
REGIONAL ADAPTATION NEEDS ASSESSMENT

Funding for the
Regional Adaptation Needs Assessment
was provided by an adaptation planning grant from
Caltrans via Senate Bill 1



PROJECT TEAM:



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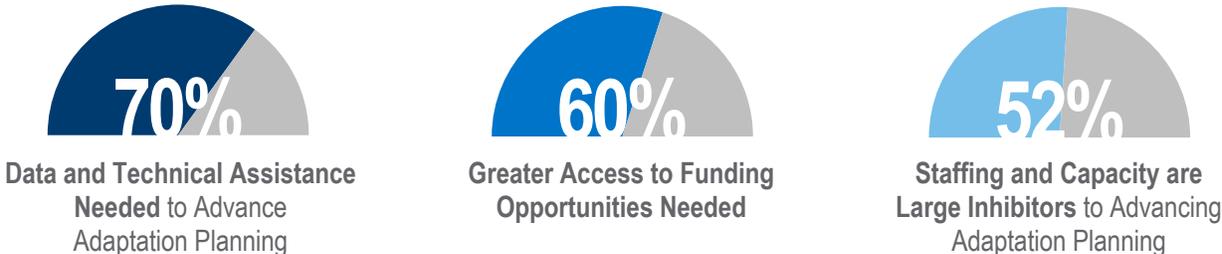
Executive Summary

The Regional Adaptation Needs Assessment (NA) was designed to inform regional and local planning efforts and to strengthen the linkage between existing mitigation and adaptation planning efforts. The NA is multi-disciplinary, addressing multiple climate impacts to best identify cross-sectoral needs and future opportunities for collaboration. Funding for the NA was awarded to the San Diego Association of Governments (SANDAG) via a Caltrans Senate Bill (SB) 1 adaptation planning grant.

Key Findings

Development of the NA consisted of two rounds of interviews; Round One consisted of participants from local or regional jurisdictions, and Round Two consisted of practitioners in the climate impact areas of equity, wildfire, water, and public health.

Round One Interview Responses



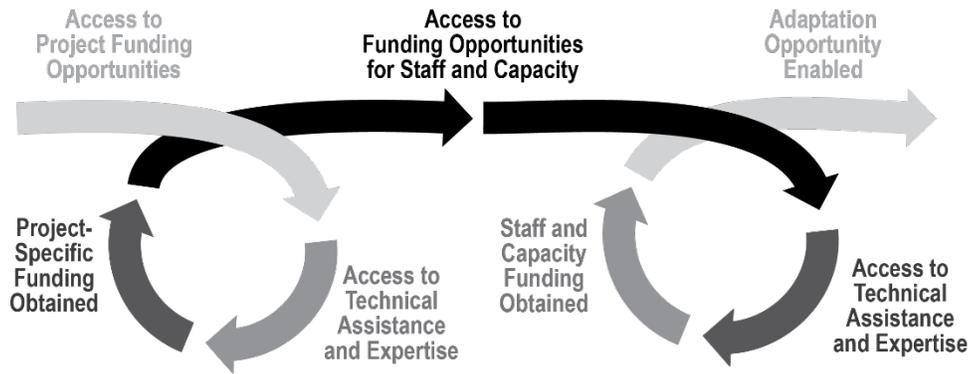
Round Two Interview Responses



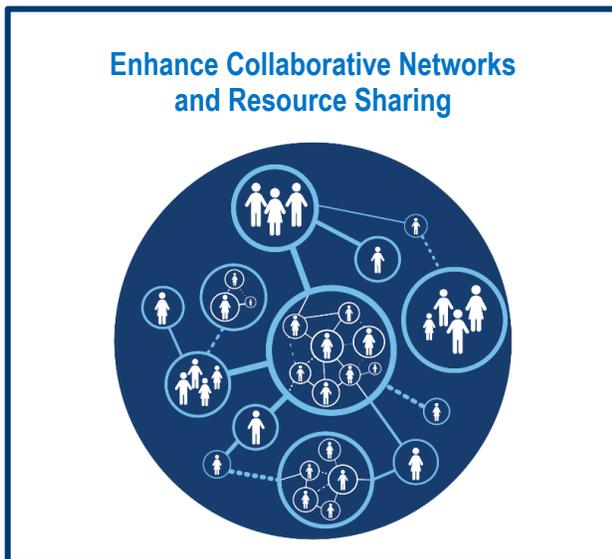
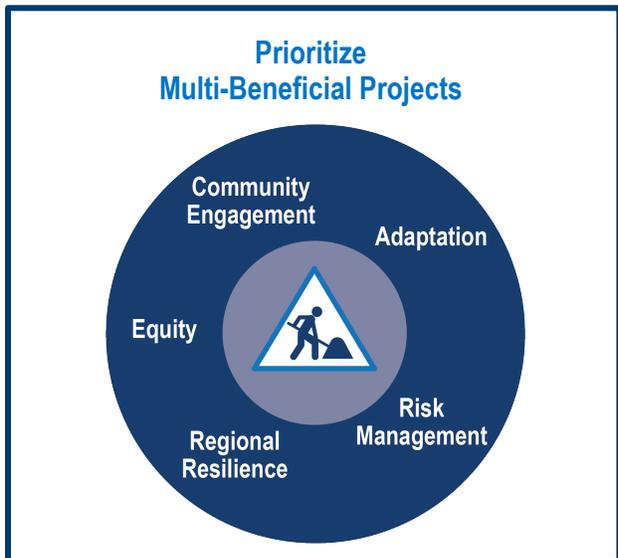
Key Needs

- Adaptation Efforts are Largely Reactive
- State Policies and Resources are Difficult to Access and/or Understand
- Regional Collaboration, Communication, and Engagement Strategies Need to Be Elevated

Lack of Funding Slows Realization of Adaptation Projects



Key Opportunities



Introduction

The Regional Adaptation Needs Assessment (NA) was prepared by the San Diego Regional Climate Collaborative (SDRCC), at the direction of SANDAG with support from the project team. The NA is a deliverable for a Caltrans-funded Senate Bill (SB) 1¹ Adaptation Planning Grant awarded to SANDAG. A needs assessment is defined as the process of systematically collecting information to better understand a discrepancy or gap in knowledge between what is happening and what is desired (National Oceanic and Atmospheric Administration [NOAA], Needs Assessment Guide, September 25, 2019). The goal of this NA is to identify multi-disciplinary adaptation planning needs and to increase understanding of these needs regionwide.

