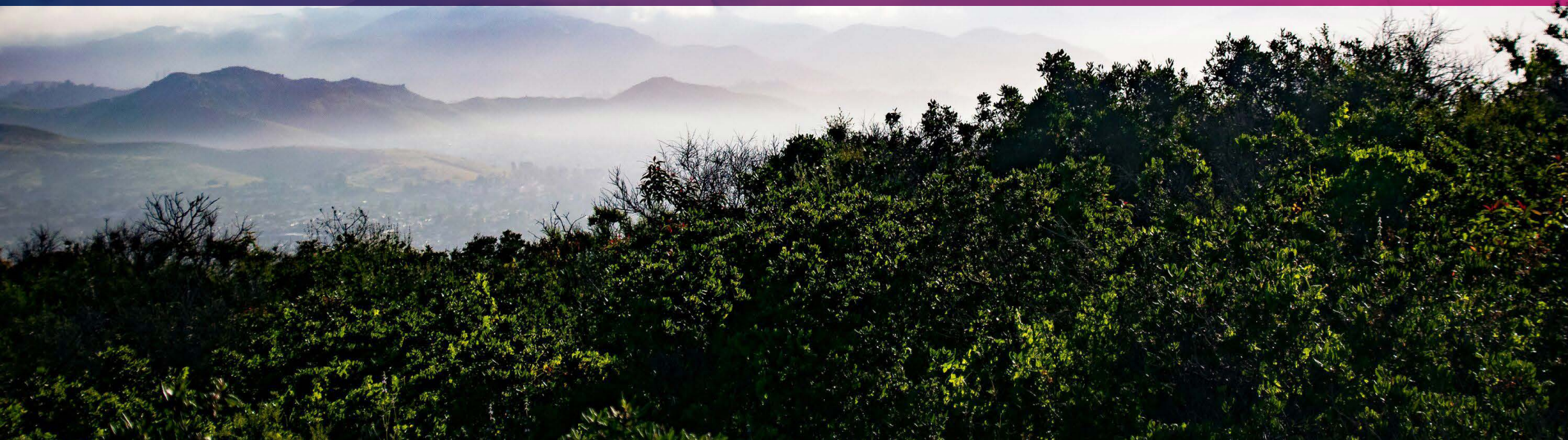




# Regional Resilience Framework Tools

## Existing Conditions Report



**DECEMBER 2023**

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# GLOSSARY

**Action:** A proceeding pursuant to the ordinance in which the legal rights, duties, or privileges of specific parties are determined, and any appeal or review of such proceeding, pursuant to the provisions of the ordinance.

**Adaptive Capacity:** The ability to adjust to potential damage, to take advantage of opportunities, or to respond to consequences.

**Area of High Heat Risk:** Census tracts in which the heat health action index score is in the top quartile of the county.

**Climate Equity:** The goal of addressing the impacts of climate change, which are felt unequally, by identifying who is most impacted and taking action to limit its effects.

**Climate Change Adaptation:** The adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, and which moderates harm or exploits beneficial opportunities.

**Climate Change Hazard:** An event or condition with the potential to cause fatalities, injuries, property damage, infrastructure damage, agricultural loss, damage to

<sup>1</sup> California Office of Environmental Health Hazard Assessment (OEHHA). “SB535 Disadvantages Communities.” Accessed September 12, 2023: <https://oehha.ca.gov/calenviro-screen/sb535>

the environment, etc. created by the effects of the local climate.

**Community of Concern:** Historically underserved and underrepresented communities. This definition overlaps with that of disadvantaged communities.

**Disadvantaged Community (DAC):** Places that meet one or more of the following criteria: (1) census tracts with the highest 25% of overall scores in CalEnviroScreen, (2) census tracts without an overall score due to data gaps that show the highest 5% of cumulative pollution burden scores, (3) census tracts identified as disadvantaged in the 2017 DAC designation, or (4) lands under control of federal recognized Tribes, which may establish an area of land not represented on California Environmental Protection Agency’s (CalEPA’s) DAC map through consultation with CalEPA.<sup>1</sup>

**Exposure:** The presence of people, infrastructure, natural systems, and economic, cultural, and social resources in areas that are subject to harm.

**High-Emissions Scenario (RCP 8.5):** Is a high-emissions scenario that assumes continued global greenhouse gas (GHG) emissions growth until 2100, when GHG emissions stabilize at rates three times higher than emissions levels in the year 2000.

**Medium-Emissions Scenario (RCP 4.5):** Is a low emissions scenario that assumes global GHG emissions increase until 2050 and then steadily decrease to 2000 levels over 30 years, where emissions stabilize.

