

OVERCOMING ORGANIZATIONAL BARRIERS TO IMPLEMENTING LOCAL GOVERNMENT ADAPTATION STRATEGIES

A Report for:

California's Fourth Climate Change Assessment

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Edmund G. Brown, Jr., *Governor*

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PREFACE

California's Climate Change Assessments provide a scientific foundation for understanding climate-related vulnerability at the local scale and informing resilience actions. These Assessments contribute to the advancement of science-based policies, plans, and programs to promote effective climate leadership in California. In 2006, California released its First Climate Change Assessment, which shed light on the impacts of climate change on specific sectors in California and was instrumental in supporting the passage of the landmark legislation Assembly Bill 32 (Núñez, Chapter 488, Statutes of 2006), California's Global Warming Solutions Act. The Second Assessment concluded that adaptation is a crucial complement to reducing greenhouse gas emissions (2009), given that some changes to the climate are ongoing and inevitable, motivating and informing California's first Climate Adaptation Strategy released the same year. In 2012, California's Third Climate Change Assessment made substantial progress in projecting local impacts of climate change, investigating consequences to human and natural systems, and exploring barriers to adaptation.

Under the leadership of Governor Edmund G. Brown, Jr., a trio of state agencies jointly managed and supported California's Fourth Climate Change Assessment: California's Natural Resources Agency (CNRA), the Governor's Office of Planning and Research (OPR), and the California Energy Commission (Energy Commission). The Climate Action Team Research Working Group, through which more than 20 state agencies coordinate climate-related research, served as the steering committee, providing input for a multisector call for proposals, participating in selection of research teams, and offering technical guidance throughout the process.

California's Fourth Climate Change Assessment (Fourth Assessment) advances actionable science that serves the growing needs of state and local-level decision-makers from a variety of sectors. It includes research to develop rigorous, comprehensive climate change scenarios at a scale suitable for illuminating regional vulnerabilities and localized adaptation strategies in California; datasets and tools that improve integration of observed and projected knowledge about climate change into decision-making; and recommendations and information to directly inform vulnerability assessments and adaptation strategies for California's energy sector, water resources and management, oceans and coasts, forests, wildfires, agriculture, biodiversity and habitat, and public health.

The Fourth Assessment includes 44 technical reports to advance the scientific foundation for understanding climate-related risks and resilience options, nine regional reports plus an oceans and coast report to outline climate risks and adaptation options, reports on tribal and indigenous issues as well as climate justice, and a comprehensive statewide summary report. All research contributing to the Fourth Assessment was peer-reviewed to ensure scientific rigor and relevance to practitioners and stakeholders.

For the full suite of Fourth Assessment research products, please visit www.climateassessment.ca.gov. This report documents the development and findings of the Adaptation Capability Advancement Toolkit (Adapt-CA), which aims to help local governments build their internal capacity to address climate change resilience.

ABSTRACT

Local governments across California have taken immense strides to combat climate change. However, many local governments still face organizational barriers to comprehensively implement climate change adaptation measures. Organizational barriers can delay and even prevent local governments from moving from adaptation planning to implementation due to the wide-reaching scope of climate change impacts. This study aims to further the understanding of the diversity of organizational barriers that California local governments experience and to develop a resource to assist local governments in their efforts to overcome these barriers to more effectively implement climate change adaptation strategies.

The research team conducted a broad literature review, an online survey, multiple regional stakeholder workshops, and focus groups to deepen the understanding of organizational barriers to adaptation in California local governments. These research inputs produced findings on organizational barriers experienced by California local government adaptation practitioners, and enabled the development and testing of the Adaptation Capability Advancement Toolkit. The Toolkit aims to help local governments rapidly assess their current capabilities to overcome organizational barriers and identify key actions and resources for increasing their organizational capability for undertaking climate change adaptation. The Toolkit is based on the Capability Maturity Model process improvement framework, and focuses on developing capabilities within four key process areas which were identified as common sources of organizational barriers: leadership and organizational culture, staffing and technical capacity, stakeholder engagement and partnerships, and operations and institutional processes. The Toolkit was tested by California local government adaptation practitioners in order to ground-truth recommendations and assess the utility of suggested actions and resources. Participants indicated that they view the resource as valuable, particularly if continuously supported.

Keywords: climate change adaptation, Capability Maturity Model, local government, institutional barriers, mainstreaming, organizational barriers

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HIGHLIGHTS

- This project found that California local government climate adaptation efforts are frequently inhibited by internal organizational barriers. These barriers can be grouped into four categories: (1) leadership and organizational culture, (2) staffing and technical capacity, (3) stakeholder engagement and partnerships, and (4) operations and institutionalized processes.
- To help local governments overcome common organizational barriers and advance their capability to implement climate change adaptation measures, this project developed the Adaptation Capability Advancement Toolkit, termed Adapt-CA. The Toolkit is based on the Capability Maturity Model (CMM) process improvement framework, and is designed to help local governments advance their process capabilities to overcome common barriers in the four areas described above. The Toolkit aims to help local governments assess their existing capabilities for climate adaptation and identify concrete actions to advance their capabilities for more effective planning and implementation of climate change adaptation activities.
- The Adaptation Capability Advancement Toolkit includes three components: (1) a CMM Matrix that describes key capabilities, (2) Self-Assessment Checklists that enable users to quickly assess their local government agency's capabilities, and (3) a Roadmap of suggested actions to advance capabilities and external resources to aid in this process. Each of the Toolkit components is described within four process areas of common organizational barriers (Leadership and Organizational Culture, Staffing and Technical Capacity, Stakeholder Engagement and Partnerships, and Operations and Institutionalized Processes) and four levels of maturity (Initiation, Development, Standardization, and Optimization). The process areas are core areas of control within local governments and are areas where organizational barriers to climate adaptation efforts frequently arise. The maturity levels are defined by milestones that follow an evolutionary path toward an institutionalized, continuously improving adaptation process.
- The Toolkit was tested and refined based on feedback from adaptation practitioners working for, or with, California local governments. The participants indicated that they view the resource as a useful tool, and see significant value in a continuously updated and supported tool.

WEB LINKS

The Adaptation Capability Advancement Toolkit can be found at:

<http://arccacalifornia.org/adapt-ca/>

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1: Introduction

1.1 Background and Motivation for this Study

As greenhouse gas concentrations continue to rise, the world is increasingly experiencing changes attributable to climate change (USGCRP 2017). California is already experiencing increased average temperatures, reduced snowpack, warmer storms, and higher sea levels (CNRA 2017). These changes pose risks across the state, affecting infrastructure, public health, the economy, and other sectors (CNRA 2017). As owners and managers of infrastructure, land, and public services, California government agencies have the opportunity to enhance the resilience of California communities and the systems they rely on. Furthermore, the California State Government is committed to undertaking climate adaptation; within the latest Safeguarding California Plan update, the first recommendation is that all core functions of government consider climate change to “*protect people, infrastructure, the economy, and nature from climate impacts and disrupting events*” (CNRA 2017). The State Government also recognizes the need to encourage and support local governments in planning for, and implementing, climate change adaptation (CNRA 2017).

While California local governments have begun to undertake climate adaptation efforts, these efforts are in early stages of development (CNRA 2017; Moser and Ekstrom 2012). Local governments face a multitude of barriers to comprehensively implementing climate change adaptation measures. These barriers are primarily related to institutional governance, attitudes and motivation, resources and funding, politics, and leadership (Moser and Ekstrom 2012). While local governments have limited control over external barriers, such as their jurisdictional or legislative powers delegated through state or federal legislation and policy, they have the ability to influence internal barriers. In this project, these internal barriers that are within the control of the organization are described as organizational barriers.

Previous in-depth research on barriers to adaptation has been completed in the Bay Area by Moser and Ekstrom (2012). However, as of the start of California’s Fourth Climate Change Assessment, there were no comprehensive assessments of local government adaptation barriers throughout California. Furthermore, while there were guides available to help communities conduct discrete adaptation actions, such as conducting climate change vulnerability assessments and developing adaptation plans, there were no guides to help agencies take a comprehensive approach to increase their organizational capability for implementing adaptation strategies.

To fill these knowledge gaps, this research project aimed to:

- a) Further the understanding of the diversity of organizational barriers inhibiting California local government climate adaptation efforts and methods for overcoming these barriers, and
- b) Develop a toolkit based on the Capability Maturity Model (CMM) process improvement framework to help the State’s local governments understand their current capacities to adapt, overcome common organizational barriers, and improve their own capabilities for adapting to climate change.

To achieve these goals, the research team undertook a literature review, an online survey, regional stakeholder workshops, and focus groups¹. The resulting Adaptation Capability Advancement Toolkit (Toolkit)² – termed *Adapt-CA* – is based on project findings on organizational barriers and is designed to help local governments:

- 1) Rapidly identify their existing capabilities across four process areas of common organizational barriers,
- 2) Identify steps that they might take to improve their capability and address common organizational barriers to climate adaptation efforts, and
- 3) Access targeted tools and resources to accelerate the pace of advancing their capabilities and implementing adaptation measures.

1.2 Overview of Paper Structure

This paper is structured as follows: Section 2 describes the research team’s methodology for researching organizational barriers to climate change adaptation efforts in California local governments and developing and testing a CMM framework to overcome these barriers. Section 3 describes key findings on organizational barriers from the literature review and survey. Section 4 provides an overview of the Toolkit and its components, as well as findings from focus groups’ Toolkit testing. Section 5 describes conclusions and potential future research.

2: Methodology

This section describes the research team’s approach to establishing a deeper understanding of organizational barriers that currently inhibit California local government climate change adaptation efforts (“organizational barriers”), and the approach to developing and refining the Adaptation Capability Advancement Toolkit. To better understand these organizational barriers and to inform the development of the Toolkit, the research team conducted a literature review, survey, regional stakeholder workshops, and focus groups, as depicted in Figure 1, below.

The following sections describe the methodology for each step.

¹ Notably, there is an associated project under California’s Fourth Climate Change Assessment (Fourth Assessment) which investigates financial barriers to climate adaptation in local governments, titled *Theme 7 Project A: Adaptation Finance Challenges: Characteristic Patterns Facing California Local Governments and Ways to Overcome Them* (Moser et al. 2018)

² The Toolkit can be found at <http://arccacalifornia.org/adapt-ca/>. Notably, the website is still under development as of January 16, 2018.

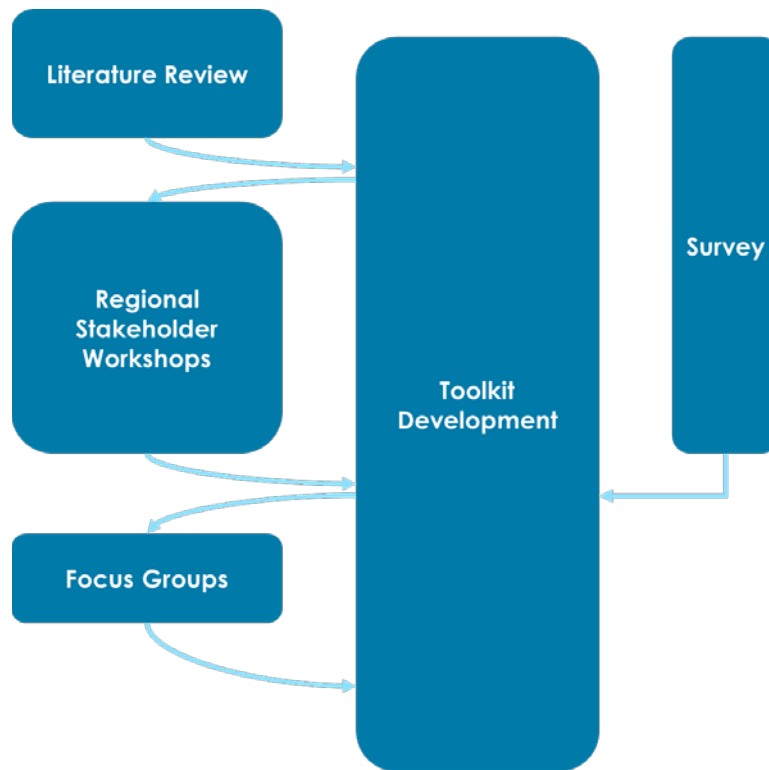


Figure 1. Methodology

2.1 Literature Review

The research team undertook a literature review to deepen the understanding of California local government adaptation efforts in recent years and the barriers that have inhibited these efforts. Over 30 sources were reviewed, including published California local government adaptation plans, academic literature, grey literature, and other online sources. To identify California local government adaptation plans, the research team used a list of California local climate change policies and plans compiled by the Governor’s Office of Planning and Research (OPR 2016). Academic literature was identified through an academic database search (EBSCO), and grey literature and other online sources were identified through web searches of terms related to local government climate adaptation. The findings from this review are synthesized in *Section 3: Synthesis of Key Findings*, and were used to develop the initial draft CMM Matrix and Roadmap.

The following are the terms used in the web searches to find online sources:

- **Broadest search:** “climate adapt*” and (financ* or funding or barrier* or challeng*)
- **Search refined with ‘institution/local government’:** “climate adapt*” and (financ* or funding or barrier* or challeng*) and (institution* or govern* or politic* or power or authority or actors)
- **Search refined with ‘institution/local government’ and ‘adaptive capacity’:** “climate adapt*” and (financ* or funding or barrier* or challeng*) and (institution* or local govern* or politic* or power or authority or actors) and (“adaptive capacity” or “institutional capacity”)

- **Search refined with 'California':** “climate adapt*” and (financ* or funding or barrier* or challeng*) and California.

2.2 Survey

A survey was developed to elicit information about adaptation efforts within California local governments, associated organizational barriers that local governments have encountered, and to determine the relative magnitude of these barriers as currently perceived by local government adaptation practitioners. The link to the survey was distributed publicly through several listservs, email contact lists, and promoted at the California Adaptation Forum (Long Beach, September 7-8, 2016) through a postcard. The link was also distributed at the California Climate Science Symposium (January 25-26, 2017) through conference announcements. The survey outreach strategy was designed to reach the widest distribution possible, rather than specifically representing a bounded population.³ The survey was open for 13 months, between June 28, 2016 and July 27, 2017. Notably, while the survey included questions about organizational barriers, it was primarily composed of questions about financial barriers to adaptation to inform the associated Fourth Assessment project *Theme 7 Project A: Adaptation Finance Challenges: Characteristic Patterns Facing California Local Governments and Ways to Overcome Them* (Moser et al. 2018). The survey can be found in Appendix A.

2.2.1 Responses and Criteria for Inclusion

A total of 333 responses were collected from the online survey. The survey dataset was carefully reviewed to identify and eliminate those that did not meet the inclusion criteria of answering at least the one of the substantive questions. Eighty-two surveys were excluded on this basis, leaving a total of 251 responses. There were also 18 duplicate responses submitted by the same person at different times, resulting in a total of 233 responses.

Partial responses occurred because many survey questions were optional; therefore, participants could skip any given question without responding to it. Allowing for optional responses can contribute to a lower per question response rate; however, it can also reduce early drop-off (Dillman et al. 2009).

2.2.2 Respondent Characteristics and Potential Biases

Among the 233 respondents, 74 percent (173) worked with or for a city or county (Table 1), 96 of which worked in a municipality and 53 in county government. Around a quarter (25.8%) of respondents stated that they did not work with or for a particular city or county. Such organizations include regional planning organizations, special districts, and joint power authorities (JPAs). Far fewer were associated with regional districts or associations, and no respondents worked for tribal governments. Therefore, the results primarily gave insight into actions and barriers at the local city or county level, and the research team could not draw conclusions on groups underrepresented in this study, including tribal governments, the Federal government, non-governmental organizations, or the private sector.

³ The survey outreach method results in a non-parametric dataset; therefore, the data is not necessarily representative of all California local governments.

Table 1. Proportion of respondents who reported to work with or for a local government or not

		Frequency	Percent
Valid	I work with/for a city or county	173	74.2
	I do not work with/for a particular city or county	60	25.8
	Total	233	100.0

There are 482 municipalities and 58 counties in California, totaling 540 local governments. As the survey received 173 responses from individuals who work for or with a California city or county, it is likely that the survey includes responses from a high proportion of local governments across the state. However, the dataset may include multiple responses from the same agency, disproportionately representing the experiences of that local government.

The majority of respondents working with a local government were from highly populated cities or counties. Of the 170 respondents to the question, 75 percent worked with or for a city or county with a population of over 100,000 people, and over 25 percent worked with or for a city or county whose population exceeded 500,000 people (Table 2). Therefore, the analysis of barriers for these entities may not be wholly representative of the experience of smaller jurisdictions.

Table 2. Distribution of respondents by size of city/county.

		Frequency	Valid Percent
Valid	<25,000	23	13.5
	>25,000 - 50,000	14	8.2
	>50,000 - 100,000	25	14.7
	>100,000 - 500,000	60	35.3
	>500,000	48	28.2
	Total	170	100.0
Missing	System	63	
Total		233	

Respondents were asked what location their work or jurisdiction addressed. The majority of respondents (58%) reported a location within coastal climate regions, which, through a coarse unit of analysis, is consistent with how the state's population is distributed. As shown in Table

3, the majority of respondents are from the State's two largest conurbations: San Francisco (n=53) and Los Angeles (n=41).