A needs assessment is defined as the process of systematically collecting information to better understand a discrepancy or gap in knowledge between what is happening and what is desired (NOAA, Needs Assessment Guide).

Project Team

[SANDAG](#) is the Metropolitan Planning Organization (MPO) for the San Diego region and serves as the forum for regional decision-making. SANDAG's climate mitigation, adaptation, and resilience work supports local efforts to reduce greenhouse gas emissions in alignment with statewide goals to prepare for the impacts of climate change. Through its Roadmap Program, SANDAG offers no-cost technical services to its member agencies to assist with energy efficiency and climate planning efforts. Recognizing the region is and will continue to be affected by the impacts of climate change, SANDAG's adaptation and resilience efforts are growing rapidly, and the agency served as the lead for this project.

[The San Diego Regional Climate Collaborative](#) (SDRCC) is a network of public agencies that shares expertise, leverages resources, and advances comprehensive solutions to facilitate climate change planning. SDRCC's membership includes public agencies, non-profits, local academic institutions, and the local utility, with 26 current members representing 80% of San Diego County. SDRCC has established itself as a trusted source of technical assistance, the latest climate science, and up-to-date information on State efforts around climate change.

The [Tijuana River National Estuarine Research Reserve](#) (TRNERR) served as a project partner on this NA. TRNERR has emerged as a regional leader in coastal adaptation planning through its Resilience Initiative, which works to inform and engage local managers and planners in assessing adaptation needs and strategies to protect coastal communities from sea-level rise and coastal hazards. In addition to expertise in climate science and planning, TRNERR has an established track record of conducting needs assessments and leveraging those results into on-the-ground projects. The long-established relationships working across science, policy, and cultural boundaries put TRNERR in a unique position within the region to build capacity across

¹ SB 1 (Beall) created the Road Maintenance and Rehabilitation Program and was approved and filed April 28, 2017.

jurisdictions and bridge the gaps among various community, science, and government stakeholders.

The last project partner for this NA was [The San Diego Foundation \(TSDF\)](#). As the region's largest community foundation, TSDF encourages, supports, and facilitates action on challenges and opportunities that affect the quality of life of each of the region's diverse communities, including climate change. Since establishing the Climate Initiative in 2007, TSDF has partnered with public agencies and all 19 local jurisdictions in the region to help catalyze regional action to reduce emissions and prepare communities for local impacts of climate change.

Project team worked to ensure the NA could inform regional and local planning efforts, either ongoing or those on the horizon (e.g., the County of San Diego's Multi-Jurisdictional Hazard Mitigation Update, local jurisdictions' Climate Action Plans and General Plan Updates), as well as those at the nexus of transportation and other local priorities (e.g., SANDAG's *San Diego Forward: The 2021 Regional Plan*). The NA was specifically designed to be multi-disciplinary, ensuring that several diverse efforts (e.g. social vulnerability in disadvantaged communities, habitat restoration) and multiple climate impacts (e.g. sea-level rise, wildfire, drought) were addressed to identify cross-sector needs and future opportunities for collaboration.

Methodology

What is a Needs Assessment?

Needs assessments are designed and executed by organizations in order to effectively plan projects by identifying knowledge discrepancies. NOAA released a comprehensive “[Needs Assessment Guide](#),” which offers project planners step-by-step information on how to effectively move through the planning, data collection, and analysis of a needs assessment. The NOAA Needs Assessment Guide was utilized throughout the planning, design, and implementation of this NA.

Why a Needs Assessment for the San Diego Region?

Conducting a detailed needs assessment specific to the San Diego region will serve as a tool to help decision-makers better understand the climate adaptation planning, implementation, and funding needs for the region. A strong needs assessment will identify local vulnerabilities of and opportunities for the San Diego region and our regional transportation system in the context of a changing climate and coastal hazards, including sea-level rise, wildfires, and changing precipitation patterns. In addition to climate impacts, a needs assessment will identify efforts and needs related to the integration of equity in adaptation and resilience planning. Enhancing regional resilience relies on holistic, equitable, and collaborative climate adaptation planning. The content of the discussion will be largely informed by the findings and recommendations from [California’s Fourth Climate Change Assessment](#), particularly the [San Diego Regional Report](#).

The objectives of this NA were to:

- Communicate adaptation needs in the San Diego region to local agencies;
- Strengthen the linkage between existing planning efforts (e.g., transportation, mitigation, equity, hazard and emergency services) and adaptation;
- Enhance regional preparedness and resilience to climate change by connecting local and regional jurisdictions to available resources; and
- Support ongoing efforts around sea-level rise and its impacts to the regional transportation system.

It was important that the NA holistically address several components of climate planning and ensure that the information was relevant to diverse geographies, populations, and priorities throughout the region. Furthermore, the NA provides local jurisdictions with resources to understand and consider the impacts of climate change on infrastructure, including transportation, to bridge the gap between planning and implementation and to show how emerging funding and organizational priorities can be better linked.

Our Approach

The NA consisted of two rounds of interviews; interviews were conducted either in person or

over the phone, were approximately 60 minutes in length, and responses were recorded anonymously. Objectives of the NA informed the development of interview questions, which were tailored to each round. The responses from each interview were used in the analysis for this NA. More information on the interview audience, question development, and data analysis are described in this section.

Round One Interviews – Local Jurisdictions

The first round of interviews (Round One), conducted with staff from local jurisdictions, were designed to better understand local priorities, approaches, and needs related to transportation and climate adaptation. It was important to identify knowledge gaps among local agency staff, as well as the barriers to planning and implementing climate adaptation projects. Questions also were developed to better understand previously completed and/or ongoing projects that could be leveraged into future adaptation work and to strengthen partnerships.

The goal of the first round of interviews was to speak with at least one representative from each of the 19 local jurisdictions in the San Diego region, as well as staff from other regional agencies. Between April and June 2019, 23 interviews were conducted with 35 total participants. Interviewees represented 18 local jurisdictions and four regional agencies. Project team looked to specifically engage staff tasked with managing sustainability efforts or the development and/or implementation of Climate Action Plans (CAPs). As of April 16, 2020, of the 19 jurisdictions in the San Diego region, 18 either have an adopted CAP or are in the process of developing one; as a result, staff identified for interviews were those involved in the development or implementation of the CAP for their jurisdiction.