**Monitoring:** The regular and ongoing tracking of the status or condition of a program, project, policy, or strategy to measure progress or change over time.

**Policy:** A general rule for action focused on a specific issue, derived from more general goals.

**Resilience:** The capacity of any entity—an individual, a community, an organization, or a natural system—to prepare for disruptions, to recover from shocks and stresses, and to adapt and grow from a disruptive experience.

**Strategy:** An action, activity, or program carried out in response to adopted policy to achieve a specific goal or objective. Policies and programs establish the “who,” “how,” and “when” for carrying out the “what” and “where” of goals and objectives.

<sup>2</sup> SANDAG. “ArcGis REST Services Directory: Planning/PLN TransitPriorityArea (MapServer).” Accessed September 12, 2023: [https://webmaps.sandiego.gov/arcgis/rest/services/Plan-ninwg/PLN\\_TransitPriorityArea/MapServer#:-text=In%20accordance%20with%20SB%20743%2C%20%E2%80%9CTransit%20Priority%20Areas%E2%80%9D.Title%203%20of%20the%20Code%20of%20Federal%20Regulations.%E2%80%9D](https://webmaps.sandiego.gov/arcgis/rest/services/Plan-ninwg/PLN_TransitPriorityArea/MapServer#:-text=In%20accordance%20with%20SB%20743%2C%20%E2%80%9CTransit%20Priority%20Areas%E2%80%9D.Title%203%20of%20the%20Code%20of%20Federal%20Regulations.%E2%80%9D)

<sup>3</sup> These definitions are adapted from the Planner’s Dictionary (American Planning Association) and the California Adaptation Planning Guide (APG).



## EXECUTIVE SUMMARY

This existing conditions report summarizes the current status of climate adaptation and resilience planning among jurisdictions in the San Diego region, and identifies the tools and resources local jurisdictions need to advance this work. To assess existing conditions, the project team conducted a survey, met with stakeholders, and performed a document review of a variety of adaptation and resilience plans. The team evaluated the general depth and detail of all this information in context of the four phases outlined in the California Adaptation Planning Guide (APG; Phase 1 – Explore, Define, and Initiate; Phase 2 – Assess Vulnerability; Phase 3 – Define Adaptation Framework and Strategies; and Phase 4 – Implement, Monitor, Evaluate, and Adjust) and concluded that member agencies are excelling in Phases 1 and 3 but could use support in Phases 2 and 4. Many member agencies have completed Phase 2, but plans are still missing information about sensitive populations, critical assets, and current capacity. Additionally, many member agencies have not yet reached Phase 4. The project team found that the gaps in Phase 2 were best addressed by existing tools in the California APG, whereas the gaps in Phase 4 require new tools to be developed.

## INTRODUCTION

The San Diego Association of Governments (SANDAG) received Caltrans funding to develop a Regional Resilience Framework (Framework) to provide member agencies guidance to build resilience to climate change hazards in the region. SANDAG’s member agencies are encouraged to use the Framework to plan and prepare for the impacts of sea-level rise, extreme heat, increasingly frequent and damaging wildfires, more frequent and severe rain events, and other climate-related issues.

The purpose of this Existing Conditions Report is to determine the kinds of resources the Regional Resilience Framework should provide jurisdictions to support adaptation planning across the region. The Report highlights a need for guidance and tools to support implementation, monitoring, evaluation, and adjustment in the adaptation planning process (i.e., Phase 4 of the APG). Specifically, member agencies voiced concerns about lack of staff capacity and requested tools that facilitate proactive implementation of resilience projects, resource sharing, and cross-jurisdictional collaboration. The Framework aims to address these needs by offering the following resources:

### STORY MAP

The Story Map will be a user-friendly gateway to the Framework and adaptation planning. It will be an interactive online resource that presents how various pieces of the Framework work together in a visual format, defines the steps of the adaptation planning process, and provides an entry point for member agencies no matter their status in adaptation planning (i.e., conducting public outreach, completing a vulnerability assessment, drafting adaptation policies, etc.).

### RESILIENCE TOOLS

The Framework will offer a suite of tools to facilitate adaptation planning in any jurisdiction. These tools will target different yet connected needs for adaptation planning. Member agencies will be able to access and adapt these tools to suit local conditions and needs.

### REGIONAL CONTEXT

SANDAG serves both as a metropolitan planning organization and a council of governments. SANDAG works with local governments and organizations to address regional issues, including transportation, air

quality, clean energy, economic development, goods movement, public health, public safety, and housing, and to make sure that these services and benefits are distributed equitably.