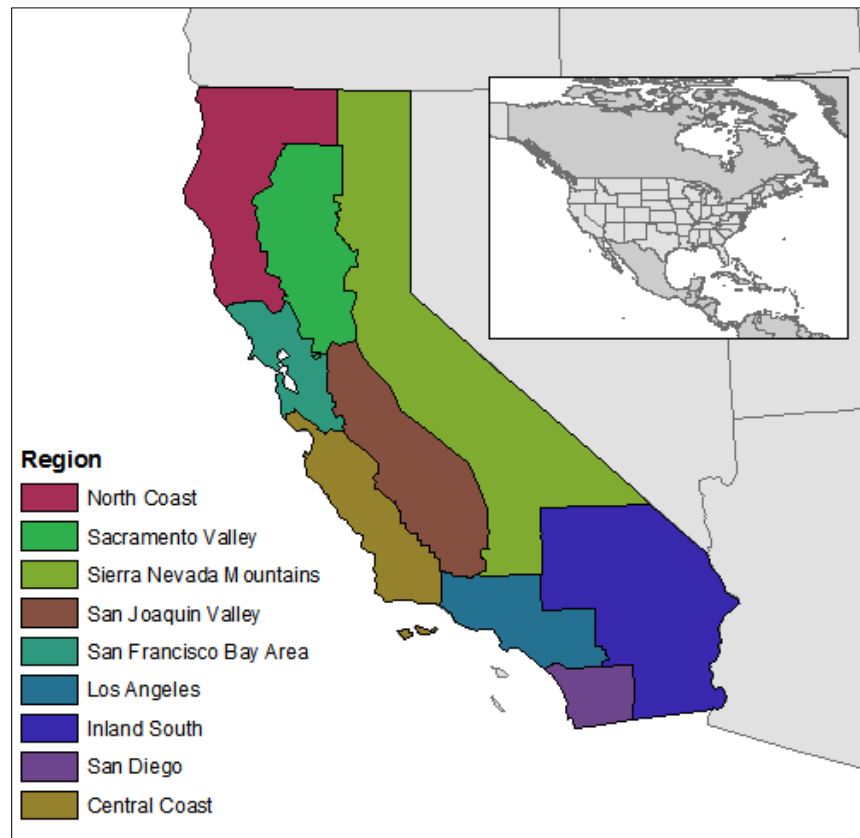


Figure 2. California's Fourth Assessment Climate Regions (Source: Moser et al. 2018)

Table 3. Number and proportion of respondents per climate region

Climate Region	# Respondents
Central Coast	22
Inland South	1
Los Angeles	41
North Coast	6
Sacramento Valley	19
San Diego	13
San Francisco Bay Area	53
San Joaquin Valley	3
Sierra Nevada Mountains	9
Unknown	66
Total	233

It is also likely that the survey responses are biased toward involvement in climate adaptation relative to the typical California local government. Specifically, it is likely that responses disproportionately represent local governments that are involved in climate adaptation activities while underrepresenting those that are not involved and/or interested in climate adaptation-related activities.

2.3 Toolkit Framework and Development

As described in *Section 1.1 Background and Motivation for this Study*, the Toolkit was developed based on the Capability Maturity Model (CMM) framework. The following sections provide an introduction to the CMM framework and describe how each of the Toolkit components was developed and refined.

2.3.1 Background on the Capability Maturity Model (CMM) Framework

The CMM is a process improvement framework developed to identify and advance an organization’s ability to execute processes that achieve particular results (Paulk et al. 1993). In other words, it acts as (1) a measuring stick that enables users to assess their capabilities, and (2) a guide to determine how users can advance their capabilities and achieve overarching goals such as advancing climate adaptation.

The CMM was originally designed to describe software development capabilities and its usefulness has subsequently led other sectors to adopt the framework to advance organizational capabilities outside of software development (Miron and Muita 2014; Cosic et al. 2012; Curtis et al. 2009).

The CMM framework is composed of

- **Process areas:** Each process area describes a group of related activities that together achieve a set of objectives (Paulk et al. 1993). Process areas in the original Paulk et al. (1993) CMM included software product engineering, staff training, and intergroup coordination, among others.
- **Maturity levels:** Each maturity level is a defined evolutionary stage in achieving mature process capabilities (Paulk et al. 1993). In the original CMM, maturity levels progress from initial, to repeatable, to defined, to managed, to optimizing (Paulk et al. 1993). At the optimizing level, the entire organization focuses on continuously improving processes.

An example of a CMM structure, including an example process area with process capabilities for five maturity levels, is illustrated in Table 4.

Table 4. Example CMM Structure

	Maturity Level 0 (L0)	Maturity Level 1 (L1)	Maturity Level 2 (L2)	Maturity Level 3 (L3)	Maturity Level 4 (L4)
Process Area 1:	Organization lacks a stable environment to engage in	Organization has procedures for managing an	Organization has a standard process for managing	Organization sets quantitative goals for	Organization is focused on continuous

Adaptation project management	adaptation efforts	adaptation project	adaptation projects, and process is documented	adaptation projects	process improvement
Process Area 2 (PA2)	Process Capability PA2 L0	Process Capability PA2 L1	Process Capability PA2 L2	Process Capability PA2 L3	Process Capability PA2 L4
Process Area 3 (PA3)	Process Capability PA3 L0	Process Capability PA3 L1	Process Capability PA3 L2	Process Capability PA3 L3	Process Capability PA3 L4

Examples of CMMs include the American Association of State Highway and Transportation Officials (AASHTO) Transportation Systems Management and Operations Guidance, and the Federal Highway Administration (FHWA) Transportation Performance Management (TPM) Self-Assessment Tool (AASHTO 2017; FHWA 2017).

Generally, CMM-recommended actions are inward-looking and emphasize internal management structures, staffing, training, and so on (Paulk et al. 1993). However, the CMM can also define an organization’s engagement with external stakeholders and partners (Paulk et al. 1993). As such, an organization can use the CMM as a decision-making guide to define what it could achieve by engaging with external partners to collaborate on broader efforts, impact policies and regulations, and influence other factors external to the organization.

2.1.1.1 Benefits of the CMM

The CMM format serves as a basis for the Adaptation Capability Advancement Toolkit as it provides the following benefits:

- It identifies a **high-level vision** of organizational capability as a target and provides a common language to discuss how to achieve this target.
- It provides a process for local governments to **quickly assess their organizational capabilities in a repeatable and standardized way**.
- It directly links **increasing process capabilities to overcoming common organizational barriers**.
- It focuses on a **small set of clearly-defined, incremental, and achievable steps** that are appropriate to an organization’s capabilities, and that **cumulatively advance organizational capability** and help organizations achieve overarching objectives.
- Specific actions needed to reach the next maturity level – while described independently – are conceived as occurring in parallel with other actions so as to **achieve improvement throughout the organization**.
- It guides the user towards reaching **continuous organizational process improvement** as opposed to defining a plateau, which may no longer be appropriate at a certain point.
- It **identifies areas where internal resources can be targeted** to most effectively advance capability.

- Within local governments, progress on climate action is sometimes viewed as the production of specific products (e.g., a greenhouse gas inventory, a climate action plan). The CMM, however, focuses on **maturing organizational processes, which institutionalizes and increases the longevity of climate adaptation efforts beyond a specific product.**

2.3.2 Toolkit Development

The Toolkit was developed using three components:

- The **CMM Matrix**, which is the core of the Toolkit. The Matrix describes the high-level core adaptation capabilities of a local government under each process area and each maturity level.
- The **Self-Assessment Checklists**, which enable the user to assess her/his agency's adaptation capabilities. For each process area and maturity level, the checklists describe core adaptation capabilities in detail, as well as the associated benefits.
- The **Roadmap**, which describes how local governments can improve their adaptation capabilities and advance to a higher maturity level. The Roadmap outlines concrete, incremental actions that users can take to advance their capabilities. It also includes external resources to provide additional guidance when undertaking the suggested actions.

These components were developed through an iterative process, as depicted in Figure 3 and described in the following sections.

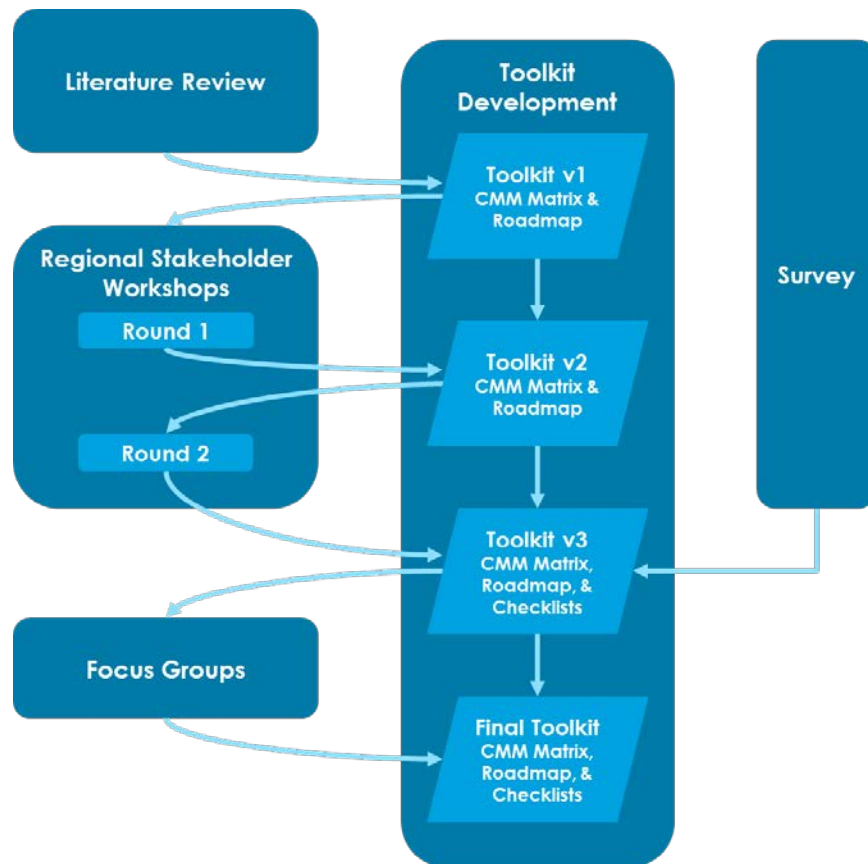


Figure 3. Toolkit development process

2.3.2.1 CMM Matrix Development

The CMM Matrix was developed through four major iterations, as shown in Figure 3: the first version was drafted based on literature review findings about organizational barriers; the second version incorporated feedback from the first three regional stakeholder workshops; the third incorporated feedback from the remaining six regional stakeholder workshops and findings from the survey; and the fourth and final version incorporated feedback from the focus groups. Specific findings from the literature review and survey are described in *Section 3: Synthesis of Key Findings on Organizational Barriers*; findings from the regional stakeholder workshops are found in *Appendix G: Regional Stakeholder Workshops: Toolkit Refinements*; findings from the focus groups are described in *Section 4.4 Testing the Toolkit: Focus Group Findings*.

The initial CMM Matrix was developed based on literature review findings and included nine process areas and five maturity levels. Based on the organizational barriers identified in the literature review, the research team identified organizational process areas related to local governments' abilities to address climate change adaptation measures. Because comprehensively planning and implementing adaptation measures requires engaging a range of agency departments, these process areas were developed to crosscut agency departments. To allow for use across a diverse set of California local governments, the process areas were also developed to be applicable to local governments of all types and sizes. The research team initially created nine process areas that were later condensed, through the iterative approach

shown in Figure 3, into the four higher-level process areas in the final CMM Matrix. This was based on feedback from the regional workshops about CMM Matrix usability and local government adaptation practitioner views of core adaptation process capabilities. The original nine process areas were: agency staffing structure, workforce development, internal collaboration and coordination, executive buy-in, external collaboration, technology and technical capabilities, business processes and mainstreaming, financing, and measuring progress. Much of the original content within the nine process areas was retained despite the consolidation to four process areas, namely: leadership and organizational culture, staffing and technical capacity, stakeholder engagement and partnerships, and operations and institutional processes.

Under each process area, the research team created maturity levels based on the original software development CMM (Paulk et al. 1993). The team originally created five levels, which progressed from process capabilities that were ad-hoc and independent to process capabilities that were managed and continuously improve. The levels were titled individual capability, managed individual capability, organizational capability, quantitatively managed organizational capability, and optimization. At the regional workshops, the research team received feedback that five levels created an unwarranted degree of complexity in the CMM Matrix. Therefore, the number of levels was reduced to four for the final product, namely: initiation, development, standardization, and optimization.

Based on the initial organizational process areas and the maturity levels identified, the research team developed the capabilities within the CMM Matrix. The capabilities were drafted to describe a logical progression of capability maturity for each process area. The capabilities within the matrix were refined based on feedback from California local government adaptation practitioners during the regional stakeholder workshops and focus groups, as described in *Section 4.4 Testing the Toolkit: Focus Group Findings* and *Section 3.3: Regional Stakeholder Workshops: Toolkit Refinements*.

The final CMM Matrix can be found in Appendix D.

2.3.2.2 Self-Assessment Checklists Development

The research team developed Self-Assessment Checklists for each process area to enable local governments to rapidly determine their current capability maturity levels. The Self-Assessment Checklists were developed following the regional stakeholder workshops and during the development of the third iteration of the CMM Matrix and Roadmap. The content is based on agency capabilities described in the CMM Matrix, and the advantages associated with those capabilities identified during the literature review and stakeholder workshops.

The final Self-Assessment Checklists can be found in Appendix E.

2.3.2.3 Roadmap Development

The research team developed a Roadmap to further assist local government users in identifying concrete actions to advance their adaptation capabilities based on the CMM Matrix. The research team aimed to design actions that are straightforward and achievable by local governments, and to select resources that provide useful information to help local governments undertake the actions. The Roadmap was developed and refined in four iterations in parallel with the CMM Matrix, based on information collected from the survey results and during the regional stakeholder workshops (see *Section 3: Synthesis of Key Findings on Organizational Barriers*

and *Appendix G: Regional Stakeholder Workshops: Toolkit Refinements*). The Roadmap was then refined based on feedback from focus groups (see *Section 4.4 Testing the Toolkit: Focus Group Findings*) and additional subject-matter experts who are engaged in ARCCA and other LGC adaptation programs. The final Roadmap can be found in Appendix F.

2.4 Regional Stakeholder Workshops

To refine the Toolkit, including focusing on local government needs, the research team solicited input on the tools at the stakeholder workshops, and modified them based on feedback received. The research team conducted nine half-day stakeholder meetings held in regional centers in partnership with the Local Government Commission’s (LGC) network. Five of the meetings were held in conjunction with the Alliance of Regional Collaboratives for Climate Adaptation (ARCCA), a coalition program of the LGC, three were held in conjunction with LGC’s network of CivicSpark regional partners, and one was held in conjunction with the 2016 California Adaptation Forum organized by the LGC. Using these networks provided regional consistency and maximized participation.

ARCCA is a coalition of regional networks across California that work to build regional resilience to climate impacts (ARCCA 2017a). The organization has been active in adaptation conversations and has often been called upon to provide insight on adaptation in state and national dialogues (ARCCA 2017b). ARCCA’s five regional collaboratives exist in the Sierra Mountain region, the Capital (Sacramento) region, the Bay Area, Los Angeles County, and San Diego County.

LGC’s network of CivicSpark regional partners provided an opportunity to convene consultation meetings in regions of the State not yet covered by the ARCCA network such as the Central Coast, Central Valley, and North Coast Regions.

The regional workshops were conducted between August 2016 and January 2017, and were attended by a total of 149 unique participants. The locations of the workshops (listed from south to north) and associated participation levels are identified in Table 5.

Table 5. Regional stakeholder workshop locations and number of participants

Regional Workshop	Workshop Location City	Number of Participants
San Diego Region	City of San Diego	18
Los Angeles Region	City of Los Angeles	40
Central Coast	City of San Luis Obispo	6
Central Valley	City of Fresno	3
Bay Area	City of San Francisco	26
Capital Region	City of Sacramento	10
Sierra Region	City of Truckee	12
North Coast	City of Eureka	10
California Adaptation Forum	City of Long Beach	24

Each regional stakeholder workshop followed a similar format to ensure consistency of inputs. At each workshop, the research team introduced the project, objectives, draft deliverables, and

findings on organizational barrier research undertaken to date. Following the introduction, each workshop focused on exercises for the associated Fourth Assessment project, *Theme 7 Project A: Adaptation Finance Challenges: Characteristic Patterns Facing California Local Governments and Ways to Overcome Them*. Following these exercises, the workshop focused on discussing organizational barriers to adaptation and potential strategies to overcoming these barriers. The research team introduced the Toolkit and how it can help local governments improve their abilities to implement climate change adaptation strategies. At this point, the methodology for the first three and final six workshops diverged.

During the first three workshops (San Francisco, Los Angeles, and Long Beach), participants reviewed the CMM Matrix and Roadmap. Participants were divided into small groups, each of which focused on a select number of process areas; each group included at least one facilitator and note taker. The groups discussed the following key questions:

1. Do the process areas address the core organizational barriers that you face at your agency? Are there missing barriers or things that aren't really barriers anymore?
2. What's your view on the levels? Too many, or just right? What about the distinctions between the levels? Could you identify where your agency falls or do you need more concrete examples of what you could "have" at each level? Are any of the steps too large to be reasonable?