Interview questions (Appendix A) covered active and planned projects focusing on adaptation, mitigation, and transportation planning in the short-term (over the next five years). Round One interviews identified areas that could benefit from capacity building, regional partnerships, as well as gaps and needs surrounding funding, resources, information, and data.

Round Two Interviews – Climate Adaptation Experts

After completing the interviews with local jurisdictions, the project team compiled the results to better inform the climate impacts to focus on in the second round of interviews (Round Two). The selection criteria for these impacts are described below:

- Climate adaptation experts should help to fill knowledge gaps identified in Round One interviews
- Climate impacts should be cross-sectoral and benefit identified planning and project goals from the Round One interviews; and
- Climate impacts should be relevant across the San Diego region (e.g., coastal, urban, suburban, and rural communities).

Using the listed criteria, the following climate impact areas were selected: wildfire, water, public health, and equity. With a limited budget and short timeframe, it is important to note that not all

climate impacts were analyzed in this NA. The selected impacts fit well with the overall objectives of the NA and were of repeated interest throughout the Round One interviews. Additionally, while sea-level rise meets all of the selection criteria, it was not selected as a focus area for this project. SDRCC's previous work on the Resilient Coastlines Project funded through the NOAA Regional Coastal Resilience Program was utilized and integrated to ensure holistic climate impacts were integrated into the NA and development. Furthermore, through a separate SB 1-funded effort, SANDAG and Dudek conducted interviews with local staff at coastal jurisdictions focusing solely on sea-level rise, and those interviews were leveraged in the analysis for this NA (Appendix C).

The project team identified interviewees that specialized in the four climate impacts, predominately located in the San Diego region (Appendix B). Between July and November 2019, 22 interviews with 27 total participants, split by climate impact area, were conducted: five interviews were with wildfire experts, seven with equity experts, seven with water experts, and three with public health experts. The goals for the Round Two interviews were to understand how the work done by each interviewee could meet the informational or data needs identified in the Round One interviews.

Overall, the questions for the Round Two interviews focused on understanding adaptation through the lens of the interviewee, with details about both short-term (one to five years) and long-term (five to ten years) projects they have worked on or are currently working on (Appendix B). Additionally, questions were designed to strengthen existing partnerships. Last, interviewees shared how the public and other organizations could best leverage the knowledge and expertise of those in the climate adaptation field to support regional and local adaptation goals.

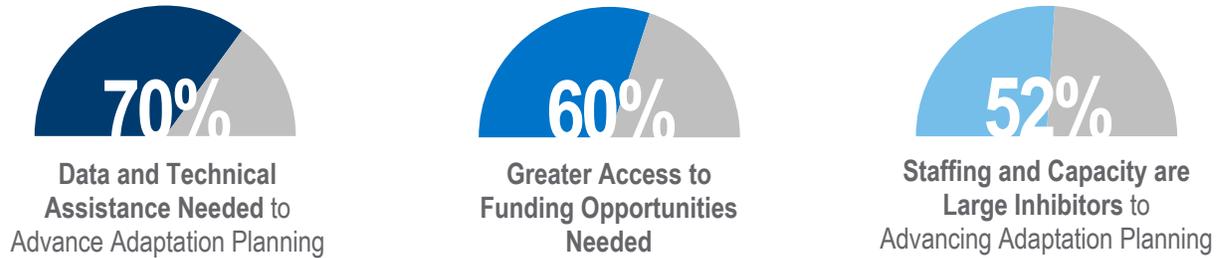
Post-Interview Analysis

Data for both rounds of interviews were consolidated both by question and by theme. Interview responses were tallied to gather a total number of similar responses across each interview (e.g., resource documents mentioned, climate stressors being analyzed). Next, the overarching themes were analyzed to identify needs, successes, and future opportunities. For the Round Two interviews, the data were further analyzed to identify patterns of adaptation needs within each specific climate impact area. Overall, the data gathered from each round of interviews were used to identify the key findings presented later in this NA.

Key Findings: Needs

This section outlines the key findings related to adaptation needs from the two rounds of interviews, which revealed significant barriers to advancing adaptation planning in the San Diego region.

Round One Interview Responses



70% of Round One interviewees indicated that data and technical assistance were needed to advance adaptation planning. This was followed by 60% of Round One interviewees reporting a need for greater access to funding opportunities, and 52% of Round One interviewees indicating that staffing and capacity were large inhibitors to advancing adaptation planning. Of the 18 local jurisdictions interviewed, 10 responded that their primary planning priorities stemmed from mitigation measures in their Climate Action Plans (CAPs). However, eight of those respondents also indicated they were implementing plans or projects with strong linkages between adaptation and hazard mitigation. When asked about planning for impacts from climate change, impacts from wildfire and sea-level rise were among the most frequent responses.

Round Two Interview Responses



73% of Round Two interviewees indicated their greatest need to advance adaptation as increased funding opportunities. Furthermore, 60% of Round Two interviewees indicated there was a lack of awareness regarding their involvement in adaptation and climate resilience in the region. Like Round One, 50% of Round Two interviewees indicated that staffing and capacity prevented the advancement of adaptation planning; specifically, staffing retention was a major concern for the respondents who work in the equity space.

A Clear Definition of “Adaptation” is Lacking

Round One interviews indicated the primary barrier to advancing adaptation is the limited understanding of “adaptation” and how it can be applied to various jobs, organizations, and projects. This lack of clarity is problematic. When it comes to meeting new and evolving needs, a uniform definition is crucial to tracking local and regional long-term success. Mitigation planning has clear, measurable metrics of success (e.g., a greenhouse gas reduction target in a Climate Action Plan) but to mobilize adaptation planning, local and regional agencies need to fully understand State guidance. After conducting the Round One interviews, the project team chose to utilize the State’s Office for Planning and Research (OPR) definition for both adaptation and resilience, sharing it with Round Two interviewees and other project stakeholders. OPR was established in 1970 as part of the Office of the Governor as the comprehensive State planning agency. OPR staff serve the Governor and their Cabinet in long-range planning and research, and provides planning guidance to local, regional, and State agencies.

OPR defines adaptation as, “the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.” OPR also defines resilience as 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.”