SANDAG is governed by a Board of Directors made up of elected officials from the region's 18 city councils and the County Board of Supervisors, who represent communities across the region. Representatives from Imperial County, the California Department of Transportation (Caltrans), the U.S. Department of Defense, the Port of San Diego, the San Diego County Water Authority, the San Diego Metropolitan Transit System (MTS), the San Diego County Regional Airport Authority, the North County Transit District (NCTD), the Southern California Tribal Chairmen's Association, and Mexico serve on the Board of Directors as non-voting advisory members.

The San Diego region has diverse landscapes, politics, economies, languages, and cultures. To the west is the Pacific Ocean, and to the the east lies mountains, the Anza-Borrego Desert, and Imperial County's agricultural fields. The international border with Mexico borders the south, and Camp Pendleton as well as Orange and Riverside Counties comprise the northern boundary. In the San Diego region, there are 18 independent sovereign tribal nations with jurisdiction over 19 reservations, the most in any county in the United States. The region

also has the largest number of military personnel in the country. In addition to Camp Pendleton, bases include Miramar Marine Corps Air Station, Marine Corps Recruit Depot San Diego, North Island Naval Base, Naval Base Point Loma , Naval Base San Diego, and US Coast Guard Station San Diego.

More than 3.2 million people reside in the San Diego region, and that number is expected to grow to greater than 4.2 million by 2050. Part of the region's challenge is to accommodate this population growth while preserving the natural environment and building resilience to climate change.

**Adaptation planning develops actions to manage risks and reduce vulnerabilities to the impacts of climate change. This type of planning focuses on how to best adapt to the anticipated rise in sea levels, increases in temperature, and the elevated risk of wildfires. Adaptation planning builds capacity to better prepare San Diego communities for these impacts.**

**(SANDAG)**

## BACKGROUND

SANDAG works with local governments to help communities, local and regional economies, natural resources, and recreational spaces endure, recover, and thrive in response to impacts of ongoing climate change. SANDAG's regional perspective and climate expertise position it well to advocate, facilitate, and support local agencies to become more resilient to the changing climate. SANDAG recognizes the importance of a collaborative, transparent, and regional approach to adaptation planning because the hazards that threaten the San Diego region adhere to no jurisdictional boundaries.

Climate action in the region is already underway, led by local and county governments, the Port of San Diego, the San Diego County Regional Airport Authority, the San Diego County Water Authority, the Tijuana River Estuarine Research Reserve, and SANDAG. The County of San Diego plus all 18 cities in San Diego County have performed greenhouse gas emissions inventories; more than half of local governments have adopted or are in the process of adopting Climate Action Plans to reduce emissions and the Port of San Diego and the San Diego County Regional Airport Authority worked collaboratively to develop a sea level rise adaptation plan.

The San Diego County Water Authority is working with climate scientists to integrate climate change projections into the region's future water supply-and-demand planning; SANDAG has produced the regional Sustainable Communities Strategy with goals and strategies to reduce vehicle miles traveled among San Diego residents. Public agencies, San Diego Gas & Electric, academia, philanthropy, nonprofit organizations, and community leaders partnered to establish the San Diego Regional Climate Collaborative to facilitate collaboration among local leaders; among other climate action efforts.<sup>4</sup>

<sup>4</sup> Climate Education Partners. San Diego, 2050 is Calling. How will we answer? <https://catcher.sandiego.edu/items/usd/2050.pdf>

# 1

# Approach



## APPROACH

### DOCUMENT REVIEW

The project team reviewed all relevant adaptation and resilience documents to determine how well each plan addresses each phase. Adaptation and resilience are required in many hazard and natural resource management documents and rarely exist in one central adaptation plan. To assess local planning progress, the project team reviewed completed local general plan safety and environmental justice elements, climate action plans, and local coastal plans. Documents in progress are subject to change; however, progress to date should be captured in the survey and interview findings below. Adaptation and resilience are also required in local hazard mitigation plans. The San Diego region shares a county multi-hazard mitigation plan, which is currently being revised and therefore was not included in this assessment.

### SURVEY

Members of the ReCAP & Resilience stakeholder group, representing climate adaptation planners and implementors for SANDAG member agencies (see **Table 1**), were surveyed in Fall 2022. This survey held two purposes: first, it allowed the project team to hear where member agencies are in the process of climate adaptation planning; second, it built an understanding of what agencies need to better facilitate adaptation planning and

implementation in accordance with best practices. Survey questions were about adopted plans involving adaptation, their vulnerability assessments, depth of engagement, and implementation plans. It concluded with a long-answer question: “What support would be the most meaningful moving forward?” These survey responses set the stage for meaningful follow-up discussions.

