunities to collaborate and integrate water and land use in each region. Effective models include the Water Education for Latino Leaders (WELL) UnTapped fellowship program and the Local Government Commission's Association of Regional Climate Change Collaboratives (ARCCA).

COMMUNITY ENGAGEMENT AND EDUCATION

Community foundations can engage local community members and educate them about the value of integrating water management and land-use planning, while also teaching them political engagement and self–advocacy skills. As a cohort, the Community Foundation Water Initiative could invest in a shared statewide curriculum with regional variations, and simultaneously launch a collective community engagement campaign. Such a campaign will be most effective if centered around a specific local action or policy change. The Community Water Center, Self Help Enterprises, and Youth United for Community Action provide successful models for building local capacity to ensure equity in decision-making.

TECHNICAL ASSISTANCE TO FACILITATE INTEGRATED PLANNING

Community foundations can provide technical assistance to support water and land use integration in pilot communities through the "Growing Water Smart" community-assistance training program model. The program convenes multi–disciplinary teams from each participating jurisdiction, educates them about

water and land-use integration, facilitates local visioning and goal-setting, works through development of a tangible action plan, and then provides ongoing technical assistance during plan implementation.

Alternatively, foundations can build relationships directly with jurisdictions willing to improve integration and fund technical assistance providers to facilitate the cross-jurisdictional collaborative process. Effective models of local technical assistance include the Central Coast Low Impact Development Initiative for stormwater management and the CivicSpark AmeriCorps program.

PROJECTS THAT INTEGRATE WATER AND LAND USE

Community foundations as local grantmakers can provide competitive funding opportunities that require cross-jurisdictional water and land-use integration for project implementation. Similar to the recommendations above for state funding programs, community foundations should provide project funding that requires collaboration and integration of water and land use. For example, community foundations could fund joint efforts to advocate for legislation that would support collaborative green infrastructure projects. Los Angeles Measure W initiative is a successful example.

Stormwater green infrastructure projects are the most tangible and straightforward. Larger development projects, such as Candlestick Park and the Los Angeles County Stormwater Master Plan, will be costlier, but have greater impact.

The Community Foundation Water Initiative could launch a collective grant program (competitive or noncompetitive) to implement similar projects in each of their regions, such as multisolving through stormwater green infrastructure projects in local parks.

The Department of Water Resources Integrated Regional Water Management grant program and the State Water Board's Stormwater Resource Planning grants are successful examples of incentivizing collaboration.

What Other Stakeholders Can Do

The water-management and land-use planning sectors each rely on a wide range of actors to achieve their respective goals. These same actors – state and local agencies, NGOs and engaged community members – are necessary to achieve integration of the two sectors.

The following actions are efforts other stakeholders can take to continue making progress toward more equitable integration of water and land use.

LOCAL PUBLIC AGENCIES:

TAKE INITIATIVE TO START THE CONVERSATION. Public-agency staff with a mind toward integration should start regular conversations and ad hoc meetings with their counterparts in other departments, agencies, or even jurisdictions. Integration begins with opening up lines of communication and building relationships.

For example, San Diego CoastKeeper initiated an ad hoc coordination committee of city and county department heads who meet monthly to discuss planning and infrastructure. In Merced, the City's planning and water-conservation departments meet regularly, and are working closely with their county colleagues and local irrigation districts to prepare the region's Groundwater Sustainability Plan.

PRIORITIZING INFRASTRUCTURE INVESTMENTS THAT SUPPORT EXISTING COMMUNITIES. Local communities across California – especially low-income communities and communities of color – suffer from deferred maintenance of existing infrastructure.

Investing infrastructure and development dollars in these communities, rather than developing new communities, is more equitable and more sustainable. This can be accomplished by conducting an internal audit of existing infrastructure investment needs, scheduling and budgeting for them, and requiring more stringent review of project siting to evaluate alignment with general plans and regional Sustainable Communities Strategies and Regional Transportation Plans.

Local jurisdictions can also provide incentives – such as reducing uncertainties for developers for affordable housing projects, and streamlined permitting – for affordable-housing development that is located in priority development areas (for communities that have them) and consistent with both General Plans and Sustainable Community Strategies. The same applies for infill and redevelopment projects. These actions will help ensure equity, prevent environmental injustices, and minimize negative water and land-use impacts.