Adaptation Efforts are Largely Reactive

43% of Round One and 63% of Round Two respondents were aware that adaptation planning is occurring in the region. However, it is unclear how these efforts are being integrated into existing plans or how the region will measure progress. To date, many adaptation planning efforts are high-level and not at the implementation stage. 60% of Round One and 73% of Round Two respondents identified the need to more effectively and equitably leverage engagement and funding across sectors. An understanding of adaptation needs and ongoing adaptation efforts will help local and regional agencies begin to break down silos within and across organizations.

State Policies and Resources are Difficult to Access and/or Understand

State adaptation planning guidance needs to be more widely understood by local and regional practitioners. 70% of Round One and 23% of Round Two respondents noted State guidance is not easily operationalized on the ground. The State has provided strategies (e.g., managed retreat) that are challenging to implement without further legal precedence and/or economic support.

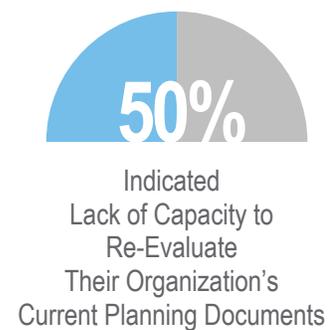
For several years, the State has provided policies, guidance, and funding to support climate mitigation and, as a result, many local and regional agency staff understand mitigation and have advanced climate mitigation efforts within their jurisdictions, as exemplified by the adopted CAPs in the San Diego region. At the time of writing, 18 out of 19 local jurisdictions in the region

have a CAP in place or in development. However, without a more comprehensive understanding of the State’s adaptation policies, many local jurisdictions have a difficult time knowing how to plan for adaptation, despite wanting to incorporate adaptation into their operations.

Regional Collaboration, Communication, and Engagement Strategies Need to Be Elevated

Interview analysis revealed a need for enhanced collaboration to advance local and regional adaptation planning; specifically, 23% of Round One interviewees indicated they needed greater cross-jurisdictional coordination. Local jurisdictions have limited capacity and struggle to establish dedicated adaptation roles. Furthermore, constraints on staffing capacity can limit meaningful collaboration, which can further hinder opportunities for cross-jurisdictional adaptation efforts. Four Round One interviewees hold full-time positions administering and implementing their jurisdiction’s Climate Action Plan. A similar position is needed for adaptation and resilience to ensure it is fully integrated into local and regional policies and linked across departments.

52% of Round One and 50% of Round Two respondents stated they lacked the capacity to re-evaluate their organizations’ current planning documents (e.g., General Plan, Local Coastal Plan, Safety Element) to identify what measures are adaptation-focused. Without this exercise, local agency staff would not be able to identify where new strategies and solutions addressing climate change impacts need to be developed. Regional coordination and support are particularly important for organizations that have less funding and capacity. Further, it can help to establish multi-jurisdictional funding partnerships, increasing the possibility for broader and more comprehensive vulnerability assessments, a critical first step in adaptation planning.



Effective Communication Materials are Lacking

There is a need for effective communication materials, training, and outreach for diverse audiences that focus on adaptation; 41% of interviewees in Round One indicated the need for information for both decisionmakers and the general public. Different audiences have nuanced communication and engagement needs, often requiring different products and strategies.

Dynamic partnerships between community-based organizations and local jurisdictions help adaptation planning to be both innovative and impactful. All seven of the Round Two equity interviewees expressed their organizations communicate openly about climate mitigation planning and how it impacts the community, residents, and business owners they serve. However, these interviewees indicated that adaptation has not been at the forefront of their strategies. To elevate adaptation planning, the public needs the opportunity to participate in how their communities adapt. 45% of Round Two respondents indicated they would benefit from

increased engagement with staff at local and regional jurisdictions to better inform the communities they serve.

Additionally, local jurisdictions need to engage with the community and other regional stakeholders throughout the life of an adaptation project. Interviewees in both rounds highlighted the need to have open dialogues during all phases of the planning process to ensure information is equitably shared among and shaped by all stakeholders.

Local jurisdictions need relevant, up-to-date information for elected officials to better understand vulnerabilities, potential impacts, and available solutions. Similarly, 60% of Round Two respondents indicated there was a lack of awareness around their role in the region. To help increase understanding and awareness of adaptation planning, the work being done by local experts needs to be disseminated to local agency staff. 41% of Round One respondents indicated this information would be most beneficial if sourced from a neutral third-party and crucial to helping elected officials and other decision-makers make informed decisions about how their communities can best adapt to future conditions.



Today's youth will be most affected by climate change; however, most decision-making processes overlook engaging youth and/or youth-focused organizations. Local jurisdictions and regional agencies should put an emphasis on communicating with youth in their community throughout the adaptation planning process; for example, a student could volunteer or intern with a local jurisdiction as an advisor on a climate adaptation project.

Limited Adaptation Funding Creates a Feedback Loop, Inhibits Advanced Adaptation Planning

Gaps in Funding Limit Adaptation Planning

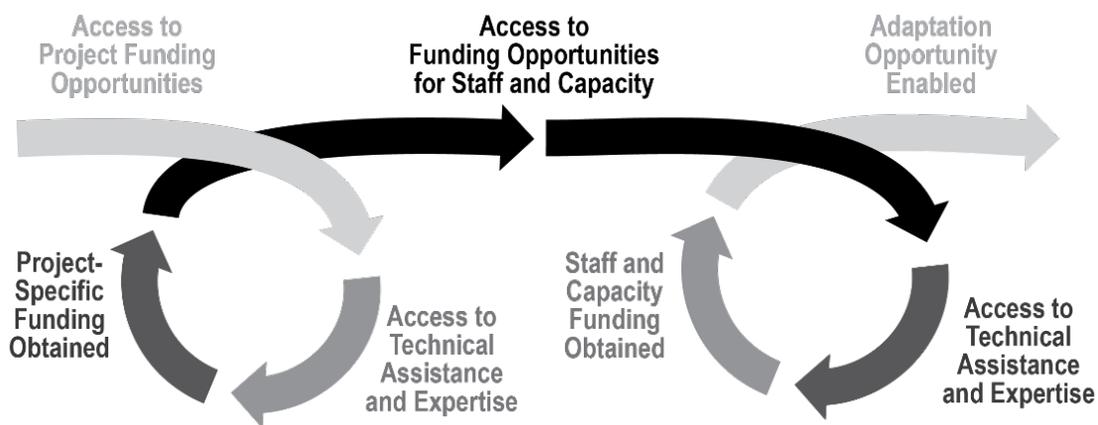
60% of Round One and 73% of Round Two respondents need greater access to funding opportunities; this encompasses the capacity and technical expertise to apply for, as well as becoming aware of new and upcoming funding sources. Limited funding can create a negative feedback loop, inhibiting local jurisdictions and regional agencies from advancing their planning activities. While 23% of Round One respondents identified the need for more collaboration, it requires time and capacity to be effective. Without specific funding to establish, maintain, and strengthen partnerships, it is challenging for some organizations to collaborate successfully.