**Table 1. ReCAP & Resilience Stakeholders**

|                      |                       |                        |                     |
|----------------------|-----------------------|------------------------|---------------------|
| City of Solana Beach | City of Carlsbad      | Port of San Diego      | City of La Mesa     |
| City of Oceanside    | City of National City | City of Coronado       | City of Chula Vista |
| City of Poway        | City of Encinitas     | City of El Cajon       | City of Escondido   |
| City of San Diego    | San Diego County      | City of Imperial Beach | City of Lemon Grove |
| City of Vista        | City of Del Mar       | City of San Marcos     | City of Santee      |

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## MEETING

This survey was followed by a stakeholder meeting where the same member agency stakeholders voiced their accomplishments and barriers to adaptation and resilience planning and expanded upon the survey responses. The meeting utilized three questions:

- (1) What best describes your adaptation planning progress?
- (2) Is there different progress based on the hazard?
- (3) What is your biggest barrier to adaptation planning?

This meeting setting allowed for conversations between member agencies that highlighted unique differences and, at times, built consensus on what is most needed to overcome barriers and facilitate more adaptation and resilience planning and implementation. Findings from this meeting are described in the next section.

# 2

## Gaps Analysis



# GAPS ANALYSIS

## DOCUMENT REVIEW RESULTS

By local general plans, action and adaptation plans, and local coastal plans, the project team was able to characterize the current state of adaptation planning in the region, which provided the basis for subsequently identifying gaps for moving forward toward more widespread and consistent adaptation planning. As shown in **Figures 1–4**, many adaptation plans are currently in progress and likely to address adaptation and resilience when adopted.

For completed general plan elements, Phases 2 (Assess Vulnerability) and 4 (Implement, Monitor, Evaluate, and Adjust) are only partially addressed or missing completely. For Phase 2, elements are often missing specific inventories of vulnerabilities, especially people. Environmental justice elements included fewer climate hazard policies than safety elements. This finding is not surprising as many member agencies include disproportionate effects of climate change in their safety element if they are updating both elements concurrently. Agencies with disadvantaged communities (DACs) should pay close attention to distribution of benefits in Phase 4 (Implementation). General plans often have a 20-year planning horizon and are implemented through the new design and development standards in the zoning code as well as the capital improvement program.

Climate action plans are widely adopted to address greenhouse gas mitigation and to support California Environmental Quality Act (CEQA) streamlining. Many climate action plans contain some adaptation and resilience planning but often do not meet the rigorous standards of the California APG. There is no legislative requirement to have a standalone adaptation and resilience plan, and only the City and County of San Diego have such plans. All coastal member agencies have completed a vulnerability assessment, most have completed an adaptation plan, and some are working through California Coastal Commission (CCC) policy review.

## SURVEY AND MEETING REVIEW RESULTS

To expand on the document review, the project team created a member agency survey and held a stakeholder meeting to identify specific challenges member agencies face in each phase. The findings of this review are summarized by phase below. The project team used these findings to determine new regional adaptation tools to be included in the Framework.

### Phase 1 – Explore, Define, and Initiate

All member agencies are either currently in Phase 1 or have been at some point in the last five years. Member agencies have adopted, or are in the process of adopting, plans that include climate resilience to varying degrees