After discussing the CMM Matrix, the groups reviewed the Roadmap and focused on the following key questions:

1. Are the actions to advance between levels useful? What is missing or needs to be modified? What actions have you taken at your agency or heard of others taking to move between these levels?
2. Are you aware of any resources that would help local governments accomplish the actions to advance between levels?
3. Do you have any best practices to share or agencies to point to that you think would be useful?

Following the group exercises, the research team led a facilitated discussion to gather participants' opinions of the Toolkit's benefits, shortcomings, ease of use, and identification of additional action steps to enhance capabilities.

In subsequent workshops (San Diego, Central Coast, Central Valley, Capital Region, Sierra Region, and North Coast), the participants were divided into groups where they discussed process areas, and the initial and most advanced maturity levels of the Toolkit. The change in the workshop format was primarily due to the integration of feedback into the Toolkit after the first three workshops. The research team then solicited feedback on the refined Roadmap at the subsequent workshops to allow for deeper discussions on specific components of the Toolkit. Participants were asked to discuss:

1. Do the process area groupings make sense? Are there categories that should be merged or broken out?

2. What are the first capabilities of an agency that would develop or an action they would take to work on climate change adaptation?
3. What capabilities will an agency have developed when they have a fully robust and integrated climate change adaptation program? How does it all come together?

While these workshops included perspectives from a variety of local governments from across the state, they inevitably were unable to capture the full range of perspectives represented by local governments and associated organizations in California. Active steps were taken to ensure that perspectives from remote and rural governments were included where possible, including through the survey process. However, the logistical constraints of organizing engagement sessions in remote and rural parts of the state, together with the long distances required by participants to travel to such workshops, resulted in the underrepresentation of perspectives from less populated, more remote, and under-resourced cities and counties.

2.5 Focus Groups

Following the revisions to the Toolkit, the research team conducted focus groups which brought together a cross-section of adaptation practitioners from local governments to test the Toolkit, provide feedback, and inform the final project report. The focus groups were conducted in the San Diego and Sacramento regions. The two locations were selected to ensure that both coastal and inland regions were included, and that regions from both Northern and Southern California were represented. A broad spectrum of participants was invited to ensure a diversity of size and experience with climate change adaptation implementation. Participants included planners, a sustainability coordinator, an assistant deputy to a county board of supervisors, and individuals working on coastal programs, climate action programs, energy programs, air district programs, and housing programs.

This section summarizes the pre-workshop questionnaire distributed prior to the focus group meetings and describes the focus group methodology.

2.5.1 Pre-focus group questionnaire

The research team asked participants to complete an online self-assessment questionnaire prior to the workshop (Appendix H). The questionnaire was intended to provide participants with a preview of the Toolkit's content that they would be reviewing at the focus groups, and to compare their ratings of their agencies' adaptation capability levels against their maturity levels as determined by the Toolkit. The questionnaire asked participants to rate their agencies' adaptation capabilities on a scale from one to four for each of the four process areas without a description of the maturity levels, then asked participants to respond to a series of questions about maturity level criteria that their agencies met, and lastly asked respondents to reassess their agencies' process areas based on their responses to the criteria questions.

2.5.2 Focus Group Design

The focus groups were designed to validate and refine the Toolkit, and with the potential outcome of providing actionable next steps for participants.

After introducing the project, the Toolkit, and the goals of the workshop, the facilitators asked participants to review process areas within the Roadmap. The San Diego workshop reviewed *Staffing and Technical Capacity* and *Leadership and Organizational Culture*, while the Sacramento focus group reviewed *Operations and Institutionalized Processes* and *Stakeholder Engagement and*

Partnerships. Each participant was asked to review two Roadmap progressions (e.g., Institutionalized Processes Level 0 to Level 1: *Initiation*). Participants filled out a worksheet which included questions on whether the recommended actions seemed appropriate, whether the guidance was clear and useful, and whether there was additional guidance or resources that the participants would recommend including. The worksheet also provided an optional space for participants to identify which specific steps they might take to advance their capability level, and associated obstacles and ways in which they might overcome these obstacles. The feedback collected from these worksheets and from the focus group discussions was integrated into the final guidebook.

3: Synthesis of Key Findings on Organizational Barriers

This section details key findings on organizational barriers from the literature review and survey. Findings from the survey are based on two questions. The first asked participants to rate the degree to which a variety of common barriers to climate adaptation acted as a hurdle (“not a hurdle” scored as 1, “small hurdle” scored as 2, and “big hurdle” scored as 3). The full results from this question can be found in Appendix B. The results from this question are compared against those from a survey run by Ekstrom and Moser (2012) which asked the same question and provided a very similar list of common barriers as response options. The second question asked survey respondents to share how they had overcome adaptation barriers that they had encountered, or to provide one or two ‘creative ideas’ for how the barriers might be overcome.

Findings are organized by the four Toolkit process areas. These areas are vital to local government adaptation efforts, yet are areas in which local governments frequently encounter organizational barriers. The four process areas are

- Leadership and Organizational Culture.
- Staffing and Technical Capacity.
- Stakeholder Engagement and Partnerships.
- Operations and Institutionalized Processes.

3.1 Leadership and Organizational Culture

3.1.1 Leadership

Support and buy-in from agency executives and elected officials are often necessary for effective climate change adaptation, otherwise it would not be considered a priority (Ekstrom and Moser 2012). Executive support is also needed to set agency goals on climate change adaptation, without which agency staff would continue to focus on other issues (Ekstrom and Moser 2012).

Executives, in addition to mid-level staff and community leaders, may not be providing leadership on climate change adaptation for a number of reasons, including (Ekstrom and Moser 2012):

- Waiting for others to take the lead.
- Lack of a mandate to conduct adaptation planning.
- Adaptation viewed as conflicting with personal political ambition.

Of the survey respondents, nearly 65 percent indicated that “lack of leadership from elected officials” is a hurdle to climate change adaptation and nearly half reported “lack of leadership within my organization” as a hurdle. In the Ekstrom and Moser (2012) survey, similar proportions of respondents reported these barriers as hurdles. In a similar vein, over 65 percent reported “no legal mandate to take climate change impacts into account” as a hurdle to climate change adaptation efforts. In the Ekstrom and Moser (2012) survey, a smaller proportion of respondents (fewer than 45 percent) rated this as a hurdle. These hurdles were most common among respondents whose local governments had not yet begun adaptation.

Ekstrom and Moser (2012) found that some of the strongest aids in advancing adaptation are strong leadership and increased public awareness of and interest in climate change. Survey respondents also highlighted the need to increase political will by increasing public awareness and support for climate adaptation. Additionally, respondents noted that barriers could be overcome through state-level action and the regulatory framework for adaptation. For example, California Senate Bill 379 (which requires local governments to include climate adaptation and resiliency in their general plan) was mentioned. Other respondents suggested that there be state laws requiring adaptation plans, backed with state funding to support implementation of such plans.

3.1.2 Organizational Culture

Climate change adaptation often necessitates coordination within an organization to determine roles and responsibilities, and to share findings. Internal coordination may be underdeveloped because of an institutional void or the absence of a department dedicated to managing climate adaptation related tasks, causing adaptation to go unaddressed (Eisenack et al. 2014).

Conversely, there may be institutional crowdedness, or overlapping areas of responsibility relating to climate adaptation, leading to ambiguity in the division of tasks between departments (Shkaruba et al. 2015). Without coordination, this ambiguity can lead adaptation to go unaddressed. In a third scenario of organizational and cultural barriers, termed a ‘functional misfit’, there is one department responsible for climate adaptation but it is not adequately equipped to manage adaptation efforts (Shkaruba et al. 2015).

Intra-agency coordination (including strong communication, building both formal and informal relationships, and creating or changing governance structures) encompasses important strategies to overcoming barriers to adaptation (Ekstrom and Moser 2013). However, challenges to such coordination can arise via stove-piped or isolated government departments (Ekstrom and Moser 2013). There may also be fragmented adaptation functions across special-purpose statutes, causing simultaneous but disparate and un-coordinated adaptation efforts (Lawrence 2015). Therefore, assigning clear responsibilities can foster effective collaboration, not only internally among staff, but also externally with stakeholders, partners, and other local government agencies (Eisenack et al. 2014).

Over 60 percent of survey respondents indicated that “lack of internal coordination among departments in my organization” is a hurdle to climate adaptation; a similar proportion

indicated that “lack of coordination” (unspecified whether internal or external) was a hurdle in the Ekstrom and Moser (2012) survey. Survey responses indicate that this hurdle persists throughout all stages of the adaptation process, including not yet begun, understanding, planning, and managing.

Survey respondents also noted the importance of breaking down organizational silos and finding better ways to reach out to staff across the organization to stimulate adaptive action and overcome barriers. Creativity and communication were key to the internal coordination and advocacy. Respondents indicated that finding ways to communicate adaptation scenarios so that they resonated with decision makers was helpful, as were consistent meetings among local government leaders and sharing resources and information among departments.

3.2 Staffing and Technical Capacity

3.2.1 Staffing

Tackling local government adaptation requires that staff have the bandwidth to take on the effort. Because of the historic lack of requirements for local governments to consider climate change impacts, adaptation is a new area of work for many local governments. Frequently, municipalities do not have the staff capacity to address climate change impacts and adaptation due to competing priorities and capacity constraints (Crawford and Seiderl 2013; Ekstrom and Moser 2012). Local governments are faced with “overwhelming other priorities [that] are preventing people from taking notice, learning about, and focusing on climate change” (Ekstrom and Moser 2012). This aligns with survey findings. Survey respondents scored “insufficient staff resources to analyze relevant information” as the second greatest hurdle (nearly 90 percent of respondents indicated that it is a hurdle, and over 60 percent of respondents rated it as a “big hurdle”); these results are similar to those of the Ekstrom and Moser (2012) survey. Respondents whose local governments had not yet begun adaptation on average ranked this as the greatest hurdle. Survey respondents scored “current pressing issues are all-consuming” as the third greatest hurdle (over 85 percent of respondents indicated that it is a hurdle, and nearly 50 percent scored it as a “big hurdle”). In the Ekstrom and Moser (2012) survey, a larger proportion of respondents perceived this to be a hurdle; nearly 90 percent reported it as a hurdle, and over 60 percent scored it as a “big hurdle”. This hurdle was ranked higher by respondents whose local governments had either not yet begun or were in the early understanding phase of adaptation.

Ekstrom and Moser (2012) found that staff with particular traits are the most important aid to advancing adaptation in the face of barriers. These traits included interest in serving the regional good, innovation and willingness to be an early adopter, taking on a long-term and integrative perspective, being an effective collaborator and communicator, and commitment, among others (Ekstrom and Moser 2012). Similarly, survey respondents noted the importance of finding champions to promote, sustain, and help implement climate adaptation to overcome barriers. For example, respondents indicated that having a climate change champion within their organization helped make adaptation a higher priority by placing greater emphasis and visibility on the issue and by successfully engaging stakeholders. In other cases, organizations were their own champions and pushed forward with studies on their own without waiting for broader coordination with other organizations or higher-level management. Survey respondents also noted that staff that are persistent, dedicated, and passionate can help overcome barriers to adaptation.

3.2.2 Technical Capacities

Effectively working on climate change adaptation requires technical capabilities, including an understanding of climate science and typical adaptation planning processes (e.g., vulnerability assessments, risk assessment, adaptation strategy development, spatial analysis) (Crawford and Seiderl 2013; Ekstrom and Moser 2012). However, many local government agencies lack staff members who have this level of technical expertise and knowledge (Crawford and Seiderl 2013; Ekstrom and Moser 2012). Additionally, analyzing climate change impacts and developing adaptation strategies frequently requires an understanding of how to conduct multi-hazard assessments. A barrier to the uptake of multi-hazard assessments includes a lack of clarity regarding the multi-hazard approach and concern over the level of expertise required to implement the methods (GFDRR 2016). Survey findings indicate that California practitioners perceive the lack of technical capabilities as a barrier to climate adaptation. Over 70 percent of survey respondents reported “lack of technical assistance from state or federal agencies” to be a hurdle to adaptation, and over 60 percent reported “lack of access to relevant information, data” as a hurdle. These proportions are very similar to the Ekstrom and Moser (2012) survey findings. These hurdles were on average ranked highest by respondents whose local governments had not yet begun or were in the early understanding phase of adaptation. California practitioners also perceive a more general lack of capability to address climate impacts and adaptation as a barrier. Over 70 percent of survey respondents reported “magnitude of problem is too overwhelming to address” as a hurdle, and 70 percent reported “unclear what adaptation options are available” as a hurdle. Ekstrom and Moser (2012) found these hurdles to be less pervasive, with approximately 60 percent of respondents reporting “magnitude of problem overwhelming” as a hurdle, and 55 percent reporting “unclear on available options” as a hurdle.

Ekstrom and Moser (2012) found that learning and increasing others’ awareness about climate impacts and adaptation are important strategies for overcoming adaptation barriers. Survey respondents noted that assistance from the state, including grant funding and technical guidance, could help overcome adaptation barriers.

3.3 Stakeholder Engagement & Partnerships

Climate adaptation challenges are not confined by geopolitical borders, but the people and governments dealing with them are (Adams et al. 2015). Because of the overarching impacts from adaptation, entities that do not often collaborate at a significant level (e.g., the public sector, private companies, NGOs, academics) are likely required to do so to manage climate adaptation efforts effectively.

The lack and difficulty of effective coordination and integration of efforts among actors engaged in adaptation are major barriers to climate adaptation (Adams et al. 2015; Aylett 2015; Ekstrom and Moser 2012; Herzog et al. 2015; Hughes 2015; Lawrence 2015). Coordination is needed, but lacking between entities across different sectors, geographic scales, and levels of government (Adams et al. 2015; Ekstrom and Moser 2013). These findings are consistent with survey results, where respondents marked “lack of coordination across levels of governments” as the fifth greatest hurdle (over 80 percent of respondents reported it as a hurdle, with nearly 45 percent of respondents scoring it as a “big hurdle”). The Ekstrom and Moser (2012) survey found this hurdle to be less pervasive; less than 65 percent of respondents reported “lack of coordination” as a hurdle, and less than 25 percent reported it as a “big hurdle”. Additionally, nearly 55

percent of survey respondents marked “opposition from stakeholder groups” as a hurdle; in the Ekstrom and Moser (2012) survey, similar proportions of respondents reported “opposition from stakeholders” as a hurdle. Based on survey responses, these hurdles persist throughout all phases of the adaptation process.

Difficulty in coordinating across agencies is often exacerbated by a lack of leadership, clarity on responsibilities, agreement over options and goals, and an established structure for collaboration (Adams et al. 2015; Ekstrom and Moser 2012). However, informal networking, relationship building, and more structured partnerships and agreements have been used to improve collaboration (Eisenack et al. 2014; Ekstrom and Moser 2013; Lawrence 2015). The lack of public appetite for adaptation has also been identified as a barrier to adaptation (Ekstrom and Moser 2012). Over 80 percent of survey respondents perceive “lack of public demand to take adaptation action” to be a hurdle to adaptation, with over 40 percent reporting it as a “big hurdle”. Survey respondents also reported “lack of social acceptability of adaptation strategies” as a barrier, with over 70 percent perceiving it as a hurdle, and 35 percent ranking it as a “big hurdle”. Ekstrom and Moser (2012) found both hurdles to be less widespread; in the 2012 survey, 65 percent of respondents reported “lack of public demand” as a hurdle and less than one third reported it as a big hurdle, and less than 65 percent of respondents reported “lack of social acceptability” as a hurdle and less than one quarter reported it as a big hurdle. Both hurdles were ranked highest among survey respondents whose local governments have not yet begun the adaptation process.

Ekstrom and Moser (2012) found that conscious and strategic communication, networking, relationship building, and forming partnerships are among the most common types of strategies for overcoming adaptation barriers. Many survey respondents shared networking and engagement strategies for overcoming adaptation barriers. These included engaging local communities, especially among those who were already in support of climate change action, to build momentum and create demand. Respondents also found it useful to collaborate with other organizations within their region to pool resources and information. This was also a useful strategy for organizations that were in the earlier stages of adaptation planning – they could glean ideas and lessons learned by working with other organizations that had already prepared plans or developed actions. Another strategy was to bring in outside entities such as universities or non-profits that already had the capacity to take on adaptation action and to add credibility to the efforts with sound research.

Respondents also noted a need to raise public awareness about climate impacts and adaptation options, thereby increasing political will for adaptation. When communicating about climate adaptation, respondents recommended orienting messaging around community priorities and socially acceptable issues (e.g., communicating through a public health lens, rather than communicating exclusively about climate change).

3.4 Operations & Institutionalized Processes

3.4.1 Mainstreaming

Mainstreaming is the integration of climate adaptation into existing planning, policy-making, and decision-making processes, such as long-range plans (Aylett 2015; Cuevas 2016). Mainstreaming adaptation into existing departmental functions and sectoral policies reduces uncertainty and ambiguity in adaptation responsibility and ensures that adaptation is addressed effectively (Aylett 2015; Biesbroek et al. 2010; Cuevas 2016; Ramos 2011). However,

the literature acknowledges that the process for mainstreaming climate change adaptation into existing departmental functions remains challenging, and there are few examples of how to effectively do so (Adams et al. 2015; Aylett 2015). Additionally, government decision making frameworks, through which climate change adaptation would be mainstreamed, are often incapable of dealing with the uncertainty and dynamic nature of climate change and climate adaptation (Lawrence 2015).