Funding to support staffing capacity within organizations is extremely limited. Without capacity, many organizations don't have time to pursue funding opportunities, collaborate and develop partnerships, conduct adaptation planning analyses, and/or implement adaptation-related projects. Given the complexity of the application content and identifying a mutually beneficial scope of work, local jurisdictions and regional agencies have an increased need for technical assistance to apply for funding. However, even when technical assistance is offered, 52% of

Round One respondents felt they still lacked the staffing capacity needed to complete an application, and/or administer, if awarded.

Funding often targets a specific project phase (e.g., assessment, planning, implementation, monitoring), making it difficult to holistically fund a project. Ideally, funding would support a project from start to finish, to ensure implementation and monitoring occur. Cohesive funding is also needed to create linkages between different sectors that may benefit from similar efforts (e.g., reduced wildfire risk benefits emergency responders but also ensures potable water supply isn't depleted when fighting wildfires, thus benefiting the water sector). Most funding sources are geared toward a specific sector and overlook the opportunity of multi-sectoral projects; 23% of Round One and 45% of Round Two respondents indicated that building multi-sectoral collaboration is increasingly important to support these types of projects.

Lack of Funding Slows Realization of Adaptation Projects



Building Community Resilience Requires Prioritizing Equity in Adaptation Planning Goals

Equity Must Be Integrated Throughout Adaptation Planning

The NA was designed specifically to address the universal need to integrate equity into climate adaptation and resilience planning. The project team utilized resources and guidance from [The Equinox Project's Quality of Life Dashboard](#) to understand the many definitions associated with this process. Equity is both the fair and just distribution of societal benefits and burdens and the ability of marginalized communities to influence decisions in a way that addresses their needs and concerns.

In Round One, 36% of interviewees indicated the need for more information about how to integrate equity into adaptation planning. To holistically advance adaptation planning, local and regional agencies must integrate equitable solutions for historically underserved and

underrepresented communities, or Communities of Concern² (CoCs), throughout the planning process. All seven of the equity-focused organizations interviewed in Round Two shared that many CoCs already have multiple adaptation pathways³ integrated into their decision-making, and there is an opportunity for local and regional agencies to learn from these communities.

All seven of the equity-focused experts interviewed in Round Two indicated a need to collaborate more directly with local and regional agency staff; this would create a pathway to empower residents to engage in the adaptation planning process. In Round One, 41% and in Round Two 45% of respondents highlighted the importance of an informed and engaged public, especially around water conservation and fire risk reduction. However, interviews with equity-focused organizations revealed that many residents, particularly in CoCs, are unclear as to how they can help, lack resources to act on their own, and have little incentive to take action.

While equity is often a component within broader funding opportunities, 36% of Round One and 32% of Round Two interviewees indicated a need for equity-focused funding specific to adaptation. Round Two interviewees encouraged local and regional agencies to prioritize funding opportunities that promote adaptation solutions driven by the CoCs themselves, to then be integrated into local and regional planning efforts. Residents of these communities should benefit from adaptation; an example of this is including language about avoiding displacement⁴ in planning documents for those in CoCs. By engaging the community to shape adaptation priorities, CoCs can create more impactful resilience efforts.

² This report utilizes [SANDAG's San Diego Forward](#): The 2021 Regional Plan definition of "Communities of Concern" to maintain consistency across work.

³ Adaptation pathways is an approach to adaptation strategy development that allows decisionmakers to build adaptation capacity, prioritize strategies, and communicate critical climate adaptation concepts that a community should understand as it pursues adaptation goals ([California Adaptation Planning Guide](#)).

⁴ Examples of displacement language are included in the Greenling Institutes report "[Making Equity Real in Climate Adaptation and Community Resilience Policies and Programs: A Guidebook](#)".

Key Findings: Opportunities

Objectives of the NA were to bridge the gap between planning and implementation and to show how emerging funding and organizational priorities can be better linked. A strong needs assessment identifies local vulnerabilities of and opportunities for the San Diego region and our regional transportation system in the context of a changing climate and coastal hazards, including sea-level rise, wildfires, and changing precipitation patterns.

Regional Leaders Champion Adaptation Projects

Despite the challenges associated with adaptation planning, the region continues to make advancements. Many local and regional organizations have internal adaptation champions. Without a formal title or dedicated position focusing on adaptation and resilience, these individuals are elevating adaptation within their organizations, with decision-makers, and/or in community dialogues.

Without funding, guidance, and capacity to address adaptation at the community level, many agencies are advancing adaptation at the project level; considering climate impacts through each project phase. By continuing to emphasize the integration of adaptation into projects, as well as prioritizing those projects with multiple adaptation benefits, neighboring jurisdictions and agencies will have more tangible examples for practitioners to learn from and share with their peers, community, and decision-makers.

Prioritize Multi-Beneficial Projects

Due to limited funding and staff capacity, there is a need to identify projects that include multiple benefits across sectors, thus achieving multiple planning goals at one time. Furthermore, local jurisdictions and regional agencies should prioritize integration of adaptation into their immediate planning priorities. Adaptation planning is often low on a list of priorities, if considered at all. If integrated into other planning efforts, it would become more normalized in typical local and regional planning practices and operations.