**Figure 1: Number of Member Agency Safety Elements Including Climate Resilience**

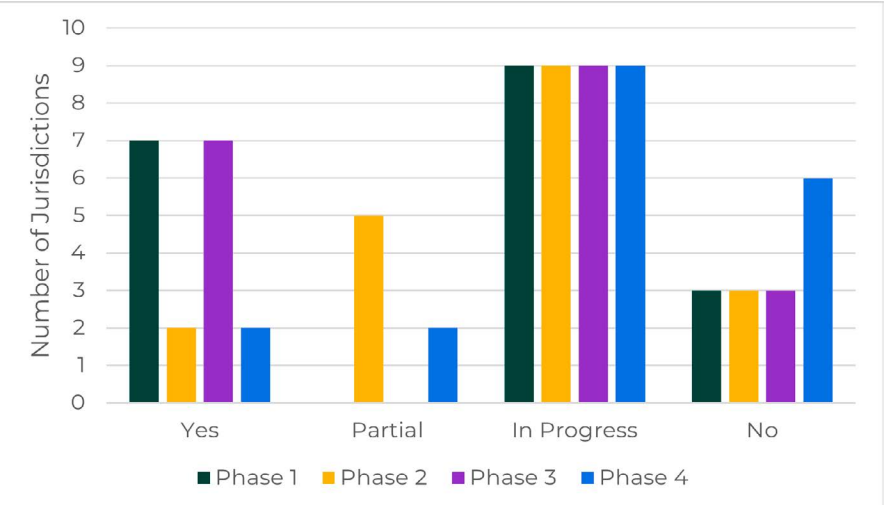


**Figure 2: Number of Member Agency Environmental Justice Elements Including Climate Resilience**

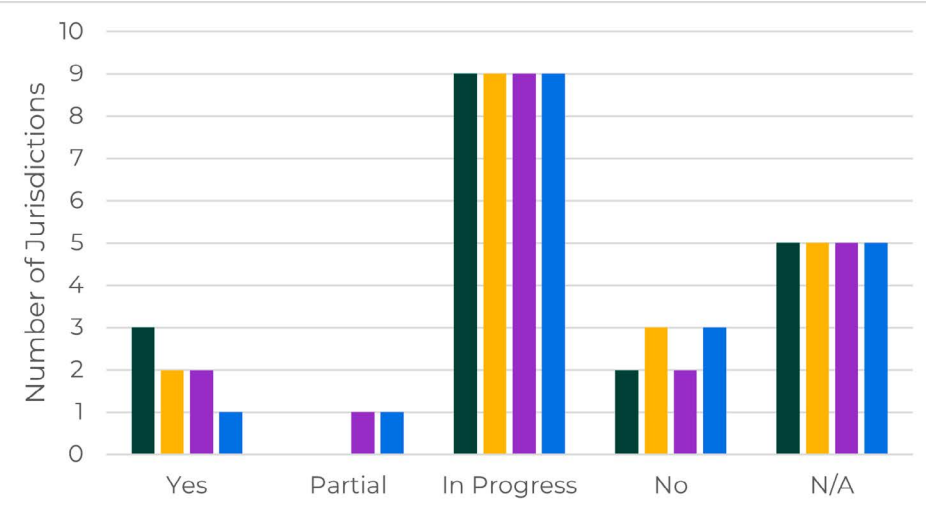


**Figure 3: Number of Member Agency Climate Action and Adaptation Plans Including Climate Resilience**

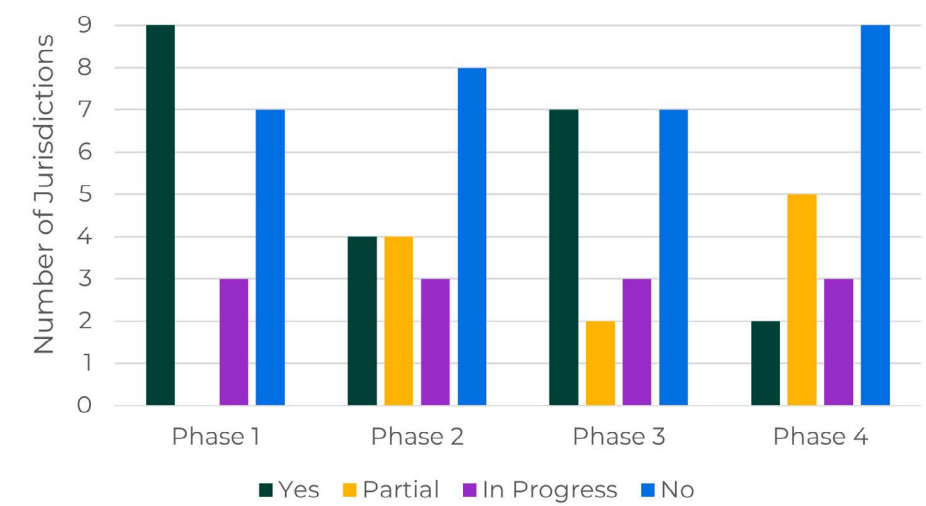
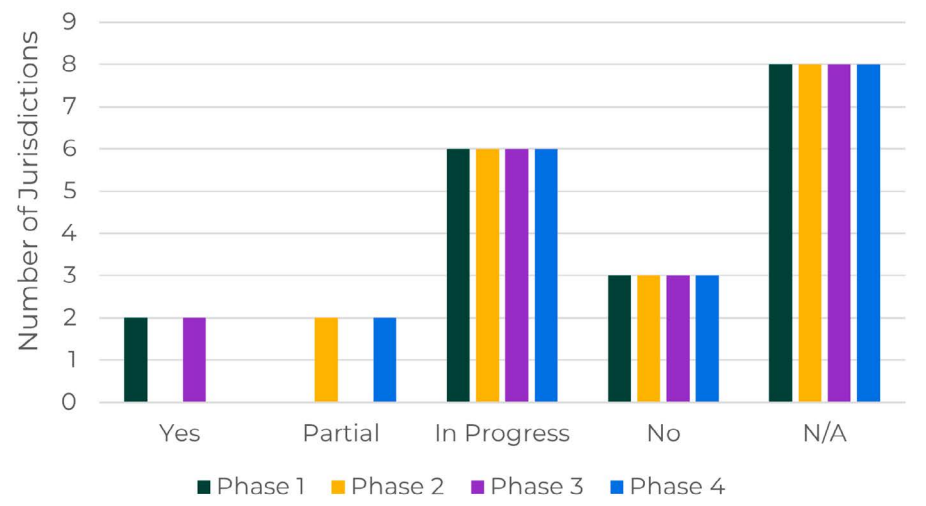