Ekstrom and Moser (2012) found that one of the most important aids in advancing adaptation is the creation of policies, laws, plans, and mandates that facilitate and allow the integration, or mainstreaming, of adaptation. The authors also found that making policy, planning, and management changes is the most common strategy for overcoming adaptation barriers. Adding adaptation studies in a plan update, making small changes to infrastructure and development decisions, and requiring development applicants to assess climate risks are all examples of such changes. Similarly, survey respondents highlighted mainstreaming as a mechanism for overcoming barriers to climate adaptation, such as incorporating adaptation into general plan, local hazard mitigation plan, and climate action plan updates.

3.4.2 Financing

Financing is critical to advancing adaptation planning, implementation, and evaluation, but it has been identified as a key barrier to local government climate change adaptation (Coffee 2016; Ekstrom and Moser 2012). This is consistent with the survey findings. Respondents scored the “lack of funding to implement a plan” as the biggest hurdle to adaptation (nearly 95 percent indicated that it is a hurdle, and nearly 80 percent marked this option as a “big hurdle”). Respondents also scored “lack of funding to prepare a plan” as the fourth biggest hurdle (nearly 85 percent indicated that it is a hurdle, and nearly 50 percent scored the option as a “big hurdle”). While the lack of funding to implement a plan was ranked highest by respondents whose local governments were in the adaptation planning stage, the lack of funding to prepare a plan was ranked highest by respondents whose local governments had not yet begun the adaptation process.

Ekstrom and Moser (2012) found that local governments lack funding for initial vulnerability assessments, detailed assessments (including environmental reviews), adaptation planning, and adaptation strategy implementation. With agencies already feeling financially stretched thin, internal funding for adaptation is not readily available as it is typically not a priority (nor a requirement). This leads to the exclusion of adaptation in work plans and budgets (Ekstrom and Moser 2012). Additionally, advocating for internal funding for adaptation is made more difficult by an inability to demonstrate reasonable or positive returns on investment (Ekstrom and Moser 2012).

Survey respondents proposed using greenhouse gas mitigation funding sources to support adaptation by identifying and implementing mitigation strategies that have adaptation co-benefits.

3.4.3 Evaluation, Measurement, and Verification (EMV)

Measuring progress allows an agency to understand the effectiveness of its actions, which can help inform adjustments to the agency’s adaptation actions and overarching plans, if needed. Undertaking monitoring is difficult for a number of reasons. Some local agencies may not traditionally keep data and/or records that could assist with this process, and other organizations may not publicly publish their data (Ekstrom and Moser 2012). In addition, a

standardized method to measure the reduction of vulnerabilities does not currently exist, and there have been few attempts to develop systematic approaches for tracking adaptation. Therefore, agencies do not have a clear understanding of what they need to be monitoring, how to establish a monitoring plan, and how to evaluate the data (Ekstrom and Moser 2012).

4: Final Toolkit: A Framework for Overcoming Organizational Barriers to Climate Change Adaptation

To help local governments overcome common organizational barriers, the final Toolkit presents steps for advancing capabilities that enable agencies to overcome barriers that frequently arise. The Toolkit consists of a CMM Matrix, Self-Assessment Checklists, and Roadmap; this sequence also reflects the order in which the components are intended to be used. The CMM Matrix is intended to help the user develop a basic understanding of the process areas and maturity levels, and the concept of advancing process capabilities. The user can then determine her/his agency's capability maturity level using the Self-Assessment Checklists, then use the Roadmap to identify actions that they might take to advance to the next capability maturity level in any given process area.

The final products will be available on an interactive online platform developed by LGC and hosted on the ARCCA website. LGC will coordinate with the research team, ARCCA regional collaboratives, the Governor's Office of Planning and Research, and other key stakeholders to keep the tool updated beyond the project timeline. The online platform is located at <http://arccacalifornia.org/adapt-ca/>.

The final products can be found in the Appendices in the following order:

- Appendix C: Toolkit introduction.
- Appendix D: CMM Matrix.
- Appendix E: Self-Assessment Checklists.
- Appendix F: Roadmap.

The following sections describe the final Toolkit products, as well as the results from the focus group testing.

4.1 CMM Matrix

The final CMM Matrix includes four maturity levels and four process areas, and describes local government adaptation capabilities for each combination of level and process area. This structure is depicted in Figure 4, below. The complete final CMM Matrix can be found in Appendix D.

		Maturity Levels			
		Level 1 Initiation	Level 2 Development	Level 3 Standardization	Level 4 Optimization
Process Areas	1. Leadership and Organizational Culture				
	2. Staffing and Technical Capacity				
	3. Stakeholder Engagement and Partnerships				
	4. Operations and Institutional Processes				

Figure 4. Local government climate change adaptation CMM structure, including process areas (row headers), maturity levels (column headers), and capabilities (white cells).

The maturity levels progress from ad-hoc activities to a robust adaptation program that is continuously monitored and improved. The four maturity levels developed include

Level 1. Initiation, which describes a local government with the capability to build an understanding of climate risks and adaptation, and to support adaptation activities on an ad-hoc or opportunistic basis.

Level 2. Development, which describes a local government with the capability to incorporate adaptation into agency goals, plans, and activities with dedicated staff leading adaptation efforts.

Level 3. Standardization, which describes a local government with the capability to establish a shared vision for adaptation with strong support from staff, leaders, partners, and community members, and is quantitatively measuring progress in achieving adaptation goals.

Level 4. Optimization, which describes a local government with the capability to fully integrate adaptation into agency planning, investing, and decision-making processes with agency- and community-wide engagement, and to measure progress and continuously improve adaptation processes.

Local governments that lack the capabilities described in the Level 1 (Initiation) maturity level are described as Level 0. Notably, not all agencies must strive to be a Level 4, as Level 2 or Level 3 may be appropriate depending on the size and goals of the agency.

The process areas reflect four core local government components which are essential to effectively plan for and implement climate adaptation. To allow for use across a diverse set of California local governments, the areas are also applicable to local governments of all types and sizes. Because comprehensive planning and implementation of climate change adaptation requires engaging a range of agency departments, these process areas crosscut agency departments.

The four process areas include:

- **Leadership and Organizational Culture.**
- **Staffing and Technical Capacity.**
- **Stakeholder Engagement and Partnerships.**
- **Operations and Institutional Processes.**

The following sections describe four process areas in the final CMM Matrix and in the rest of the Toolkit.

4.1.1 Leadership and Organizational Culture

Insufficient support from leadership and ineffective intra-agency coordination often inhibit climate adaptation efforts, as described in *Section 3: Synthesis of Key Findings on Organizational Barriers*. To help local governments overcome these barriers, this process area focuses on engaging agency executives and elected officials, establishing adaptation as a strategic priority, and developing clear processes for internal coordination on adaptation. Leadership from agency executives and local elected officials is essential in driving adaptation, and establishing adaptation as an agency priority can codify this leadership. Creating a culture that values internal coordination and empowers staff enables an organization to more smoothly and effectively advance adaptation efforts throughout the agency.

At the optimization level:

- The agency has formalized executive support and has prioritized adaptation.
- Elected officials are adaptation champions who provide strong leadership for climate resilience.
- Adaptation program coordination, information sharing systems, and staff responsibilities and relationships are defined and institutionalized.
- Climate change resilience is built into agency employee empowerment and recognition efforts.

4.1.2 Staffing and Technical Capacity

A lack of staff bandwidth, staff adaptation champions, and technical capabilities are common organizational barriers, as detailed in *Section 3: Synthesis of Key Findings on Organizational Barriers*. To enable local governments to overcome these barriers, this process area focuses on developing dedicated staff capacity and access to technical skills to address climate change risks and adaptation. The process to build staff capacity can be broken down into: a) increasing technical capacity to identify climate change risks to decision making and implementing adaptation activities; and b) ensuring that there is sufficient staffing allocated to adaptation activities, as well as sufficient investment in staff development to increase the ability to plan for and implement adaptation. Given that climate change risks and adaptation are cross-cutting, staff capacity is needed across multiple departments.

At the optimization level:

- Adaptation roles are elevated to a high level within the organization and integrated with other senior staff.

- There is investment in technical resources to conduct in-house analyses.
- There is a strong commitment to hiring and training staff to enhance the agency's adaptation expertise and technical skills.
- There is agency-wide adaptation competency building plan and training curriculum.

4.1.3 Stakeholder Engagement and Partnerships

The absence of effective coordination across sectors, geographies, and levels of government is a major barrier to climate adaptation, as described in *Section 3: Synthesis of Key Findings on Organizational Barriers*. This process area is designed to help local governments overcome this barrier by engaging the communities that it serves and by collaborating with other entities focused on adaptation. Local governments may achieve community buy-in by increasing public understanding of climate change impacts and risks, and the need for resilience-building strategies. Integrating voices from citizens, businesses, faith groups, and industry groups into the planning process can enhance community ownership of adaptation activities. Additionally, local governments can avoid conflicting adaptation efforts and even gain efficiencies from collaborating with external entities. These may include regional agencies, neighboring municipalities, non-profit organizations, private sector companies, academia, and the science community.

Collaborating with external entities allows for information sharing, coordination of activities, and leveraging of limited resources to conduct joint projects. Furthermore, it is critical to broadly engage with the community, including disadvantaged communities, who may experience greater climate impacts. Local governments should aim to achieve robust and consistent coordination with and response to community stakeholders (both community members, other local governments, and outside experts) with respect to adaptation activities.

At the optimization level:

- The agency pro-actively engages with relevant community audiences.
- Engagement activities are frequently assessed to achieve engagement goals, and regularly reviewed and fed back into community engagement processes and other adaptation planning processes to ensure ongoing improvement.
- A conflict resolution process has been established and is continuously improved.
- The agency has formal partnerships with external stakeholders.
- Effective, formalized mechanism(s) for influencing policy exist.
- Adaptation efforts are coordinated with external stakeholders.
- Adaptive management is applied to foster flexibility, innovation, and partnership network growth.

4.1.4 Operations and Institutionalized Processes

A lack of clear adaptation processes within local government is a major barrier to effective climate adaptation. This process area focuses on overcoming these barriers by institutionalizing adaptation efforts into agency processes. This ensures that resilience is consistently and systematically implemented, and that adaptation efforts are continually monitored, evaluated, and improved upon. Institutionalization includes mainstreaming adaptation efforts into

existing agency processes, developing processes to track and report progress on climate adaptation, and creating mechanisms for predictable multi-year adaptation funding.

At the optimization level:

- An adaptation program plan is continuously monitored, evaluated, and improved based on an agency-wide measure of adaptive capacity.
- Collaboration occurs with other agency decision makers and planners to implement adaptation policy and integrate adaptation into all relevant agency decision making and planning processes.
- Climate adaptation funding is embedded into overall organizational budgeting systems and aligned with the adaptation program plan.

4.2 Self-Assessment Checklists

The Self-Assessment Checklists are designed to enable local governments to rapidly determine their current capability maturity levels. The Self-Assessment Checklists include a summary of the four maturity levels for each process area, along with a checklist of CMM process capabilities of an agency at each maturity level and the value of advancing to a given maturity level. This self-assessment process enables local governments to gain an understanding of their capabilities and their shortcomings; only when they are armed with this information can they begin to develop an action plan for overcoming the remaining barriers to adaptation. The structure of the checklists is depicted in Figure 5. The final Self-Assessment Checklists can be found in Appendix E.

	Level 1 Initiation	Level 2 Development	Level 3 Standardization	Level 4 Optimization
Level Description				
Agency Attributes at Level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Value of Achieving Level	✓	✓	✓	✓

Figure 5. Self-Assessment Checklist structure. There is one checklist per process area.

4.3 Roadmap

The Roadmap is intended to help users advance from one maturity level to the next within each process area by developing their adaptation capabilities. Specifically, the Roadmap provides users with concrete actions to advance climate change adaptation capabilities at each maturity level, additional guidance on how to accomplish each action, and external resources to help agencies undertake these actions. By laying out the strategies to overcome barriers in this

format, the information will be accessible and useful to local governments. The final Roadmap for each process area can be found in Appendix F.

Figure 6 below depicts the structure of the Roadmap for a given process area and maturity level.

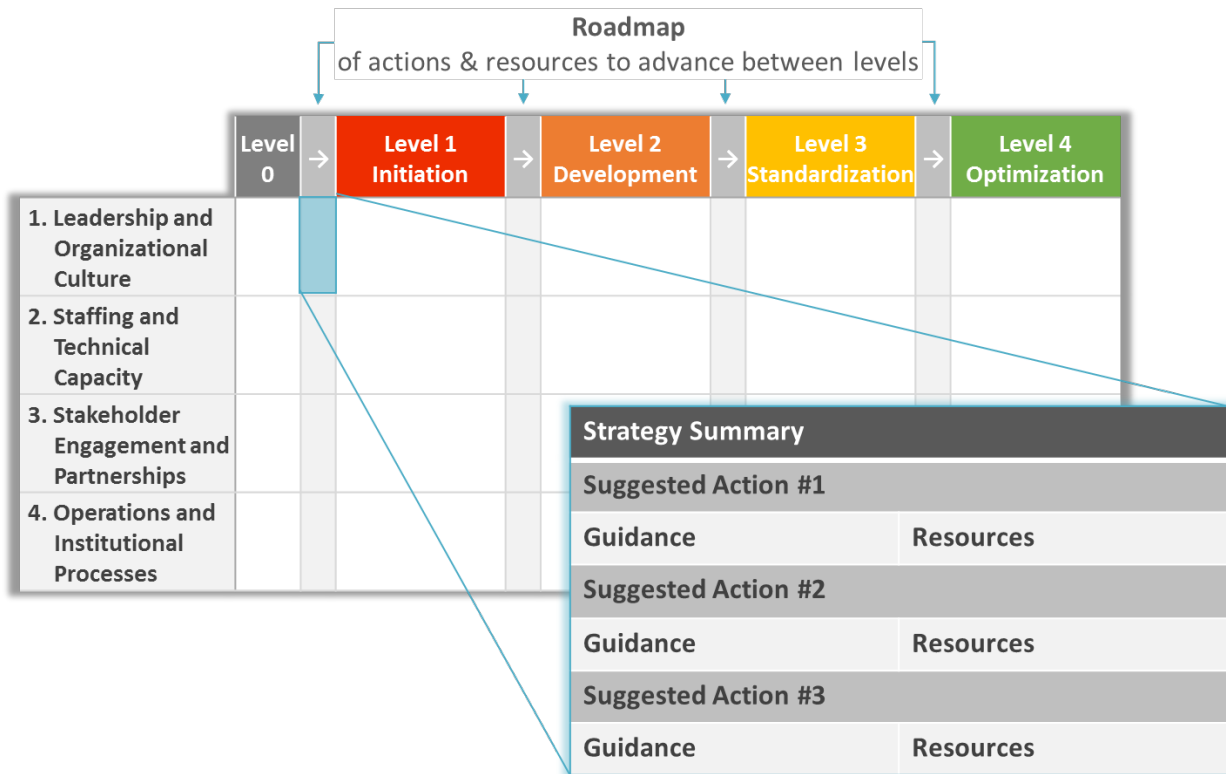


Figure 6. Roadmap structure (pop-out table highlighted in blue) for a given CMM Matrix process area and maturity level.

4.4 Testing the Toolkit: Focus Group Findings

4.4.1 Pre-focus Group Questionnaire Results

Thirteen participants responded to the pre-focus group questionnaire and 11 of those responded to all Toolkit-related questions. Five of the 11 were from Sacramento, five were from San Diego, and one did not provide their location. Most respondents' initial ratings matched their reassessment rating (82%). A handful (16%) of respondent initial ratings were higher than their reassessment rating. In one case, the initial rating was lower than the reassessment rating.

Based on the reassessment ratings, respondents' capability levels seem relatively low. According to the reassessment rating average across the four process areas, all respondents rated their agency's capabilities between Level 1 (Initiation) and Level 2.5 (Standardization), with an average of Level 1.6 (Development). Capability was ranked the highest in the *Stakeholder Engagement and Partnerships* category (average of 1.9), followed by the *Leadership and Organizational Culture* category (average of 1.7), the *Staffing and Technical Capacity* category (average of 1.5), and lowest in the *Operations and Institutional Processes* category (average of 1.4).

It is important to note that the San Diego and Sacramento regions are considered to be among the California regions that are actively engaged in climate adaptation efforts based on the presence of an active ARCCA member regional collaborative and on the efforts and projects that local governments within these regions are currently undertaking. This indicates that many California local governments are likely to be at a Level 1 (Initiation) or a Level 0, and that the Toolkit could be a useful tool for many California local governments to advance their adaptation capabilities.

4.4.2 Focus Group Findings

Participants reported that they view the Toolkit as a useful tool, and on average, rated its utility between *very useful* and *somewhat useful*. Most participants (80%) reported that the Self-Assessment Checklists helped them think through their agencies' capabilities. The majority (60%) also either agreed or strongly agreed that they could see themselves using the Roadmap to help advance their agency's adaptation capabilities.

Participants also described a number of additional features that would improve the utility of the Toolkit. Many participants reported a need for continued support associated with the Toolkit, specifically a person that users could contact for guidance and help to advance their capabilities. A number of participants also reported a desire for a tool that could determine the user's capability level based on their responses to just a handful of questions. Additionally, participants recommended that the Toolkit be translated into Spanish, to increase usability within predominantly Spanish-speaking communities.

Participants also highlighted the utility of regional collaboration, specifically of one jurisdiction progressing and creating peer pressure for others to follow.