Enhance Collaborative Networks and Resource Sharing

Collaborative networks and working groups help local staff stay informed and connected to local resources. As an example of collaborative networks, several Round One interviewees stated they participate in quarterly sub-regional meetings coordinated by SANDAG staff; these meetings focus on climate mitigation and adaptation best practices and sharing lessons learned with neighboring jurisdictions. Furthermore, more than half of the Round One interviewees indicated that events hosted by SDRCC were helpful in advancing their climate planning. SDRCC engages a broad spectrum of planning experts with their Adaptation and Policy Working Group and Sea Level Rise Working Group. Similarly, SANDAG's Regional Planning Committee, Regional Energy Working Group, Environmental Mitigation Program Working Group, Shoreline Preservation Working Group, and Regional Planning Technical Working Group made up of elected officials, planning directors from all of the local jurisdictions, and

other stakeholders, discuss items related to climate adaptation and resilience. Diversity of these groups help to disseminate information within and across sectors, and to different audiences. This helps saturate the message and broaden the integration of adaptation into the planning process more holistically. Despite information sharing within these and other collaborative networks, there is still a need to better understand what adaptation efforts are occurring. While the San Diego region has excelled at sharing information on climate mitigation, Round One interviewees indicated that bringing more diverse voices to the table may help further advance adaptation work and disseminate information across sectors and populations.

In addition to building networks, local and regional jurisdictions need technical expertise and assistance, even if they are knowledgeable about adaptation and working on adaptation-focused projects. Organizations and communities with limited capacity and resources can benefit from connecting with others in the region that have more adaptation resources and/or experience. For example, SANDAG documented best practices and lessons learned related to sea-level rise planning in the [Regional Transportation Infrastructure Sea Level Rise Assessment and Adaptation Guidance](#), funded by SB 1.

Connect Local Research to Local Action

70% of Round One and 32% of Round Two respondents cited the value of access to local and regional resources and/or research advancing climate change science, best practices, and local and regional action. There is a wealth of local scientific research made available by the Scripps Institute of Oceanography, such as the [Fourth Climate Change Assessment, San Diego Region Report](#), and the Center for Climate Change Impacts and Adaptation. However, there needs to be a more centralized location and streamlined process for sharing this information so organizations know that local science and research is available and how to access it. This will not only increase understanding and consistency, but it will also reduce duplicative research efforts.

Conclusions

Key Regional Needs to Improve Adaptation Planning Efforts

This NA provides an in-depth analysis of the barriers, needs, and opportunities to advance adaptation planning in the San Diego region. The Round One interviews indicated a limited understanding of adaptation and how it applies to various jobs, organizations, and projects. This limitation inhibits the ability to leverage existing programs, meeting new and evolving needs as a result of changes to our climate, and identifying and obtaining funding.

Round One interviewees acknowledged that the State has strong policies and numerous funding opportunities to support climate mitigation efforts; however, interviewees felt the State's guidance on adaptation was less clear and/or more difficult to access. Local and regional jurisdictions are challenged with absent and an unclear understanding of adaptation and a lack of concrete regulations or guidance at the state level. This directly inhibits their ability and capacity to start planning, and many local jurisdictions interviewed indicated they have not yet evaluated their current programming for existing adaptation measures and what new strategies or solutions might be needed. The need for more information and direction is magnified when only one of the 18 Round One interviewees is developing a full adaptation plan. However, adaptation planning is happening at many local jurisdictions on a smaller scale, with projects focusing on a specific climate impact, such as implementing a coastal resilience project or integrating a new policy related to wildfire protection. To successfully adapt, and, in turn, improve regional climate resilience, local jurisdictions and regional agencies need support from each other and the State. There is not enough funding or capacity for local jurisdictions to adapt on their own.

It is unclear if and how ongoing adaptation efforts are being integrated into existing plans, where each plan will overlap, what gaps exist, and how local and regional agencies will measure progress. The San Diego region would benefit from a coordinated effort outlining how adaptation planning is being integrated and implemented. Local jurisdictions and their communities need to better understand what adaptation actions are being taken by other entities and how those actions may be leveraged across sectors and across jurisdictional boundaries, helping to break down silos.

Enabling Immediate Opportunities for Regional Adaptation

A valuable opportunity to advance regional adaptation planning lies in effective collaboration. SANDAG and SDRCC coordinate regularly and have built a strong network supporting multiple aspects of mitigation and adaptation planning, as one example. This network has helped local agency staff stay informed and connected to resources.

Regional collaboration will be crucial to the success of holistically advancing adaptation planning.

Continued emphasis and improvement around regional collaboration will be crucial to the success of holistically advancing adaptation planning. Many local jurisdictions have yet to

identify meaningful pathways to coordinate and leverage resources and funding opportunities to implement local and regional climate adaptation solutions. Regional coordination and support are particularly important for smaller jurisdictions with less funding and/or staff capacity.

In addition, local and regional jurisdictions need to increase information-sharing within and between sectors and jurisdictional boundaries. For a consistent, comprehensive, and holistic approach to adaptation, coordination is crucial – impacts from climate change are felt beyond jurisdictional boundaries and across sectors. Local and regional practitioners need consistent and accessible guidance, best practices for adaptation planning, and local and regional case studies that highlight the application of these best practices. As indicated by Round Two interviewees, there is a need to better share what entities are doing to advance adaptation across sectors, including, but not limited to, community-based organizations, local nonprofits, and conservation agencies. There is limited coordination and information-sharing around what adaptation efforts these organizations are focusing on and how local jurisdictions may partner and/or leverage these efforts to meet local, sub-regional, and/or regional adaptation goals.

Next Steps

This NA will strengthen ongoing adaptation efforts by informing local and regional agencies of available resources to help fill identified informational gaps or barriers. The results of this NA will be used to inform adaptation planning in the San Diego region. SANDAG was awarded an additional SB 1 grant, the Holistic Implementation of Adaptation and Transportation Resilience Strategies (HIATRS) project, to leverage the findings from this NA, with the support of SDRCC and others.

The primary objective of HIATRS is to comprehensively assess equity, economic, and environmental considerations in existing climate mitigation and transportation planning policies, programs, and projects in the region that intersect with adaptation strategies and to identify efficiencies and opportunities among them. To help understand the opportunities, a regional economic guidance document (economic document) will be prepared to help local jurisdictions consider the costs and benefits of different adaptation strategies. A second guidance document (equity document) with considerations for how to integrate equity into adaptation and transportation resilience planning and implementation will be prepared as a partner resource. Both guidance documents will be designed for use by climate and transportation planning professionals throughout California. All deliverables from HIATRS are expected to be completed by December 2021.