IMPLEMENT MULTISOLVING THROUGH STORMWATER GREEN-INFRASTRUCTURE PROJECTS.

Green infrastructure is the most tangible illustration of the water/land-use nexus. Projects can be implemented at all scales – from small pocket parks and street medians to large regional mixed-use spaces. Regardless of scale, projects can be used to educate the community (and other agencies) about water and land use; provide local green economy jobs and job training opportunities; and address a range of local infrastructure needs – such as multi-use public spaces, flood attenuation, water quality and groundwater recharge.

Larger development and redevelopment projects, such as Hunter's Point Shipyard and Candlestick Park in San Francisco provide more opportunity for collaboration and integration. Collaborative projects between multiple agencies and/or departments will yield the best results (municipal stormwater departments, parks departments, community development departments, transportation agencies, school districts, wastewater agencies, groundwater sustainability agencies and water supply agencies).

LEVERAGE THE SUSTAINABLE GROUNDWATER MANAGEMENT ACT.

New Groundwater Sustainability Agencies (GSA) have an incredible opportunity to improve water and land-use integration. The Sustainable Groundwater Management Act requires consideration of general plans in groundwater sustainability plans, and vice versa. SGMA gave any agency with land use authority eligibility to serve as a GSA, therefore creating an opportunity for water managers and land managers to be equals at the table. Despite this opportunity, many GSAs across the state were formed by existing water agencies, without land use agency representation. Communities will be far more resilient if GSAs, cities and counties proactively collaborate. These agencies should work together to identify and protect priority recharge areas, develop green-infrastructure projects that promote recharge, and conduct planning using shared data – especially growth projections and demand forecasting.

Groundwater Sustainability Agencies (and overdrafted basins operating under adjudications that are exempt from SGMA), cities and counties should also coordinate planning efforts with the metropolitan boundaries (areas of influence beyond jurisdictional boundaries), commute-sheds and Local Agency Formation Commissions of the communities relying on the basin's groundwater.

NGOS AND COMMUNITY MEMBERS

1. **Educate yourselves and others.** The first step in achieving integration is an educated populace that understands the value and importance of integrating water management and land use planning. NGOs should seek opportunities to learn more about water and land use integration themselves, and then share that knowledge with the public in the context of how water and land use decisions impact their communities, and how integration can improve conditions. Youth United for Community Action followed a "teach the teacher" model to first learn themselves, and then engage other community members in advocating for a safe, clean, affordable and reliable water supply. A similar model should be followed for water/land-use integration.

2. **Hold public agencies accountable.** City councilmembers, county commissioners, water agency board members and state legislators are public servants, beholden to their constituents. It is up to the public to engage in the local political process – voice our concerns and share our priorities with these governing bodies. NGOs and community members should engage in planning processes (such as general plans, groundwater sustainability plans and sustainable community strategies) to advocate for better coordination between agencies and more equitable distribution of investment in infrastructure.

3. **Advocate for state policies that ensure integrated planning.** State investments should be directed to multisolving via projects developed at local scales with robust community engagement. Specific policy recommendations to advance water and land use integration are outlined above. NGOs should actively engage state agencies and legislators to push for such policies, and community members should support such policies.

4. **Host or sponsor local pilot projects.** NGOs can serve as important partners for local governments to apply for grant funding and carry out projects for which public agencies lack the capacity or expertise. With their more broad, holistic perspective, NGOs can guide project planning and implementation to ensure equity, collaboration, and integration throughout. NGOs can also help publicize the positive outcomes of integrated projects, thus encouraging other communities to do the same. One particular area ripe for local project participation is multisolving solutions to stormwater compliance, especially in communities with stormwater fees, so as to ensure that public investments provide the greatest range of benefits to the communities financing that investment.

Signs Of Hope

California acknowledges water and sanitation as a basic human right. Ensuring access to clean, safe, reliable, and affordable water and wastewater services for all Californians must be the primary objective of any effort to integrate water management and land-use planning.