However, the focus group also highlighted some limitations of the Toolkit. For instance, ease of use was rated between *somewhat easy* and *somewhat hard*. While the question did not solicit details on the reasoning behind the rating, during the discussion a number of participants critiqued the Toolkit as being overwhelming and in need of simplification, which may be among the reasons that participants viewed the Toolkit as difficult to use. However, participants did not identify any specific actions as unnecessary, making simplification difficult. Future online versions could potentially create interactive Self-Assessment Checklists for users, showing only the immediate next steps and other content that is relevant to them, and preventing users from feeling overwhelmed by the volume of content. Additionally, the participants who noted that the Toolkit was difficult to use also noted that they would likely become more familiar with the Toolkit over time, particularly if it were continually refined based on feedback, making it easier to use.

Furthermore, based on the discussions during the focus groups and how participants viewed the utility of the Toolkit, the CMM Matrix, Self-Assessment Checklists, and Roadmap are likely most useful for staff personnel, and can prove more difficult to use for those in leadership positions. This indicates a need for leaders who would like to use the Toolkit to advance their agency's capacity to find staff who are interested in pursuing the Capability Maturity Model.

The research team also discovered at the regional stakeholder workshops that many participants did not have a clear understanding of the meaning of climate change adaptation, or the difference between *climate change*, *climate change and greenhouse gas mitigation*, *sustainability*, and *climate change adaptation*. Without such consensus and understanding, there is a limit to

cross-sector discussion or collaboration and to top-down pressure to act. Another complicating factor is the sheer volume of information on climate adaptation, which increases the difficulty for staff to find relevant and applicable information in a timely manner. The lack of staff understanding of adaptation creates a cycle wherein the knowledge gap makes it difficult to apply for adaptation funds, which in turn leads to a lack of support for enhancing staff capacity.

Without proper knowledge of adaptation, the issue is pushed to the back. In cases where adaptation was viewed as a global issue, there was an assumption that no local action would be possible or effective, or would impact constituents. There was also the sense that adaptation was not urgent, but rather a long-term issue. This lack of awareness about climate change adaptation highlights a need for more outreach to local government staff about climate change adaptation, its relationship to sustainability, and greenhouse gas mitigation efforts.

5: Conclusions and Future Directions

The Adaptation Capability Advancement Toolkit created under this project directly responds to common organizational barriers that inhibit climate adaptation efforts by helping local governments advance their process capabilities in areas where these barriers frequently arise. The Toolkit has been refined based on input from over 100 adaptation practitioners across California, and feedback has been integrated to create a more useful, robust, and practical product. Participant reviews from the focus groups that tested the Toolkit indicate that local governments view the product as useful for their context. While the Toolkit was developed for California local governments, it could be applied to local governments elsewhere in the United States and globally.

The Toolkit is intended to complement existing adaptation resources that are focused on specific tasks such as conducting a vulnerability assessment, by providing a strategic level framework for advancing adaptation capacity throughout an organization. This Toolkit provides guidance around how local agencies can build the skills and capabilities necessary to more effectively respond to climate risks and pursue adaptation initiatives, rather than focusing on producing a specific deliverable. Notably, public agency processes and outcomes, including those related to adaptation, are constrained by legal and political systems. While this CMM recommends methods for engaging external actors to influence conditions that are outside of an agency's control, it is important to acknowledge that external legal and political impediments are likely to persist as barriers to adaptation.

Future research should engage a broader range of local governments in California and elsewhere to evaluate the utility of the Toolkit and to identify ways it can be improved. More importantly, in-depth case studies with local governments who adopt the Toolkit and use it as a guide would be useful to determine the effectiveness and practicality of the resources.

Furthermore, the California state government has an opportunity to connect the Toolkit to and enhance the utility of the Adaptation Clearing House⁴, the website that is intended for use by the State's adaptation practitioners, including local governments. Specifically, the state could

⁴ <http://resilientca.org/>

identify resources that could be incorporated, categorized according to the CMM process areas and maturity levels.

The Local Government Commission intends to continue to update this tool as additional feedback is received and will host the Toolkit online at the ARCCA website. By continuing to support this tool, the research team hopes to provide a reliable, continuously updated resource that can act as a hub for local governments to share and learn about adaptation best practices.

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APPENDIX A: Survey

Survey: Overcoming Financial and Institutional Barriers to Local Adaptation

Overview

ICF International, in partnership with the Local Government Commission and Susanne Moser Research & Consulting, has received funds from the California Natural Resources Agency (via the Berkeley Energy and Climate Institute) to study the challenges and opportunities involved in funding and implementing climate change adaptation projects and measures at the local level in California. You are invited to participate in this survey because you work at or with local level-government on climate change adaptation, preparedness, and resilience building efforts (understood here as all those efforts involved in assessing, planning for or implementing actions that help local communities deal with the consequences of a changing climate).

The results of this survey will inform regional stakeholder workshops where financial and institutional barriers and opportunities will be discussed further. They will also be integrated in the overall study reports and publications.

While summary responses will be shared, your individual responses will remain anonymous and confidential and will not be reported in a way that is identifying specific individuals or organizations. The study protocol has been approved by the ICF Internal Review Board and complies with all ethical standards for social science research.

The survey will take approximately 8-10 minutes to complete. We greatly appreciate your time in responding to these questions.

1. Please indicate whether you work with or serve a city or county. This is not for identification purposes, but to collate survey responses by region.

- I work with/for a city or county.
- I do not work with/for a particular city or county.

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2. Please indicate the city or county you work with or serve. This is not for identification purposes, but to collate survey responses by region.

3. Please indicate the type of entity in which you work. If you work across multiple sectors, please choose the one that best matches your primary work responsibility. (Please select only one answer.)

- Municipal/City Government
- County Government
- Regional District or Association
- State Government [if relevant]
- Tribal Government
- Federal Government [if relevant]
- Non-Governmental Organization [if relevant]
- Environmental Consultancy [if relevant]
- Private Sector/Industry [if relevant]
- Other (please specify)

4. Please indicate what type of position you hold in your organization (Please select only one.)

- Planner
- Permitting Officer
- Public Works Engineer
- Environmental Specialist
- Flood District Manager
- Elected official
- Community Development Coordinator
- Water Resources Manager
- Emergency Services Manager
- Wildlife/Natural Resource Manager
- Financial Planning Officer
- Other (please specify)

5. What is the approximate size of the city or county you serve?

- <25,000
- >25,000 - 50,000
- >50,000 - 100,000
- >100,000 - 500,000
- >500,000

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6. Do you currently actively participate in coordinated adaptation efforts in your region (i.e., through the Alliance of Regional Collaboratives for Climate Adaptation or another network)?

- Yes
- No
- Not sure

Survey: Overcoming Financial and Institutional Barriers to Local Adaptation

7. If you participate in the discussions of a regional adaptation collaborative or network, please indicate which one:

- Sierra Climate Adaptation & Mitigation Partnership (Sierra CAMP)
- Capital Region Climate Readiness Collaborative (CRCRC)
- Bay Area Regional Collaborative (BARC)
- Los Angeles Regional Collaborative for Climate Action and Sustainability (LARC)
- San Diego Regional Climate Collaborative (SDRCC)
- I do not work on adaptation within a regional collaborative of any kind
- I work collaboratively on adaptation in another region (please identify below)

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8. Which category best describes your current phase of climate change adaptation/ preparedness/resilience planning and implementation? (Select only one option that comes closest to your current level of activity)

- We have not looked into climate change adaptation to date.
- We are just becoming aware of how climate change might affect our jurisdiction.
- We have started to gather information to better understand the climate change risks we face.
- We have completed an assessment of the climate change risks we face.
- We are brainstorming a range of options to prepare for and manage climate change risks.
- We have completed an assessment of potential adaptation response options.
- We have selected a subset of adaptation response options to move forward with.
- We have begun implementing the selected adaptation response options.
- We are monitoring how well the implemented responses are working out.
- We are evaluating and reassessing how well the implemented options are faring.

Survey: Overcoming Financial and Institutional Barriers to Local Adaptation

9. Whether or not your organization has already taken action to prepare for the possible impacts of climate change, how much of a hurdle has each of the following issues been in your efforts to date or do you anticipate it to be?

	Not a hurdle	Small hurdle	Big hurdle
Magnitude of problem is too overwhelming to address	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unclear what adaptation options are available	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of social acceptability of adaptation strategies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of public demand to take adaptation action	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Insufficient staff resources to analyze relevant information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Current pressing issues are all-consuming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of funding to prepare a plan	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of funding to implement a plan	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No legal mandate to take climate change impacts into account	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unclear how climate change relates to my job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of leadership within my organization to address climate change	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internal disagreements on importance of climate change	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of internal coordination among departments in my organization	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Not a hurdle	Small hurdle	Big hurdle
Lack of coordination across levels of governments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Science is too uncertain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of technical assistance from state or federal agencies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of access to relevant information and data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Opposition from stakeholder groups	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Legal pressures to maintain status quo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of leadership from elected officials	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="text"/>		

Survey: Overcoming Financial and Institutional Barriers to Local Adaptation

10. Can you share how you overcame the barriers you encountered, or provide 1-2 creative ideas for overcoming these barriers?

11. We are interested in how your jurisdiction finances climate adaptation/preparedness action. Over the past 2 years, has your jurisdiction spent money on any aspect of climate adaptation/preparedness/resilience building?

- Yes
- No
- Don't know

Survey: Overcoming Financial and Institutional Barriers to Local Adaptation

12. If in the last 2 years you have invested in climate adaptation/preparedness/resilience building, please list the type of actions and processes you have spent money on (check all that apply):

- Climate change risk or vulnerability assessment
- Adaptation/preparedness planning
- Implementation of adaptation actions
- Community engagement in adaptation planning or implementation
- Monitoring and evaluation of implemented adaptation actions
- Other (please specify)

13. For the activities you checked in Question 12, what sources of funding did you use (please check all that apply):

- Bond funding
- General fund
- Special tax (please specify below)
- Fee (please specify below)
- State agency grant
- Federal agency grant
- Foundation grant

If you selected tax or fee or used another funding mechanism, please specify

14. In the next 5 years, for which areas of climate change adaptation/preparedness/resilience building do you expect to need additional funds? (check all that apply):

- Climate change risk or vulnerability assessment
- Adaptation/preparedness planning
- Implementation of adaptation actions
- Community engagement in adaptation planning or implementation
- Monitoring and evaluation of implemented adaptation actions
- Other (please specify)

15. Please indicate the status of your fund-raising efforts for the activities listed in Question 14 (select the option that best describes the current status):

- We have secured all of the necessary funds
- We have secured some of the necessary funds
- We have begun seeking the necessary funds
- We have not yet looked into possible funding options

16. To date, when attempting to acquire funds to finance adaptation-related activities, which challenges have you encountered (check all that apply):

- We don't know where to go for adaptation funding
- We don't know how to cost out adaptation investments
- Our organization does not meet the requirements to apply for certain funding sources
- We don't have the staff time to write grant applications
- We don't have qualified staff to write successful grants
- We don't have mechanisms to integrate adaptation in capital planning or in bonds
- There are institutional barriers to accepting external grants
- We don't have the capacity to administer external grants
- We have some funding but it is insufficient to meet our needs
- We don't have the required matching funds
- Our governing board or other leadership is not supportive of adaptation-related spending
- Our constituency/membership drives our budget allocation
- The funding we have restricts how we can use the funds
- Other (please specify)

17. If you have successfully obtained funds to finance adaptation-related activities, how have you overcome the above mentioned challenges (please check all that apply):

- We have hired external professional grant writers
- We have raised funds through special fees or taxes
- We have embedded climate change adaptation in existing programs without additional funding
- We have created a budget line item for climate change adaptation-related activities
- We are working on adaptation on a voluntary basis (outside our official staff time)
- Other (please specify)

Survey: Overcoming Financial and Institutional Barriers to Local Adaptation

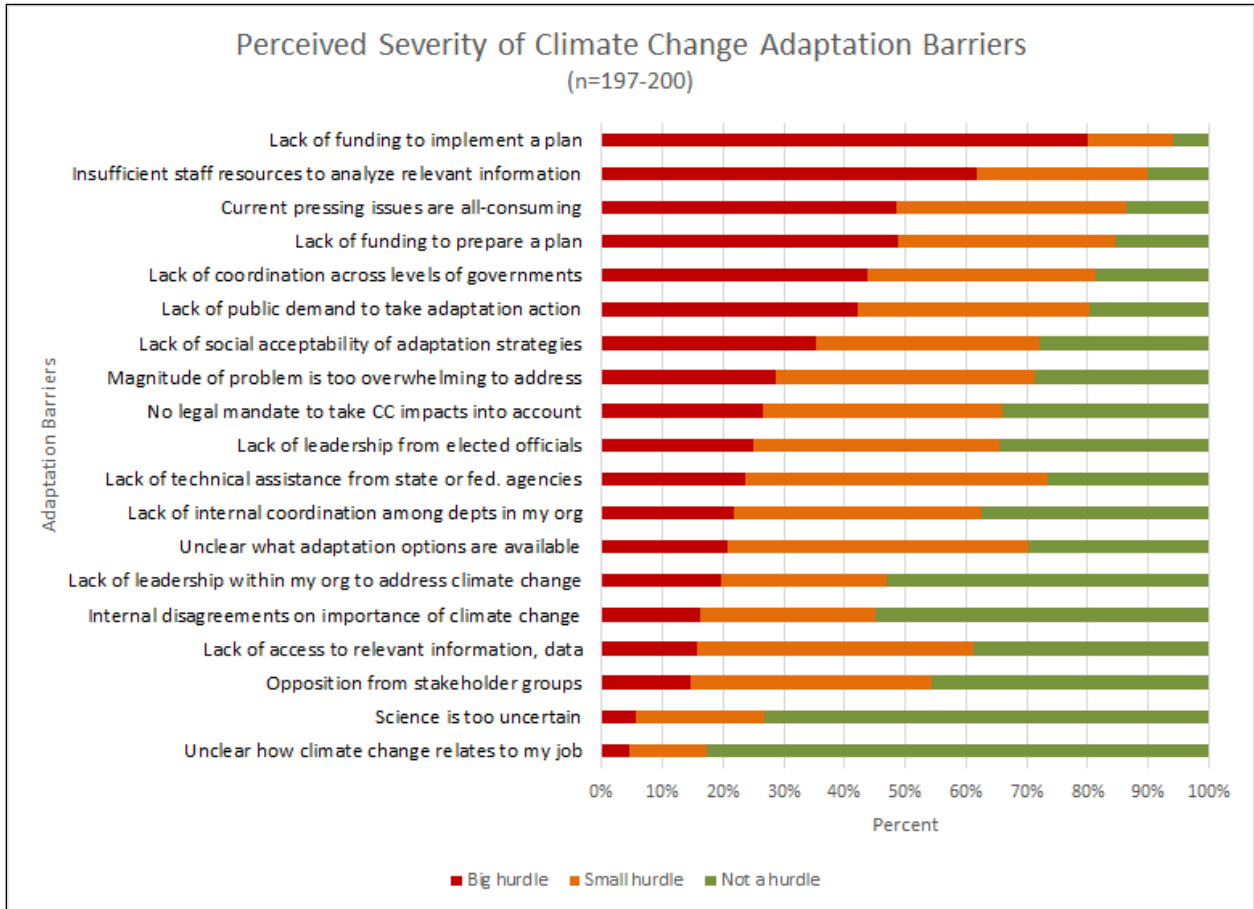
18. Please share any additional thoughts you might have about financial or institutional barriers that were not covered in the questions above. We welcome your thoughts and insights:

19. Please provide your name and email below if you're willing to be contacted about follow-up questions. Your responses will be kept confidential.

Name

Email

APPENDIX B: Survey Responses to Question Ranking Common Barriers



Source: Moser et al. 2018

Figure B-1. Responses to the question: “Whether or not your organization has already taken action to prepare for the possible impacts of climate change, how much of a hurdle has each of the following issues been in your efforts to date or do you anticipate it to be?”

APPENDIX C: Toolkit Introduction

Adaptation Capability Advancement Toolkit

Interactive online platform available at arccacalifornia.org/adapt_ca

About the Toolkit

Climate change is becoming an increasing risk in California, and local and state-level government agencies are often faced with the challenge of identifying remedies to protect infrastructure, public health, commerce, and other sectors from impacts. While local governments have taken strides to combat climate change across the state, many still face institutional barriers to comprehensively implement climate change adaptation, or measures that mitigate harm caused by climate change.

The Adaptation Capability Advancement Toolkit (Adapt-CA) is intended to assist California local governments to overcome common institutional barriers and improve agency capabilities. By using Adapt-CA, local governments will be able to rapidly identify current capabilities and opportunities to advance capabilities to pursue climate change adaptation initiatives more effectively and holistically.

Toolkit Structure

Adapt-CA is organized into four **process areas** (core areas of control within local governments and common areas where institutional barriers to pursuing climate change adaptation arise) along four **maturity levels** (milestones that follow an evolutionary path toward institutionalized, continuously improving processes) to help local agencies pinpoint actions to gain specific capabilities. Notably, as an organization advances in maturity, the process areas become increasingly interrelated.