**Figure 4: Number of Member Agency Climate Action and Adaptation Plans Including Climate Resilience**



Notes: N/A refers to member agencies that do not have disadvantaged communities as defined by CalEnviroScreen and do not have an environmental justice element. Some member agencies do not have disadvantaged communities but do have environmental justice elements.

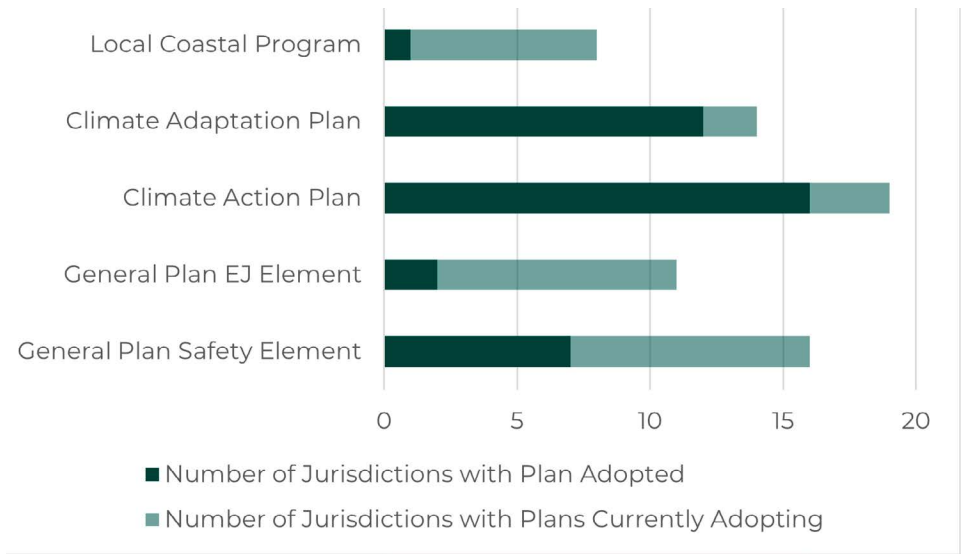
Notes: N/A refers to member agencies that are not in the coastal zone and therefore are not required to adopt a local coastal plan

(see **Figure 5, Plans Including Climate Resilience**). Data and staff resources are two key components that are necessary to complete any resilience planning effort. According to the Regional Adaptation Needs Assessment<sup>5</sup>, data was identified as the biggest need by member agencies, with nearly 70% of member agencies selecting this as a need. Survey results and meeting attendees indicated a need for downscaled data and templates outlining the types of data that should be collected.

Another major need in Phase 1 is staff support. Survey results indicated that member agency staff are highly involved and are the resource most extensively used during the climate adaptation planning process. This can lead to staff resources being spread thin. Half of all member agencies surveyed identified staff capacity as a limiting factor in resilience planning. For some member agencies, this has led to efforts being more reactive, responding to state requirements or one-off emergencies without committing to a more comprehensive, proactive approach. Limited staff capacity has also led to member agencies avoiding or not being able to take on regional adaptation and resilience efforts. To support this need, SANDAG and the San Diego Regional Climate Collaborative are providing resources to local governments, and continued support will be needed to supplement limited staff resources.