Resources Cited

Bedsworth, Louise, Dan Cayan, Guido Franco, Leah Fisher, Sonya Ziaja. (California Governor's Office of Planning and Research, Scripps Institution of Oceanography, California Energy Commission, California Public Utilities Commission). 2018. Statewide Summary Report. California's Fourth Climate Change Assessment.

California Emergency Management Agency (CalEMA). 2012. California Adaptation Planning Guide. Planning for Adaptive Communities.

Kalansky, Julie, Dan Cayan, Kate Barba, Laura Walsh, Kimberly Brouwer, Dani Boudreau. (University of California, San Diego). 2018. San Diego Summary Report. California's Fourth Climate Change Assessment.

Mohnot, Sona, Jordan Bishop, Alvero Sanchez. (Greenlining Institute). 2019. Making Equity Real in Climate Adaptation and Community Resilience Policies and Programs: A Guidebook.

National Oceanographic and Atmospheric Administration (NOAA). n.d. "Needs Assessment Guide". Digital Coast. <https://coast.noaa.gov/needsassessment/#/>, Date Accessed Sept. 25, 2019.

San Diego Forward, San Diego Association of Governments (SANDAG). n.d. Promoting Social Equity. <https://www.sdfoward.com/environment-communities/communities-concern>, Date Accessed Feb. 18, 2020.

Appendix A: Round One Interview Questions

Introduction: This assessment will result in a summary of identified regional needs to guide future planning, implementation, and funding priorities for the region. Additionally, throughout the process we will be compiling a list of helpful resources and opportunities to help address some of these needs. A couple quick notes:

- Answers will be anonymous.
 - Results will be summarized and shared throughout the region.
1. Quickly describe your role at your organization and your experience with climate adaptation, mitigation, or sustainability.

Planning & Implementation

Objectives:

- *Identify near term priorities to better understand immediate and emerging needs.*
 - *Better understand where mitigation and adaptation needs may overlap, revealing opportunities to address multiple needs through coordinated efforts.*
2. What are some near term planning priorities for your city/ jurisdiction?
 3. What are some near term implementation priorities for your city/ jurisdiction?
 4. Are there any strong linkages between your adaptation and mitigation efforts (e.g., plans or projects that are meeting both adaptation and mitigation goals)?
 - a. Linkages between adaptation and transportation efforts?
 - b. Linkages between adaptation and hazard mitigation efforts?
 - c. Linkages between adaptation and other efforts?

Needs

Objectives:

- *Identify specific informational/ data, training, funding, capacity/ staffing, and transportation needs.*
5. Thinking about what your jurisdiction needs to advance climate adaptation: (Be specific)
 - a. What are your top 3 informational or data needs?
 - b. What are your top 3 training needs?
 - c. What are your top 3 funding needs?
 - d. What are your top 3 capacity/ staffing needs?
 - e. What are your top 3 transportation related needs?
 - f. Other?

Resources

Objectives:

- *Compile a list of resources that are helpful for the region. These resources will hopefully address some needs discussed by other jurisdictions.*
6. What sources of information have been the most helpful for you as you've worked on adaptation? Are there specific resources you think would be helpful for other jurisdictions? Be specific - websites, guidance, organizations....?
 7. What sources of funding have been the most helpful for you? If none, what sources of funding would be helpful?

Cross-sectoral & regional engagement

Objectives:

- *Identify where there may be gaps in engagement both internally and externally.*
 - *Identify where there is a need for a regional approach.*
8. What departments are leading or involved in your jurisdiction's climate change work?
 - a. Are there departments that are not at the table that you wish were there? Is there a reason these departments are not engaged?
 9. What outside organizations have been engaged in your jurisdiction's sustainability and climate adaptation work to date? Think about other federal, state, regional, local agencies or organizations, including nonprofits and academic institutions.
 - a. What outside organizations have been the most helpful in your process?
 - b. What organizations do you wish were more engaged?
 10. Do you have any local examples of sub-regional efforts around climate adaptation (e.g., north country cities pooling resources to address a problem)?
 11. Are there any issues that would be helpful for the San Diego region to address on the regional level? In other words, are there specific strategies that your jurisdiction would like to explore but are unable to do so without additional regional support?

Wrap-up

Objectives:

- *Identify additional contacts who may be useful to talk to.*
12. Who else should we talk to at your City? Or in the region? Why?
 13. Any final thoughts?

Appendix B: Round Two Interview Questions

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

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.

1. Quickly describe your role at your organization and your experience with climate adaptation/resilience: What current projects of yours focus on climate adaptation?
 - a. Are any of these focused on a specific target location/sub-region/city/population?
2. What do you wish local and regional organizations/agencies/partners knew about your work or role in the region? What are common misconceptions about your work?
3. How would you like to see local and regional organizations and partners collaborate with you to advance your adaptation work?
 - a. Are there specific opportunities where you think local and regional organizations/agencies/partners could accomplish this?
4. Are there any strong linkages between your work and local/regional climate-related efforts, including:
 - a. Mitigation planning?
 - b. Transportation planning?
 - c. Hazard mitigation efforts?
5. Thinking about your organization's needs to advance climate adaptation (within your impact area): (Be specific)
 - a. What are your top 3 informational or data needs?
 - b. What are your top 3 training needs?
 - c. What are your top 3 funding needs?
 - d. What are your top 3 capacity/staffing needs?
 - e. What are your top 3 transportation-related needs?
 - f. Other?
6. What sources of information have been the most helpful for you as you've worked on adaptation? Are there specific resources you think would be helpful for other jurisdictions? Be specific: websites, technical guidance, products created by other organizations.
 - a. Is there information about adaptation/resilience outside of your focus/impact area that has been helpful?