Process Areas

1. **Leadership and Organizational Culture:** Engaging agency executives and elected officials, establishing adaptation as a strategic priority, and transforming agency culture through internal coordination and staff empowerment.
2. **Staffing and Technical Capacity:** Allocating staff to dedicated adaptation roles, developing adaptation competency throughout the agency, and enhancing technical capabilities, tools and resources.
3. **Stakeholder Engagement and Partnerships:** Standardizing authentic community engagement in agency decision-making processes, regional coordination, and external collaboration and partnerships.
4. **Operations and Institutionalized Processes:** Mainstreaming adaptation into agency processes, implementing processes for measuring and reporting progress, and building momentum for predictable and sustainable funding.

Maturity Levels

1. **Initiation:** To build understanding of climate risks and to support adaptation activities on an ad-hoc or opportunistic basis.

2. **Development:** To incorporate adaptation into agency goals, plans, and activities with dedicated staff leading adaptation efforts.
3. **Standardization:** To establish a shared vision for adaptation with strong support from staff, leaders, partners, and community members.
4. **Optimization:** To fully integrate adaptation into agency planning, investing, and decision-making processes with agency- and community-wide engagement.

Toolkit Components

The development of Adapt-CA has been informed by Capability Maturity Models (CMM), which originate from the software development industry to describe current processes and strategies to overcome barriers to improve processes and produce a desired outcome. The toolkit contains three main components – the CMM Matrix, Self-Assessment Checklists, and Roadmaps.

CMM Matrix

The CMM Matrix describes the high-level core adaptation capabilities of a local government for each process area at each maturity level.

Self-Assessment Checklists

The Self-Assessment Checklists describe core adaptation capabilities in greater detail, as well as the associated benefits for each process area and maturity level, which enable local government users to rapidly assess existing agency capabilities.

Roadmap

The Roadmap provides suggested actions, additional guidance, and recommended resources to help local agencies advance their core capabilities to pursue climate change adaptation initiatives more effectively and comprehensively.

Getting Started

Adapt-CA is intended for local government staff who are involved in day-to-day management and operations, as well as by agency executives. The toolkit allows for both a top-down approach among decision-makers and a bottom-up approach for project managers and planners. Due to the nature and scale of climate change impacts, it is recommended that key departments and offices, including community development, economic development, emergency services, sustainability and public works, collaborate to fully leverage this toolkit.

This toolkit provides guidance on improving agency capabilities without specific connections to regulations or funding opportunities. While it can be used to identify areas that require further attention and investments, as well as to build the case for making such investments, the sole use of this toolkit is not expected to provide additional funding for adaptation and resiliency efforts. Although Adapt-CA is designed with the understanding that each agency encounters unique challenges and opportunities in order to enable local governments of all sizes and types to utilize the toolkit, reaching the highest maturity level defined in this toolkit may not be desirable or suitable for all California local governments.

New users should first review the CMM Matrix to become familiar with the language used in this toolkit, as well as to understand the high-level capabilities of each process area and maturity level. Next, the Self-Assessment Checklists should be utilized to gain a better understanding of current capabilities. Finally, the

results from the Self-Assessment Checklists should be used to help navigate the suggested actions, additional guidance, and recommended resources provided in the Roadmap.

APPENDIX D: Final CMM Matrix

	Initiation	Development	Standardization	Optimization
Leadership & Organizational Culture	Limited consideration of climate risks and adaptation in agency activities, driven by individual champions, with minimal support from executive leadership or local elected officials.	High-level incorporation of climate risks and adaptation in several agency goals, plans, and programs with engagement from some agency and elected leaders. Agency conducts occasional coordination meetings among key departments.	Strong integration of climate risks and adaptation into all agency goals, plans, and programs with regular interagency coordination and widespread recognition across leadership and staff of the importance of adaptation to achieve agency and community goals.	Climate risks and adaptation are central to overall agency goals and activities as core guidance for decision-making, planning, and investment. Agency leaders and local elected officials are at the forefront of driving adaptation action and building a culture of resilience.
Staffing & Technical Capacity	Limited allocation of time and resources to pursue adaptation on a project-by-project basis. Staff begin to increase understanding of climate risks by reviewing introductory resources.	Point-person responsible for adaptation activities and additional champions in other departments identified. Staff have access to broad resources to build technical skills and understanding of local and regional climate risks and adaptation opportunities.	Role of adaptation point-person is formalized with champions from all key agency departments. Staff have consistent and reliable access to resources, tools, and trainings to build their expertise on adaptation strategies and measures.	Agency-wide competency on climate change risks and adaptation, including all senior-level staff, with dedicated adaptation staff appropriate to agency size. Staff have access to all key tools and resources to conduct adaptation planning and implementation activities.
Stakeholder Engagement & Partnerships	Ad-hoc and limited external communications about climate risks and adaptation to community members, and limited collaboration with external stakeholders on a project-to-project basis.	High-level integration of climate risks and adaptation into general external communications beyond just projects. Some community input factored into adaptation considerations, and some mapping of external skills and resources conducted.	Consistent and timely engagement with relevant community audiences based on an adaptation-specific engagement plan. A strong network of external collaborators is regularly accessed and utilized for adaptation efforts.	Robust community engagement and stakeholder feedback loops are prioritized and formalized throughout local government operations, so as to ensure adaptation activities reflect and respond to community needs, and strong processes for utilization of external collaborators are well defined and regularly adapted based on changing needs.

<p>Operations & Institutionalized Processes</p>	<p>Ad-hoc adaptation activities occurring on a project-by-project basis with varied levels of comprehensiveness and ad-hoc or opportunistic funding for adaptation.</p>	<p>High-level integration of climate risks and adaptation into several projects, activities, and agency processes with basic understanding of the business case for undertaking adaptation in projects informing decision-making.</p>	<p>Strong integration of climate risks and adaptation into standard agency processes across many departments, with some dedicated funding for adaptation and some efforts to quantify investments and to monitor performance.</p>	<p>Fully institutionalized integration of climate risks and adaptation into agency decision making. Planning processes and financial considerations with formalized review and updated processes to manage changing risk conditions, defined and adopted systems for tracking project and program outcomes against agency-wide measures of adaptive capacity, and clearly defined climate risk standards for agency budgeting.</p>
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APPENDIX E: Final Self-Assessment Checklists

Leadership & Organizational Culture		
Maturity Level	Agency Attributes	Value Added
Level 1: Initiation	<ul style="list-style-type: none"> <input type="checkbox"/> Executives are identified and informally engaged on climate change risks and the value of investing in adaptation activities <input type="checkbox"/> Priorities and interests of elected officials are identified and linked to constituency climate change risks and adaptation concerns <input type="checkbox"/> Existing models of strategic plans and goals in use by other jurisdictions are identified <input type="checkbox"/> Internal adaptation champions undertake informal efforts on coordination and collaboration across departments <input type="checkbox"/> Ad hoc programs and organizational opportunities to build internal awareness about climate change and resilience are identified 	<ul style="list-style-type: none"> ✓ Increased awareness of climate risks and adaptation among leadership and staff ✓ Increased understanding of options for incorporating adaptation into agency plans and goals ✓ Increase long-term buy-in of leadership for adaptation and climate resilience strategies and goals
Level 2: Development	<ul style="list-style-type: none"> <input type="checkbox"/> Relationships and lines of communication with executives and adaptation champions are developed to deepen executives' understanding of climate adaptation and support for adaptation program <input type="checkbox"/> Elected officials are engaged to demonstrate the need and value of addressing climate vulnerabilities and to share updates on adaptation activities. <input type="checkbox"/> Areas are identified within existing agency priorities and strategic goals where adaptation should be incorporated <input type="checkbox"/> Occasional intra-agency coordination with roles of collaborators in adaptation program is defined <input type="checkbox"/> Opportunities to build internal awareness around climate change and resilience are implemented in collaboration with leadership <input type="checkbox"/> Voluntary climate change measures that all staff can take to engage and lead by example in the office and at home are identified 	<ul style="list-style-type: none"> ✓ Leadership is willing to help advance adaptation efforts ✓ Opportunities to incorporate adaptation into agency priorities and goals ✓ Interdepartmental relationships are established ✓ Increased awareness within agency about climate change and resilience
Level 3: Standardization	<ul style="list-style-type: none"> <input type="checkbox"/> Executives are adaptation champions who provide strong leadership and institutional support for climate resilience <input type="checkbox"/> Elected officials actively participate in adaptation-related activities <input type="checkbox"/> High-level set of adaptation goals or principles developed for adoption as agency priorities <input type="checkbox"/> Adaptation goals are integrated into agency projects and programs where possible as starting place for longer term integration <input type="checkbox"/> Roles of collaborators across agency departments institutionalized 	<ul style="list-style-type: none"> ✓ Adaptation is an agency priority; agency leaders and elected officials promote that notion ✓ Interdepartmental coordination and information sharing occurs consistently and occurs in a goal-oriented manner

	<ul style="list-style-type: none"> ❑ Goals, objectives, and best practices for internal collaboration are established through guidance and expectations 	
Level 4: Optimization	<ul style="list-style-type: none"> ❑ Executive support and agency prioritization of adaptation are formalized by embedding adaptation initiatives within agency policies, existing processes, and department-level goals ❑ Elected officials are continually engaged and encouraged to become adaptation champions who provide strong leadership for climate resilience ❑ Coordination and information sharing systems, and staff responsibilities and relationships in adaptation program are institutionalized ❑ Climate change resilience is built into overall employee empowerment and recognition efforts 	<ul style="list-style-type: none"> ✓ Executives and elected officials consistently advance climate resilience and motivate the rest of the agency to do so as well ✓ Ability to influence internal policy to facilitate adaptation ✓ Consistent and effective intra-agency coordination that is resilient to staffing changes ✓ Employees throughout the agency feel empowered to undertake adaptation efforts

Staffing & Technical Capacity		
Maturity Level	Agency Attributes	Value Added
Level 1: Initiation	<ul style="list-style-type: none"> ❑ Adaptation champions engage in adaptation initiatives and encourage resource sharing among staff ❑ Key adaptation gaps, needs, and available resources within the agency are identified ❑ Basic understanding among staff of climate impacts, risks, and vulnerabilities is established 	<ul style="list-style-type: none"> ✓ Key agency staff can articulate climate change impacts and significance for agency ✓ Increased internal expertise enables staff to evaluate risks and respond to opportunities in their existing projects
Level 2: Development	<ul style="list-style-type: none"> ❑ Adaptation point-person is identified, along with adaptation champions across key agency departments ❑ Key technical support needs are identified on a project-by-project basis ❑ Access to technical resources throughout the agency is continually expanded ❑ Refined understanding of climate impacts, risks, and vulnerabilities in region ❑ Opportunities for staff to increase understanding of adaptation 	<ul style="list-style-type: none"> ✓ A point-person can help keep adaptation on the agenda and considered in projects and activities, so it does not get “lost” ✓ A core team of adaptation staff and champions can begin coordinating efforts across departments, thereby more effectively reducing risks and identifying opportunities ✓ Increasing technical skills increases staff’s ability to leverage each other to address problems, and to integrate adaptation into a variety of projects ✓ Increased staff awareness of agency’s internal technical capacity

<p>Level 3: Standardization</p>	<ul style="list-style-type: none"> ❑ Role of adaptation point-person and champions are formalized and their job descriptions are updated to include adaptation responsibilities ❑ Additional adaptation champions are recruited from key departments and their roles are formalized ❑ Streamlined process for staff to access adaptation-related technical resources ❑ Investment in core technical resources to address gaps and needs for technical support ❑ Adaptation and staff capacity building is tailored to the agency's processes ❑ Training on climate risks and adaptation strategies related to the agency provided on a regular basis for adaptation staff, department heads, and all other agency staff 	<ul style="list-style-type: none"> ✓ Having adaptation point-persons within each department increases the chances that adaptation activities will "fit" into existing department activities, systems, and practices, and enables greater coordination across departments so as to reduce gaps, minimize exposure, and increase overall organizational effectiveness ✓ Sufficiently advanced technical competency ensures that agency staff understand the importance of adaptation in successfully implementing their projects and achieving agency goals; staff can articulate the value proposition of adaptation efforts to ensure that they're being valued appropriately against or with other priorities
<p>Level 4: Optimization</p>	<ul style="list-style-type: none"> ❑ Adaptation staff given opportunities for career advancement within the organization and integrated with other senior staff ❑ Continued investment in technical resources to conduct in-house assessment of adaptation measures ❑ Strong commitment to hiring and training staff to enhance agency's adaptation expertise and technical skills ❑ Agency-wide adaptation competency-building plan and training curriculum developed and continually evaluated 	<ul style="list-style-type: none"> ✓ Fully integrating climate adaptation into staffing roles and competencies allows staff to respond most efficiently to climate risks and take advantage of potential opportunities, enabling resiliency to support community well-being, as opposed to allowing climate impacts to threaten community well-being

Stakeholder Engagement & Partnerships		
Maturity Level	Agency Attributes	Value Added
<p>Level 1: Initiation</p>	<ul style="list-style-type: none"> ❑ Opportunistic communication and engagement with community to build basic understanding of climate risks and identification of high-level adaptation priorities ❑ Ad-hoc collaboration with external stakeholders on a project-to-project basis on climate adaptation ❑ Awareness of regional adaptation policies 	<ul style="list-style-type: none"> ✓ Relationships with community and external stakeholders are established ✓ Community has an increased awareness of key climate risks and adaptation concerns ✓ Agency is beginning a process to share risks with community ✓ Initial understanding of regional adaptation policy landscape

<p>Level 2: Development</p>	<ul style="list-style-type: none"> ❑ Adaptation point person(s) engages with key community audiences regarding climate risks and adaptation at a few planned events ❑ More detailed community adaptation priorities identified ❑ Initial climate change communication/engagement training provided, including skill building around climate skepticism and other engagement challenges ❑ Broad understanding of external partners' skills, resources, and work on climate risks and adaptation ❑ Occasional collaboration with external stakeholders on a project-to-project basis ❑ Ad-hoc attempts to engage in external policy around community-wide or regional climate risks and resilience 	<ul style="list-style-type: none"> ✓ Community adaptation priorities can begin to be taken into account in agency adaptation efforts ✓ Staff are able to deepen community's understanding of climate change risks, potential impacts, and can share initial response strategies in order to overcome common obstacles to community engagement ✓ Staff has a better understanding of opportunities to collaborate with and leverage skills of external partners and begins to be part of regional conversations for shared initiatives
<p>Level 3: Standardization</p>	<ul style="list-style-type: none"> ❑ Regular, timely, and effective engagement with relevant community audiences, implementing the initial engagement plan and responding to emerging engagement needs and opportunities ❑ Staff involved in public engagement efforts are skilled climate communicators and facilitators ❑ Consistent collaboration and relationships established with external stakeholders around shared risks, high-priority policies, and opportunities ❑ Shared adaptation goals aligned and common adaptation roles are defined and documented ❑ Formal mechanisms established to engage in external policy development around community-wide, regional, or sector climate risks and resilience as well as response strategies including finance, legal, and implementation 	<ul style="list-style-type: none"> ✓ Community consistently feels involved and invested in agency adaptation efforts ✓ Agency is effective in sharing relevant and up-to-date climate risk and response information with the community ✓ The burden of some aspects of adaptation understanding and response efforts is shared on a regional level ✓ Relationships with external stakeholders are clear and formalized to ensure effective utilization at the project or program level ✓ Agency has a strong voice in external policy on climate risks and adaptation responses
<p>Level 4: Optimization</p>	<ul style="list-style-type: none"> ❑ On-going proactive engagement with community audiences on climate risks and response strategies ❑ Engagement activities are frequently assessed as to the achievement of engagement goals, regularly reviewed and fed back into general community engagement process (including conflict resolution process) and other adaptation planning processes to ensure ongoing improvement ❑ Formal partnerships with external stakeholders are established at a variety of levels (local, regional, state, NGO, academic) for a variety of purposes (e.g. policy, planning, finance) ❑ Effective, formalized mechanism(s) for influencing policy at the regional or state level ❑ Adaptation efforts coordinated with external stakeholders (both peer agencies and technical stakeholders) ❑ Adaptive management is applied to foster flexibility, innovation, and partnership network growth 	<ul style="list-style-type: none"> ✓ Community is very aware of risks for the short and long term, of agency adaptation progress, and how the response of the agency reflects and responds to community priorities ✓ Engagement is transparent, equitable, and robust and any conflicts are managed in an effective manner that builds engagement in adaptation efforts as opposed to creating barriers ✓ Partnerships with external stakeholders are institutionalized and resilient to staffing and leadership changes ✓ External policy can be influenced