<sup>5</sup> Caltrans (California Department of Transportation). 2020. Regional Adaptation Needs Assessment. <https://www.sandag.org/-/media/SANDAG/Documents/PDF/projects-and-programs/environment/climate-resilience-and-adaptation/regional-adaptation-needs-assessment.pdf>

**Figure 5: Number of Member Agency Plans Including Climate Resilience**

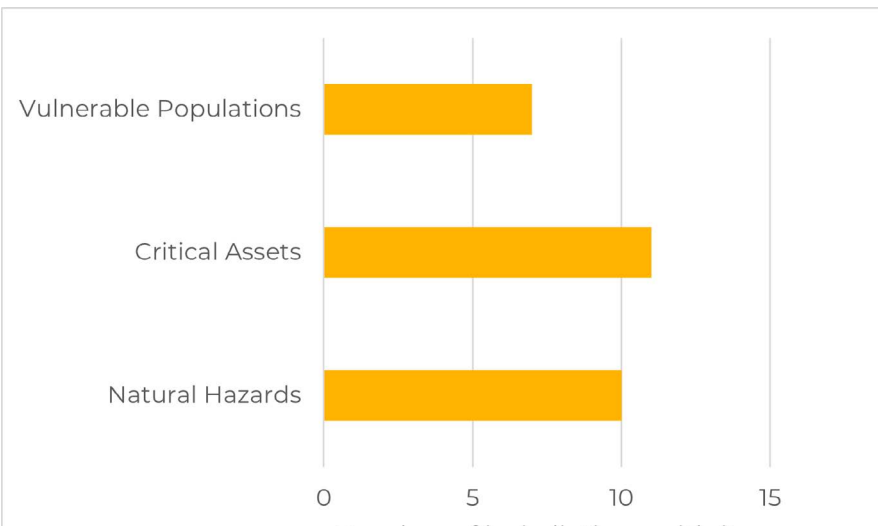


### Phase 2 - Assess Vulnerability

Most member agencies have assessed vulnerability in the past five years, but there are improvements that can be made related to vulnerability and capability assessments. Of the member agencies that addressed Phase 2, most mapped and inventoried natural hazards, and over half mapped or inventoried critical assets. However, only a third of member agencies have inventoried or mapped

vulnerable populations in the past 5 years (**Figure 6, Existing Inventories**). Without up-to-date

**Figure 6: Existing Inventories**



information on vulnerable populations, planning staff are less equipped to know where the greatest need is and understand the unique and compounding issues many frontline communities face, such as dependence on walking and biking and living in areas with greater air pollution and urban heat island effect. Vulnerability assessments triangulate people, assets, and risks to most accurately define the risk from climate change and prioritize adaptation and resilience investments. Environmental justice elements are required to address

how climate change may disproportionately impact DACs; however, these reports work in tandem with vulnerability assessments in safety elements, which should include other vulnerable groups such as older adults and renters.

Member agencies may offset some of the need for a full vulnerable population inventory by involving community groups and trusted leaders in the planning process who can represent and uplift the voices of vulnerable community members. Member agency representatives stated that general advocacy groups are commonly involved in climate resilience projects, and for member agencies with DACs, social equity groups are also often involved. Vulnerable community members do not have the resources to respond to mild climate impacts, such as the cost of installing and running air conditioning, and should be the focus of early adaptation efforts.

**Vulnerable community members are those who face physical and or socioeconomic challenges that make them less resilient to climate change. Common vulnerable populations include older adults, renters, communities without greenspace, and disadvantaged communities.**

One potential regional opportunity identified by stakeholders related to Phase 2 was a summary of local capability assessments to identify common deficiencies, explore information and resource sharing, and understand the top regional infrastructure issues. Some of this regional planning and implementation has occurred in the past or during implementation of the County of San Diego-led Multi-jurisdictional Hazard Mitigation Plan.

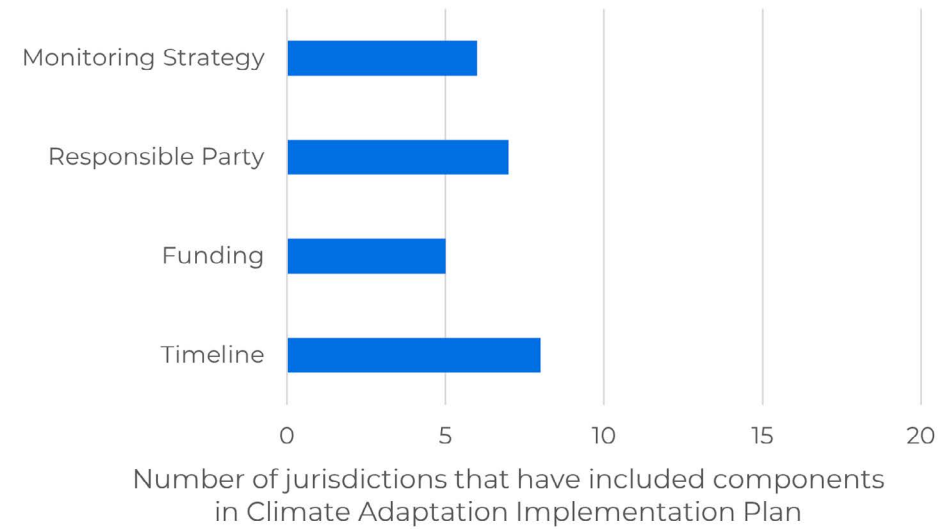
**Phase 3 - Define Adaptation Framework and Strategies**