Access to affordable housing and transportation is inherently interconnected with access to drinking water and sanitation services. Infrastructure investments (gray or green), agency consolidation, future development patterns, policy and financing mechanisms that encourage integration must include considerations of their positive and negative impacts on all community members, especially those already facing disadvantages. Costs and benefits should be distributed equitably. Affordability evaluations must include not only costs, but also the ability of community members to pay. Those community members who already face disadvantages and are historically underrepresented in decision-making must be effectively engaged to ensure

their needs are met.

Despite the many challenges and barriers to integration, opportunities abound in the Golden State. Policymakers and practitioners are beginning to acknowledge that something needs to change about our state's water management and land-use planning.

Establishing the Integrated Regional Water Management program in 2005 and creating Metropolitan Planning Organizations to develop Sustainable Communities Strategies in 2008 (via SB 375) were two early steps toward integration. A beneficial next step would be for Local Agency Formation Commissions to align municipal service review (MSR) data and information with Sustainable Communities Strategies, and vice versa.

The 2014 Sustainable Groundwater Management Act (SGMA) is another step toward integrating water and land use. The 2015 requirement to include climate adaptation in General Plan safety element updates (SB 379) is yet another step toward integration. The California Economic Summit three 1 Million Challenges integrate housing, jobs and water as critical to ensuring a vibrant future for California.

Some coordinated planning and integration is already happening at both the state and regional scale:

- The California State University System recently submitted a proposal for evaluating opportunities to integrate water and land use across their campuses.
- The Governor's Office of Planning and Research is considering guidance for integrating water into city and county general plans.
- Metropolitan Planning Organizations (MPOs) and Councils of Governments (COGs) are already integrating climate resilience, housing and transportation in their Sustainable Community Strategies.
- Regional water collaboratives in the San Francisco and Silicon Valley regions unite water retailers (BAWSCA) and wastewater agencies (BAWA), while Plan Bay Area takes a coordinated look at regional planning for future growth.
- Central Valley COGs have been mapping ecosystem services of working lands through their San Joaquin Valley Greenprint initiative.
- A new NGO, Fresnoland, is working to integrate water and land-use planning within the Central Valley's largest city.
- In the Los Angeles region, the city and county are working together on a massive stormwater capture, treatment, and infiltration project that integrates water management with multisolving land-use planning.
- The San Diego Integrated Regional Water Management Plan is coordinating various aspects of water management with land-use planning across the region. Community foundations and other stakeholders can learn from and leverage these existing efforts to link and expand integration efforts regionally and across the state.

Successful models exist for integrating water management and land-use planning, from both within and outside California. In Florida, which struggles with many of the same water and land-use challenges as California, the state completely restructured its water governance system around watershed boundaries. Each water-management district sets its regional water budget and approves development projects based on available water supply and infrastructure capacity. Australia followed a similar approach amid its historic Millennium Drought, but took it one drastic step further – restructuring the island nation's entire water-rights structure.

Sonoma County and the Sonoma County Water Agency share both geographic boundaries and a board of supervisors. This shared governance and authority over both water and land-use planning encourages integrated planning and management.

California's community foundations, NGOs and advocacy groups have proven experience in building partnerships and developing political will to address local challenges. Interested stakeholders can leverage these existing skills to foster water and land-use integration.

The most effective strategy will be a three-pronged approach: (1) engaging local elected officials (city councils and county commissions) whom have the local decision-making authority, using state government influence through regulatory frameworks; (2) educate and empower local community members to advocate for better integration; and (3) provide funding for water and land-use practitioners to incentivize the difficult work of collaborating and integrating their operations.

California is at a critical juncture. Intense pressure for further development, shifting hydrologic and ecological conditions, and a new administration present both significant risk and opportunity. We as a state and within each region can either "get it right" by equitably integrating water and land use, leading to a more resilient and vibrant future for all, or "get it wrong" by maintaining the status quo, and perpetuating historic inequities and exacerbating the negative impacts of both climate change and sprawl development. Community foundations as leaders, conveners, and funders have a unique opportunity to impact real and lasting change. The recommendations in this report provide the first steps for doing so.

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