7. What sources of information do you have that you wish to share with local jurisdictions to help them better understand your work? (don't have to be climate adaptation-related but preferred, can be from your organization or another source)
8. What sources of funding (for climate adaptation/resilience) have been the most helpful for you or are you aware of? (perhaps a funding source provided by their organization)
 - a. If none, what types of funding would be helpful moving forward? Would more funding specific to your impact area be helpful, or would more general adaptation/resilience funding be helpful? Would funding to support the development/fostering of local and/or regional partnerships focused on adaptation/resilience be helpful?
9. What outside organizations have been engaged in your organization's work to date? Think about other federal, state, regional, and/or local organizations, including nonprofits and academic institutions.
 - a. Any organizations specifically focused on climate adaptation? Any organizations focused on your climate impact area?
10. How would you like to see the San Diego region address (INSERT THEIR TOPIC HERE) on the regional level? (Specific strategies that your organization would like to explore but are unable to do so without additional regional support)
 - a. Short term vs. long term needs?
 - b. Any specific needs from others in the adaptation field (e.g., local/regional resources, tools, forums, or other supporting materials)?
11. Is there anyone else you think it would be helpful for us to talk to and include in our needs assessment (especially other experts in your impact area)? If so, why?

Appendix C: Sea Level Rise Interviews (from SANDAG's Regional Sea Level Rise Guidance for Transportation Infrastructure)

Over the next two years, SANDAG, with the support of Dudek and Moffatt & Nichol, will develop a guidance document that examines potential sea level rise impacts to regional transportation infrastructure and presents a suite of adaptation measures to address these impacts, including policies, funding mechanisms, and projects. Because a number of local jurisdictions are already conducting sea level rise vulnerability assessments and preparing Local Coastal Program Amendments to include adaptation policies, a critical component of this SANDAG project is to build on local efforts.

The goal of this interview is to learn from [local jurisdiction] and document lessons learned from sea level rise planning. We will synthesize your responses to the questions below, along with those from the other nine coastal jurisdictions in San Diego County, and include best practices for local jurisdictions to consider when conducting vulnerability assessments or updating local policies in the guidance document. Given that sea level rise can present unprecedented challenges along urbanized shorelines like San Diego County, these best practices aim to minimize conflict and facilitate effective and efficient adaptation planning at the regional and local level.

Interview date:

Local Jurisdiction:

Local Contact:

1. Introduction

- a. Please describe your jurisdiction's overall process of sea level rise planning (e.g., scope, schedule, objectives).
 - i. What was the impetus in initiating the sea level rise planning process (e.g. funding, community demand, other factors)?
 - ii. How did you identify your objectives (e.g., regulatory requirements, stakeholder interests, other factors)?
 - iii. What stage of the sea level rise planning process are you currently in?
- b. What are your lessons learned from the process so far?
 - i. What has worked well?
 - ii. What would you have done differently if you were to do it again?

2. Vulnerability assessments

- a. What was your biggest lesson learned during the vulnerability assessment process?

- i. What worked well?
- ii. What would you have done differently if you were to do it again?
- iii. Do you anticipate any key challenges moving forward?
- b. How were sea level rise scenarios selected?
- c. Were data gaps discovered while conducting the vulnerability assessment? If so, how were these gaps addressed (making assumptions and/or conducting additional analysis, e.g., sediment management plan and wetland habitat migration assessment)?
- d. Please describe the outreach approach utilized during the vulnerability assessment.
 - i. Was there an Advisory Committee? If so, who were the members and what was their role?
 - ii. How were neighboring cities or other stakeholders engaged (e.g., Surfrider, other organizations, the public)?
 - iii. In general, considering all the stakeholders involved in the outreach process:
 - (1) What went well with the outreach process and why (e.g., surveys, number of meetings, timing, attendance, participation)?
 - (2) What would you have done differently during the outreach process if you were to do it again?
- e. Did the California Coastal Commission provide feedback?
 - i. If so, please describe (e.g., when did they get involved, did they stay involved?).
 - ii. If not, why not?
 - iii. Do you have any lessons learned regarding soliciting and incorporating California Coastal Commission feedback?
- f. Please describe how [local jurisdiction] has used and/or plans to use the results of the vulnerability assessment.
 - i. Did you take your vulnerability assessment one step further by ranking the vulnerabilities or doing a risk assessment?

3. Adaptation measures

- a. What was your biggest lesson learned in identifying and developing adaptation measures?
 - i. What worked well?
 - ii. What would you have done differently if you were to do it again?
 - iii. Do you anticipate any key challenges moving forward?
- b. Please describe your process for identifying and developing adaptation measures.
 - i. How did you use existing local, regional and/or state policies, plans or guidance?

- ii. How were stakeholders involved in the process?
 - (1) What went well and why (e.g., surveys, number of meetings, timing, attendance, participation)?
 - (2) What would you have done differently if you were to do it again?
- iii. Which potential adaptation measures are preferred and why?
- iv. Which measures are controversial and why?
- v. Have thresholds/triggers been identified for implementation of any measures?
 - (1) If so, what was your key lesson learned?
 - (2) If not, why not?
- vi. How were economics considered in evaluating potential adaptation measures (e.g., cost-benefit analysis)?
- c. Please describe how [local jurisdiction] has used and/or plans to incorporate the adaptation measures into plans, programs, and/or policies, e.g., General Plan and Local Coastal Program.
 - i. What was the biggest challenge you have faced or that you anticipate in developing adaptation policies?
- d. Has [local jurisdiction] taken any steps toward implementing adaptation projects (e.g. earmarked funding for design, construction, etc.)?
 - i. Are there additional key challenges you anticipate in the implementation of adaptation measures?
- e. What role do you see regional and state organizations having, if any, in addressing local planning and project implementation challenges?

4. Regional transportation adaptation measures

- a. Have any adaptation measures been considered for vulnerable regional transportation assets (such as highways, bikeways, pedestrian routes, rail, and transit corridors that cross jurisdictional lines) in your jurisdiction?
- b. Policies (state, regional and local):
 - i. What existing policies facilitate adaptation of vulnerable regional transportation assets?
 - ii. What new or updated policies are needed to facilitate adaptation of vulnerable regional transportation assets?
- c. Funding mechanisms (state, regional and local):
 - i. What existing funding mechanisms facilitate adaptation of vulnerable regional transportation assets?
 - ii. What new or updated funding mechanisms are needed to facilitate adaptation of vulnerable regional transportation assets?

- d. Projects (regional and local):
 - i. What existing or planned projects will address vulnerable regional transportation assets?
 - ii. What new projects are needed to address vulnerable regional transportation assets?

5. Other planning considerations

- a. What is the status of the FEMA's remapping of the [local jurisdiction]? Is FEMA's remapping process coordinated with [local jurisdiction's] sea level rise planning process?
- b. Is there anything else you would like to share about [local jurisdiction's] sea level rise planning process?