Operations & Institutionalized Processes		
Maturity Level	Agency Attributes	Value Added
Level 1: Initiation	<ul style="list-style-type: none"> ❑ Opportunities to integrate adaptation into projects identified on ad-hoc, project-to-project basis ❑ Priority agency processes that should be adjusted for climate change identified ❑ Funding needs, funding opportunities, and potential revenue-raising sources for adaptation strategies are identified 	<ul style="list-style-type: none"> ✓ Adaptation is incorporated into some projects ✓ Existing processes that should be targeted for adaptation incorporation are identified ✓ Staff know of funding opportunities to advance adaptation efforts
Level 2: Development	<ul style="list-style-type: none"> ❑ Steps to integrate adaptation into priority agency processes are defined and implemented, collaboratively with agency planners and decision makers to better align agency's goals and adaptation roadmap ❑ Performance metrics to evaluate the adaptation program are identified and applied ❑ Revenue-raising plan is created and funding for initial adaptation-related projects is obtained ❑ Legal risks and considerations are identified and connected to longer-term climate risk projections 	<ul style="list-style-type: none"> ✓ Adaptation is consistently addressed in priority agency processes ✓ Adaptation program progress is evaluated, enabling areas for improvement to be identified ✓ Understanding of the business case for undertaking adaptation projects, as well as legal risks and considerations ✓ Strategies for accessing external funding can be followed ✓ Funding for initial adaptation efforts is obtained
Level 3: Standardization	<ul style="list-style-type: none"> ❑ Steps to integrate adaptation into agency processes are codified ❑ Adaptation roadmap is developed and updated on a regular basis ❑ Create and follow a plan for implementing quantifiable performance metrics to evaluate adaptation program progress ❑ Update revenue-raising plan to provide predictable funding to meet adaptation needs over the next 2-3 years, and obtain associated funding ❑ Strong feedback loop between executive leadership, adaptation staff, and legal counsel to properly assess and respond to legal challenges associated with adaptation 	<ul style="list-style-type: none"> ✓ Adaptation is consistently addressed in agency processes ✓ Long term adaptation program goals and short term plans are defined and progress is continuously monitored ✓ Performance metrics, both qualitative and quantitative, are defined and linked to established adaptation performance goals ✓ Understanding of programmatic long term financing needs and legal challenges ✓ Funding is available for adaptation programs
Level 4: Optimization	<ul style="list-style-type: none"> ❑ Adaptation program plan is continuously updated and improved as needed based on monitoring and evaluation of program, allowing for high levels of flexibility to respond to changing needs and landscape ❑ Collaboration occurs with other agency decision makers and planners to implement adaptation policy and integrate adaptation into all relevant agency decision making and planning processes ❑ Climate adaptation funding is embedded into overall organizational budgeting systems and is aligned with adaptation program roadmap 	<ul style="list-style-type: none"> ✓ Long term and short term adaptation goals and plans are established and continuously implemented and improved ✓ Institutionalized integration of adaptation into all agency decision making & planning processes ✓ Dedicated, predictable, multi-year funds with flexibility are available for adaptation

APPENDIX F: Final Roadmap

Leadership & Organizational Culture

Fostering support for agency adaptation efforts through leadership and organizational culture ensures that adaptation is advanced throughout all levels of the agency. Leadership from agency executives and local elected officials is essential in driving adaptation, establishing adaptation as an agency priority can codify this leadership, and garnering the public and political support necessary to fund and pursue adaptation strategies. Targeted approaches must be taken in order to effectively motivate and mobilize leaders in different roles to work in collaboration towards shared adaptation goals. Cultivating adaptation leaders and building a culture that values adaptation are long-term investments that are needed to effectively respond to future climate variabilities, the cascading and compounding nature of climate impacts, and the quickly evolving adaptation space in California. Creating a culture that values internal coordination and empowers staff at all levels can enable an organization to more smoothly and effectively advance adaptation efforts throughout communities.

Level 1: Initiation		
Strategy summary: Review climate adaptation plans of other government agencies to identify policies, begin to coordinate between departments on adaptation, and prepare overview briefing for executive leadership on adaptation.		
Suggested Actions	Additional Guidance	Resources
Identify and informally reach out to executives about climate change risks.	<p>Identify executives (e.g. agency leaders and department heads) that would recognize the importance of addressing climate change risks and adaptation concerns. Consider starting with department heads of climate-sensitive sectors (e.g. Emergency Management, Planning, Public Health, and Public Works).</p> <p>Provide justification for work on climate adaptation. Prepare overview briefing and speaking points for executive leadership on incorporating adaptation in agency activities. Broadly articulate local and regional climate change risks (e.g. extreme heat, displacement, depleted water resources) and the value proposition of investing in adaptation activities by drawing on existing resources. Highlight policies and mandates such as SB-379 that require local governments to consider climate impacts and develop adaptation strategies in their General Plan. Draw from recent impacts from extreme weather events to demonstrate potential consequences of future changes in climate.</p> <p>Review leadership programs and principles from other communities to identify potential leadership peers to share with executives. Demonstrate how other jurisdictions are taking action to adapt to climate change (e.g. share existing resources or news updates from other jurisdictions).</p>	<ul style="list-style-type: none"> » We Are Still In – Climate Leadership connects local and state leaders in public and private spheres who stand by the Paris Climate Agreement » CDPH – Climate Health Profiles by County provides information on climate impacts to public health in California » San Diego, 2050 Is Calling. How Will We Answer? This report is part of an effort to develop and implement a climate change education plan for the San Diego region » Risky Business: The Economic Risks of Climate Change report discusses the serious economic risk posed by climate change and the need for adaptation and

		<p>mitigation efforts</p> <p>» Global Covenant of Mayors for Climate and Energy is a network of cities and local governments focused on climate change adaptation and mitigation</p>
Identify priorities and interests of elected officials and connect to climate change.	<p>Demonstrate how climate change is connected to local elected officials' priorities by:</p> <ol style="list-style-type: none"> 1. Identifying and deepening understanding of individual elected officials' priorities and interests, and receptivity to climate change risks and adaptation. 2. Beginning to build relationships with elected officials and their staff and demonstrate commitment to advancing their priorities under a changing climate (e.g. establish a point-person to communicate priorities and actions to elected officials and their staff). For elected officials not receptive to adaptation, focus on specific strategies with adaptation co-benefits (e.g. urban greening and renewables) while pursuing a longer-term strategy to obtain full buy-in for adaptation and climate resilience. 3. Developing speaking points for local elected officials on how climate change risks could impact their community and affect their priorities, as well as the opportunities that early adaptation affords. Draw from recent impacts from extreme weather events to demonstrate potential consequences of future changes in climate. 	<p>» EcoAmerica Paths to Positive Communities: Local Climate Leadership empowers local leadership to engage their communities and drive climate efforts forward</p> <p>» Conveying the Human Implications of Climate Change is a report by the George Mason University Center for Climate Change Communication that provides guidance on communicating the impacts of climate change on public health</p>
Identify models of strategic plans and goals related to adaptation.	<p>Review strategic plans and goals from other local governments that have incorporated adaptation to identify replicable strategic policies. Review adaptation principles and approaches that have already been developed/are being utilized by other jurisdictions and prepare a summary. Prioritize reviewing plans and goals from municipalities that share similar climate risks or community characteristics and are located in the same region if possible.</p>	<p>» ILG – Local Climate Adaptation & Resilience Plans provides examples of local climate adaptation plans in California</p> <p>» Georgetown Climate Center Preparing for Climate Change in California provides links to state agency and local and regional adaptation plans</p>
Internal adaptation champions undertake informal efforts on coordination and collaboration.	<p>Engage across departments on adaptation-related efforts on an ad hoc, project-by-project basis by:</p> <ol style="list-style-type: none"> 1. Identifying point persons in each department to highlight new projects and opportunities for engagement. 	<p>» 100 Resilient Cities – City of Berkeley Spotlight focuses on hazard mitigation work undertaken by the City</p>

	<p>2. Establishing a communication channel (e.g. listserv) across department point-persons to share these opportunities on an ad hoc basis.</p> <p>Create a list of departments whose work may be sensitive to climate change risks and/or might be involved in adaptation-related initiatives (e.g. Emergency Management, Planning, Public Health, and Public Works). Conduct a stocktaking of departments' adaptation-related activities to date, share among departments, and identify opportunities for efficiencies and collaboration.</p> <p>Identify climate change risks (e.g. extreme heat) that require or can benefit from coordination across multiple departments (e.g. public health, emergency management, and transportation). Begin to engage departments around these priority risks.</p>	<p>» Getting buy-in and support in your organization (PDF) is a report by CoastAdapt with guidance on how to engage decision makers in developing and implementing adaptation plans</p>
<p>Identify ad hoc opportunities to build internal awareness about climate change and resilience.</p>	<p>Review existing programs and organizational activities to find connections to climate change (e.g., leverage transit employee benefit programs and employee wellness programs to encourage walking and biking instead of driving).</p> <p>Identify existing internal climate change mitigation efforts (e.g., energy conservation) or related efforts that can be leveraged to provide an entry point to raise awareness about climate impacts and adaptation.</p>	<p>» Alameda County Green Teams was a pilot program designed to improve County workplace sustainability</p> <p>» American Psychological Association: Mental Health and Our Changing Climate increases awareness of the impacts of climate change on mental health and strategies for addressing them</p> <p>» Climate Smart Missoula: How Does Climate Change Affect Mental Health? Also raises awareness of the tolls climate change can take on mental health and how to develop resilience</p>

Level 2: Development

Strategy summary: Provide regular updates to agency leadership, begin to identify agency goals into which adaptation could be incorporated, and establish semi-regular meetings for departments to discuss adaptation status and upcoming opportunities.

Suggested Actions	Additional Guidance	Resources
<p>Deepen agency executives' understanding of climate change adaptation.</p>	<p>Adaptation champions begin to develop relationships and lines of communication with agency executives to gain support for adaptation program. Ask for input and feedback when developing, refining, and implementing adaptation initiatives, to generate buy-in throughout the process.</p> <p>Educate executives on the value of conducting a vulnerability assessment and addressing climate vulnerabilities (e.g. provide a summary of how climate risks could impact agency priorities and community well-being). Consider opportunities to coordinate with neighboring jurisdictions, academic institutions, or regional agencies to conduct a regional vulnerability assessment.</p> <p>Provide more detailed briefings on why climate adaptation is important for the agency and the community (e.g. bottom line, service levels, public safety, inequality, public health, housing, transportation, risk management), particularly as it relates to their department and key responsibilities and interests.</p> <p>Through standing reporting mechanisms, share existing programs and outcomes that are helping to make the community more resilient to show what implementation looks like and how it's already a part of the community.</p> <p>Provide opportunities for leaders to participate in existing climate programs to give them visibility and ownership over existing actions and activities. Identify high publicity events (e.g. social media, radio, blog posts) where leadership can get engaged.</p>	<ul style="list-style-type: none"> » Oakland Mayor Climate Leadership Spotlight (PDF) describes Oakland's leadership on climate action and adaptation under Mayor Schaaf » Philadelphia Sustainability Blog Updates is an example that cities and counties can learn from – with posts, an event calendar, and other features, the blog keeps sustainability initiatives in the public eye » Getting buy-in and support in your organization (PDF) is a report by CoastAdapt with guidance on how to engage decision makers in developing and implementing adaptation plans
<p>Deepen elected officials' understanding of climate change adaptation.</p>	<p>Educate elected officials and their staff on the value of addressing climate vulnerabilities (e.g. provide a summary of climate change concerns from constituents). Provide a high-level map of risks by district or neighborhood to connect leadership constituency with vulnerability.</p> <p>Provide more detailed briefings on why adaptation is needed to achieve community goals (e.g. public safety, public health, inequity, housing, transportation, education, homelessness, etc.).</p> <p>Demonstrate the urgency of investing in resiliency by highlighting near-term climate risks (e.g. extreme heat, reduced water supplies, and increased risk of wildfires) and state laws and mandates (e.g. SB-379).</p> <p>Regularly engage with elected officials and their staff to share updates on adaptation activities and opportunities for engagement in public-facing adaptation activities (e.g. by establishing consistent meetings and communication channel with elected officials' staff).</p>	<ul style="list-style-type: none"> » CRC Factsheets: Communicating Adaptation and Resiliency for Local Leaders focuses on messaging surrounding infrastructure, health, safety, and nature for stakeholders in the Sacramento region » Rising Seas in California: An Update on Sea-Level Rise Science (PDF) provides up-to-date science for sea-level rise in California and a call for

		<p>imperative and immediate action</p> <p>» CalEnviroScreen 3.0 identifies communities in the state most at risk to pollution, which can be used to identify vulnerable communities</p>
<p>Identify areas within existing agency priorities and strategic goals where adaptation should be incorporated.</p>	<p>Compare local climate change projections with existing agency strategic goals to determine which goals may be harder to achieve under a changing climate. Prepare a summary of the identified climate risks and impacts for existing strategic goals/plans across departments, as well as the importance of building resilience and addressing climate risks to achieve the agency's strategic goals.</p> <p>Conduct an initial review of existing agency goals, policies, and plans across departments to highlight areas of misalignment with adaptation principles or where the connection to anticipated climate impacts, risks and vulnerabilities, and resiliency strategies can be strengthened.</p> <p>Add climate adaptation as a standing agenda item in strategic meetings.</p>	<p>» ARCCA Adaptation Principles provides a list of principles that can guide local goals</p> <p>» NAF Adaptation Pledge provides a philosophical framework for undertaking adaptation work</p>
<p>Adaptation point person meets semi-regularly with champions / collaborators in other departments to discuss adaptation status and upcoming relevant initiatives.</p>	<p>Work with collaborators across departments to define roles in and approach to adaptation program.</p> <p>Work with collaborators across departments to identify adaptation needs and opportunities for each department. Where appropriate, establish interdepartmental initiatives (e.g. recycled paper, green office stationary campaign, and energy saving campaign).</p> <p>Frame discussions around efficiencies that may be gained from internal collaboration to avoid unnecessary duplication and leverage limited resources (e.g. maximize existing funding and streamline implementation).</p> <p>Add adaptation coordination check-ins as an agenda item to standing interdepartmental meetings.</p> <p>Have adaptation point person hold a round of briefings on adaptation with other departments.</p>	<p>» City of Berkeley Resilience Strategy (PDF, actions listed pp. 48-53) identifies leads and partners among other key points of information to help implement actions</p> <p>» State Climate Action Team Working Groups provide examples of work being done at the state level by 10 working groups</p> <p>» AB 2800 Climate-Safe Infrastructure Working Group meets regularly to discuss the inclusion of climate change in the state design process and posts their meeting materials online</p>
<p>Work with leadership to implement opportunities to build internal awareness about climate</p>	<p>Develop or refine agency's internal policies to incorporate climate change risks and impacts and use them to raise internal awareness about existing/emerging impacts and adaptation. For example, ask staff to unplug electrical equipment and pull down window shades during high heat days,</p>	<p>» Alameda County Green Ambassadors have carried out campaigns to increase the</p>

<p>change and resilience.</p>	<p>and consider allowing staff to telecommute during extreme events (e.g. high heat days, high wind days, extreme precipitation events, etc.).</p> <p>Identify opportunities through existing internal adaptation efforts to raise staff's awareness on concepts of climate impacts, adaptation, and resilience (e.g. signage to communicate adaptation strategies on municipal property such as green infrastructure, drought-tolerant landscaping, and permeable paving).</p> <p>If agency has a green team or committee, consider regularly working with members to identify opportunities to encourage individuals to take action in the office and at home to mitigate climate change (e.g. provide reusable water bottles, encourage electronic communication/file sharing, or provide fact sheet on day-to-day energy/water saving actions).</p> <p>Consider implementing employee benefit programs that promote climate change mitigation and resilience such as shared solar purchase programs.</p>	<p>sustainability of the County office and offer lessons learned</p> <p>» The Evolution of Sustainability Initiatives in Employee Engagement (PDF) provides case studies and recommendations for creating a green workforce</p>
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<h3>Level 3: Standardization</h3>		
<p><u>Strategy summary:</u> Engage with agency leadership and elected officials to garner support on adaptation activities, develop a high-level set of adaptation goals or principles, formalize interdepartmental coordination efforts on adaptation, and empower staff to undertake adaptation efforts.</p>		
Suggested Actions	Additional Guidance	Resources
<p>Help executives become adaptation champions who provide strong leadership and institutional support for climate resilience.</p>	<p>Establish a standing multi-department committee on adaptation with agency staff, including executives.</p> <p>Maintain discussions with executives to embed executive support for adaptation programs. Ensure that executives are consistently engaged in agency adaptation efforts (e.g. by establishing consistent meetings with executives to discuss and coordinate ongoing adaptation strategies).</p> <p>Elicit executives' immediate adaptation priorities and long-term goals.</p> <p>Start to tie adaptation into departmental reporting to executives.</p> <p>Integrate language on resiliency into scope of responsibilities of senior executive (e.g. City Manager) or senior department executive (e.g. Chief Resiliency Officer).</p>	<p>» Berkeley Climate Coalition Governance Structure (PDF) describes the framework for the Berkeley Climate Coalition, which other organizations can learn from</p> <p>» City of Berkeley Chief Resilience Officer (CRO) Job Description (PDF) describes the responsibilities of a CRO, which can inform the creation or identification of similar positions in other governments</p> <p>» NACo Resilient Counties Initiative works to build leadership capacity for climate resilience</p>