Phase 3 has been undertaken by most member agencies during recent planning efforts. Several member agencies indicated that a resource that helps incorporate resilience strategies into existing general plans or local coastal programs would be beneficial. Others requested sharing best practices from around the region. Stakeholders also voiced that a regional plan, regional goals, or a menu of local policies that would ensure local contributions toward regional goals would be helpful to reduce jurisdictional islanding. Identifying funding opportunities was recognized as a major need by member agencies through survey data and focus group discussions. While funding opportunities are not always apparent during Phase 3, adding these details when possible can set member agencies up for success.

**Phase 4 - Implement, Monitor, Evaluate, and Adjust**

Implementation has had more limited success up to this point. Over half of all member agencies surveyed had not identified a monitoring strategy, responsible party, funding method, or timeline for their resilience actions (**Figure 7, Adaptation Monitoring**). Of these four implementation elements, timelines were the most common for member agencies to have developed, while a funding source was the least common. This finding is consistent with input from member agencies that overwhelmingly indicated funding assistance, such as grant identification and grant writing, as a main area of need. Other stakeholders stated that best practices and example projects, to help start adaptation and resilience projects, would be the most valuable. Phase 4 recognizes that adaptation planning work does not end when the plan is finalized. While all of adaptation planning is a cyclical process (e.g., the prior three phases may be revisited on occasion to update for accurate data), Phase 4 is particularly iterative and outlines how member agencies must implement their plans, monitor and evaluate their effectiveness, and adjust these plans in response to feedback and changing conditions.

**Figure 7: Adaptation Monitoring**



# 3

## Conclusion

### CONCLUSION

Generally, member agencies are excelling in Phases 1 (Explore, Define, and Initiate) and 3 (Define Adaptation Framework and Strategies) and could use support in Phases 2 (Assess Vulnerability) and 4 (Implement, Monitor, Evaluate, and Adjust). While many member agencies have completed Phase 2 (Assess Vulnerability), many plans are missing information about sensitive populations, critical assets, and current capacity. Additionally, many member agencies have not yet reached Phase 4. It is important to note that member agencies voiced that they felt further ahead in certain hazards, such as sea level rise or other existing hazards, and adaptation and resilience planning was inherently piecemeal.

Several key themes, issues, and desires arose from the document review and stakeholder engagement process. Themes repeated by multiple member agencies, not well addressed by the APG, and not addressed in other regional toolkits were determined to be a gap that should be addressed by the Framework. The main barriers and member agency needs identified revolved around limited staff capacity and lack of funding availability to implement plans. One connected issue was the occurrence of reactive planning and implementation, where member agencies cannot or will not undertake projects until an emergency or State requirement warrants it. To respond to this need, member agencies

asked for tools that were proactive and identified non-emergency triggers to communicate to the public and decision makers when a resilience project should be implemented. The project team identified three tools that would help to address these needs and will work with stakeholders to develop and test the tools prior to including in the final Framework. These tools include:

#### ADAPTATION METRICS

Metrics provide a standardized approach for measuring progress on climate adaptation and resilience. The metrics tool would outline typical strategy categories, such as capital improvements or community engagement, and provide details on how these categories could be measured.

#### ADAPTATION PATHWAYS

Adaptation pathways are a useful tool for climate adaptation planning in face of deep uncertainties embedded in climate change. Instead of sequencing adaptation actions on a timeline, adaptation pathways use environmental conditions, such as number of extreme heat days or percent chance of flooding annually. Adaptation pathways can help to phase in capital improvements or other adaptation measures in a cost-effective, highly responsive manner.

**PROJECT CHECKLIST**

A Project Checklist is a standardized checklist to evaluate infrastructure improvements’ resilience to climate change impacts, based on the expected lifespan of the infrastructure, projected hazards, and community vulnerabilities. The Project Checklist could present potential adaptation measures that would help to ensure infrastructure improvements are designed to be resilient to conditions intensified by climate change.



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Caltrans (California Department of Transportation). 2020. Regional Adaptation Needs Assessment. <https://www.sandag.org/-/media/SANDAG/Documents/PDF/projects-and-programs/environment/climate-resilience-and-adaptation/regional-adaptation-needs-assessment.pdf>