<p>Encourage elected officials to actively participate in adaptation-related activities.</p>	<p>Invite elected officials to participate in high-level strategic discussions regarding adaptation work.</p> <p>Provide talking points to elected officials to navigate contentious adaptation strategies (e.g. managed retreats).</p> <p>Provide talking points on adaptation co-benefits (e.g. improved local air quality) to help elected officials obtain constituency buy-in.</p> <p>Identify opportunities to recognize elected officials' participation in adaptation activities through public speaking engagements, sustainability award ceremonies, and news outlets.</p> <p>Coordinate with external engagement activities (e.g. those conducted by local NGOs or community groups) to get the public more engaged in adaptation priorities, and to make the case to elected officials to work on adaptation.</p> <p>Consider submitting op-eds that are co-authored with elected officials to news publications. This increases the likelihood of the article being published and can increase visibility around climate risks and resiliency strategies.</p>	<ul style="list-style-type: none"> » Guidance on how to build a business case for climate change adaptation provides insight on building a successful argument from a business perspective » Understanding the Science of Climate Change: Talking Points – Impacts to the Pacific Coast aids in understanding climate change, its impacts, and how to communicate with managers, the media, and the public » Taking ownership of climate change: participatory adaptation planning in two local case studies from California provides insight on a successful approach to engage local governments and other stakeholders in adaptation discussions
<p>Develop a high-level set of adaptation goals or principles for consideration and adoption.</p>	<p>Develop a strong, well-defined vision with a set of goals and measures that establish adaptation as core to local government operations. Incorporate community adaptation priorities into goals. Ensure there is executive buy-in on goals and measures, and seek to integrate the goals into agency projects and programs where possible as a starting place for longer term integration across major policy goals.</p> <p>Work with executives to begin incorporating resilience into agency goals, such as by issuing an order or document stating agency support for climate resilience.</p> <p>Develop agency or department-specific guidance on how to carry out these goals in agency processes and for specific sectors and departments. For smaller agencies with limited staff capacity, work with local NGOs engaged in the adaptation space to develop guidance.</p>	<ul style="list-style-type: none"> » Safeguarding California Plan: 2018 Update (PDF) provides state-level adaptation goals across a variety of sectors
<p>Formalize interdepartmental</p>	<p>Develop guidance and expectations for internal coordination on adaptation that includes key departments' roles, meeting frequency, goals and</p>	<ul style="list-style-type: none"> » Network Power in Collaborative Planning

<p>coordination efforts on adaptation.</p>	<p>objectives, and best practices. Ensure that collaboration goals align with overall adaptation roadmap goals. Document collaborator roles and responsibilities in the adaptation roadmap.</p> <p>Continuously provide updates on adaptation initiatives within and across departments (e.g. through regular check-ins or listserv) to allow for the identification of potential interdepartmental collaborations.</p>	<p>(PDF) describes conditions for successful collaborative planning and its importance</p> <p>» Coordination: Can't Plan Without It describes an interdepartmental approach to local planning in Los Angeles that can serve as an example for other local governments seeking to implement more coordination efforts</p> <p>» How to Build Inter-Departmental Cooperation provides guidance on general internal coordination among departments from the American Management Association</p>
<p>Highlight voluntary climate change measures that staff can take in the office and at home.</p>	<p>Connect staff with community-based organizations for volunteer opportunities on climate change education and mitigation and adaptation efforts.</p> <p>Encourage staff to lead by example by implementing energy and water efficiency measures in their homes (e.g. create a friendly office competition to track efficiency measures taken by staff and provide toolbox of affordable energy/water saving measures).</p> <p>Encourage staff to share climate change information with their personal networks, including their neighbors. Staff could work with their neighborhood associations to identify neighborhood-level vulnerabilities and adaptation strategies (e.g. identifying nearby cooling centers).</p> <p>Provide talking points for staff to discuss climate risks and adaptation needs with their personal networks and include appropriate responses to pushback on climate change.</p>	<p>» San Francisco Municipal Employee Programs rewards and incentivizes employees for sustainable commutes</p> <p>» Alameda County Transportation Incentives promotes sustainable commutes</p> <p>» Climate Adaptation: the State of Practice in US Communities (PDF) provides findings and recommendations based on community-level adaptation action in the states</p> <p>» The International Transformational Resilience Coalition</p>

		works to build mental health and personal, human resilience to climate change
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Level 4: Optimization
 Strategy summary: Integrate adaptation strategies and goals into agency’s community-wide vision and plan, establish a robust system to foster adaptation learning and collaboration, and empower leadership and staff to champion climate resilience.

Suggested Actions	Additional Guidance	Resources
Establish mechanisms to ensure continuity of strong executive support as elected officials and executive staff change.	<p>Embed adaptation initiatives within local government policies and existing processes, which can ensure continuity of initiatives despite staff change. Seek buy-in from all executives (e.g. have executives sign a commitment statement on pursuing climate adaptation as an agency) and incorporate adaptation into department-level goals to build momentum and withstand changes in staff and leadership.</p> <p>Work with standing resilience committee that involves executives to conduct annual evaluation of adaptation priorities and outcomes.</p>	<ul style="list-style-type: none"> » Berkeley Climate Coalition Governance Structure (PDF) describes the framework for the Berkeley Climate Coalition, which other organizations can learn from » City of Berkeley Chief Resilience Officer (CRO) Job Description (PDF) describes the responsibilities of a CRO, which can inform the creation or identification of similar positions in other governments » NACo Resilient Counties Initiative works to build leadership capacity for climate resilience
Help elected officials become adaptation champions who provide strong leadership for climate resilience.	<p>Encourage elected officials to advocate for state resources or legislation for adaptation.</p> <p>Encourage elected officials to become champions for adaptation and to work with other elected officials from neighboring jurisdictions to demonstrate leadership. Work with neighboring jurisdictions to connect elected officials on aligned adaptation priorities in the communities. Work with elected officials to engage local political candidates to discuss strategies to address climate change (e.g. through candidate forums).</p> <p>Demonstrate how leadership on community resilience-building activities can become a core pillar in their re-election campaigns.</p>	<ul style="list-style-type: none"> » EcoAmerica Paths to Positive Communities: Local Climate Leadership empowers local leadership to engage their communities and drive climate efforts forward

	<p>Work with executives to continually onboard new elected officials on the agency's adaptation processes and develop knowledge transfer reports for new elected officials on adaptation priorities and strategies in the community.</p>	
<p>Comprehensively integrate adaptation policies and strategy as core elements of the agency's general plan.</p>	<p>Extend the planning horizon in the general plan from 10-20 years to 30+ years to account for long-term impacts of climate change. Key elements for climate resilience integration include safety, conservation, and land use. Incorporate climate risks and projections (e.g. flood maps) as well as technological advancements that impact land use (e.g. evolving infrastructure needs with shared mobility and rollout of autonomous vehicles).</p> <p>Create a high-level policy directive and a comprehensive community vision that highlights the role of various planning documents. Consider developing a summary of all goals, strategies, and timelines identified in planning documents (e.g. climate action plan, sustainable communities strategy, local hazard mitigation plan, etc.) to streamline tracking and reporting efforts.</p> <p>Develop an implementation plan that includes a funding strategy, concurrently or immediately after updating the general plan, to identify paths to achieving the vision. Incorporate agency capacity building and coordination mechanisms as part of the implementation plan.</p>	<ul style="list-style-type: none"> » Adaptation Planning Guide (PDF) is California's state guidance for local and regional governments to plan for adaptation » General Plan Guidelines from the Governor's Office of Planning and Research is a "how to" resource for drafting a general plan. The 2017 version includes new guidance on resilient communities » C40 Cities Climate Risk Assessment Network helps prioritize and assess climate change risks to inform short- and long-term planning
<p>Establish and implement a robust system for coordination and information sharing on adaptation.</p>	<p>Integrate coordination and information sharing on adaptation across key departments into the agency's operations plan.</p> <p>Define and adopt shared reporting and tracking mechanisms on adaptation initiatives to utilize across departments.</p> <p>Include reporting/tracking mechanisms on adaptation in staff onboarding process.</p> <p>Reward adaptation collaboration through shared savings, revolving funds, and other incentives.</p>	<ul style="list-style-type: none"> » US EPA Climate Change Adaptation Plan (PDF) provides an example of a federal agency incorporating adaptation into its operations » The Interagency Forum on Climate Risks, Impacts and Adaptation by NASA and DOI discusses actions being taken across agencies to prepare for climate change
<p>Build climate adaptation into overall employee empowerment and recognition efforts.</p>	<p>Identify informal or formal opportunities to recognize staff who are taking voluntary measures to reduce their footprint and build resilience within the agency and their own communities. Consider recognizing their efforts during staff meetings, in newsletters, on the agency website, or other creative channels.</p>	<ul style="list-style-type: none"> » GE Sustainability Employee Engagement motivates and rewards employees for contributing to sustainability goals and

	<p>Provide opportunities for staff to share their climate change adaptation efforts during staff meetings or in more casual settings (e.g. brief presentation during lunch or over an internal listserv).</p> <p>Build metrics on voluntary climate change actions (e.g. supporting local food systems, engaging in alternative transportation) into employee benefits programs that help to bridge personal actions and community engagement with climate change goals.</p>	<p>initiatives</p> <p>» Alameda County Green Ambassadors have carried out campaigns to increase the sustainability of the County office and offer lessons learned</p>
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Staffing & Technical Capacity

Having well-developed and dedicated staff capacity to address evolving climate change risks and adaptation is fundamental in order to internally advance the agency towards achieving resilience goals. The process of building staff capacity can be broken down into two core strategies: 1) increasing technical capacity to identify climate change risks and implement adaptation activities; and 2) ensuring that there is sufficient staffing allocated to adaptation activities, as well as sufficient investment in staff development to increase staff’s ability to plan for and implement adaptation activities. Given that climate change risks and adaptation are cross-cutting with high levels of uncertainty and variability, staff capacity is needed across multiple departments and across a range of different skills. As the adaptation space continues to evolve, it is important to continuously invest in staff to enable more sophisticated financial and legal analyses of climate risks and adaptation scenarios.

Level 1: Initiation <u>Strategy summary:</u> Develop basic understanding of climate impacts and adaptation, and invest in adaptation champions to build expertise and empower them to integrate adaptation into their project work.		
Suggested Actions	Additional Guidance	Resources
<p>Identify internal adaptation "champions" among existing staff who are interested in working on adaptation efforts</p>	<p>In coordination with leadership, discuss existing staff roles and staff's past and current projects or activities to determine who may have interests that best align with potential adaptation needs, and where the role of an adaptation point-person should belong.</p> <p>Look across key roles or activities in traditional government operations to find individual staff with related interest in adaptation. For example, Climate Action Planning, sustainability planning, CEQA and environmental protection, transportation, stormwater management, public health, greenhouse gas mitigation efforts, etc.</p> <p>Approach staff who have demonstrated interest and skills in similar areas to determine interest and fit for the role of an adaptation point-person and champion.</p> <p>For agencies with staff unfamiliar with climate change risks and adaptation, provide all staff with a high-level summary of adaptation concerns and opportunities to implement adaptation activities within the agency to gauge staff interest and fit.</p>	<p>» Cal-Adapt resources provides access to climate projections, research, and other guidance</p> <p>» Georgetown Climate Center Preparing for Climate Change in California tracks the climate adaptation work and legislation being done in the state</p> <p>» Climate Central provides research and reports on the science and impacts of climate change</p> <p>» ARCCA Learning Sessions provides webinars to help support local adaptation efforts</p>

		<ul style="list-style-type: none"> » ARCCA Calendar of Adaptation Events and Webinars helps keep adaptation practitioners up-to-date on webinars and other adaptation activities and opportunities » The CA Natural Resources Agency Climate Adaptation Storybook (PDF) serves as a primer for people working in a variety of fields to acquaint them with adaptation work being done in the state
<p>Identify needs and gaps in the current set of available adaptation-related technical skills and technology resources, and begin to identify resources to develop basic climate change adaptation knowledge base.</p>	<p>Conduct staff and project reviews at a high level to determine gaps and needs for adaptation technical skills and technology resources.</p> <p>Create a skills matrix to define ideal staff technical skills for adaptation-related activities (e.g. across planning, safety, etc.) against the baseline. Consider the four main steps of the adaptation process when creating a skills matrix: Identifying and assessing risks and vulnerabilities; Creating a vision, setting goals, and planning; Financing and implementation; Monitoring and evaluation (outreach and engagement is integrated throughout the process).</p> <p>Connect with colleagues in other local governments to learn about necessary and preferred technology resources for adaptation programs.</p> <p>For smaller agencies with limited staff capacity, work with local NGOs engaged in the adaptation space that can help agency staff navigate the adaptation field and identify locally-relevant resources.</p> <p>Assess the agency's current process for accessing technical resources in order to identify gaps or barriers to obtaining climate risk and adaptation-related resources.</p> <p>Based on gaps in technical skills, resources, and access, set goals for building knowledge over time.</p> <p>When particularly useful resources are identified, catalog them in a resource library document. This can be a simple spreadsheet that lists resources, the topics that they cover, and a link or instructions to access. Circulate the resource library among internal staff who are available and interested in engaging in adaptation efforts.</p> <p>Identify regionally-relevant opportunities and resources, such as free webinars and email subscriptions. Sign-up for listservs from adaptation networks to stay informed about free trainings and updated resources.</p>	<ul style="list-style-type: none"> » Environmental and Sustainability Skills maps the skills and knowledge that are useful at different career levels » U.S. Climate Resilience Toolkit Trainings provides free courses and tutorials to acquire tools, skills, and knowledge for managing climate risks and opportunities » Climate Resilience Framework: Training Materials are free and are composed of three series (Establish Resilience Principles, Understanding Vulnerability and Risk, and Resilience Planning), each of which includes -8 lesson sets

<p>Empower interested staff to seek out information and build expertise as it relates to their existing projects.</p>	<p>At minimum, supervisors should allocate time to allow interested staff to participate in online and in-person trainings as opportunities arise, and to review key resources such as: regional vulnerability assessments and adaptation plans; background information on key climate impacts and response strategies; and specific resources related to their projects.</p> <p>Support sharing of available resources by champions to other staff through internal channels (e.g. newsletters and meeting briefings). If there is enough interest, set up brown bag lunches where staff can participate in and discuss adaptation webinars or other trainings.</p> <p>Connect adaptation champions and interested staff to local NGOs that are engaged in the adaptation space to learn more about locally-relevant climate change risks and adaptation initiatives.</p>	<p>» EPA Local Government Climate Adaptation Training is a half hour training designed for local government officials to provide information on climate change impacts and adaptation strategies</p> <p>» ILG Climate Adaptation resources are meant to help local agencies in their adaptation planning</p>
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<p>Level 2: Development</p> <p><u>Strategy summary:</u> Identify an adaptation point-person, identify adaptation technical support needs, and allocate resources for key project staff to participate in adaptation competency-building activities.</p>		
Suggested Actions	Additional Guidance	Resources
<p>Assign or hire at least one internal adaptation point person with at least part time responsibility.</p>	<p>Identify and communicate incentives and motivation for having a focal point for adaptation and adaptation champions. For example, framing climate risks as a security and safety concern and as a barrier to economic and workforce development can make it more relatable to staff as an agency priority. Additionally, it can be useful to frame adaptation in a way that focuses on topics that are of greatest concern to the public.</p> <p>Formalize the adaptation point-person role by including adaptation responsibilities in their job description. Responsibilities may include leading internal adaptation initiatives, developing their adaptation-related technical skills, coordinating with internal adaptation champions and leadership, and engaging external sources on adaptation. Determine what skills are needed in an adaptation point person for the agency (e.g. technical understanding of the climate adaptation process, communication skills, etc.). Determine a budget for the adaptation point person role to account for staff time and resources.</p> <p>Consider whether this role is at a level sufficient to be effective across the organization and potentially elevate the role (e.g. to a manager-level position) as appropriate to the organization’s decision-making structure.</p>	<p>Job post examples:</p> <p>» Climate Resiliency Specialist, County of San Mateo</p> <p>» City of Berkeley Chief Resilience Officer (CRO) Job Description (PDF)</p>
<p>Focus on addressing technical capability needs on a project-by-project basis while continuing to expand access to technical resources throughout the agency.</p>	<p>On a project-by-project basis, identify technical capability needs based on project goals. Identify sources of technical support to meet those project needs and steps needed to access technical support (e.g. departmental or funding approval). Consider the importance of in-house versus third party technical resources. Prior to starting a new project, assess the level of technical analysis required by considering the lifetime of the decision/investment and potential consequences of not adapting. The scope of analysis will help inform the technical capabilities that will be needed.</p>	<p>» Designing Climate Change Adaptation Initiatives: A UNDP Toolkit for Practitioners (PDF) provides step-by-step guidance for adaptation practitioners to plan and design adaptation initiatives</p>

	<p>Develop a prioritization scheme for filling the technical capabilities gaps identified throughout the agency, including knowledge and understanding of legal risks and solutions. Identify the steps needed to access sources of technical support.</p> <p>Seek external expertise to fill internal gaps and aim to include a knowledge transfer component to enhance internal capacity. External resources that can be leveraged include local universities, consulting firms, NGOs, and other public agencies.</p> <p>Maintain the resource library of competency-building materials and disseminate among interested staff. Document the way in which climate adaptation is incorporated into projects and disseminate information to other staff to increase awareness of adaptation capacities.</p> <p>Demonstrate outputs of the technical resources to build the case for investment or continued investment in the resource. Include training for specific resources in staff onboarding process.</p>	<p>» The CA LCC Climate Commons provides climate change data, information on climate science, and guidance for applying climate change science to conservation in the state</p>
<p>Ensure that project staff participate in relevant adaptation competency-building activities especially prior to undertaking projects.</p>	<p>Obtain supervisor buy-in to approve time for climate change competency-building activities.</p> <p>Competency-building activities can include attending webinars or trainings, reviewing existing primer guidance documents, and reviewing regional vulnerability assessments and/or adaptation plans. Activities should also include understanding and formalizing ethical standards of practice (organizations such as the American Society of Adaptation Professionals are currently developing standards and a professional curriculum). Where possible, leverage existing competency-building activities provided by regional agencies and collaboratives.</p> <p>Invest in training to ensure that appropriate staff possess or build the skills needed to effectively and comprehensively assess the risks and vulnerabilities of anticipated climate change impacts. Encourage staff to integrate adaptation work into budgets and grant proposals to justify time and resource allocation for project-specific adaptation training. Work with local NGOs that are engaged in the adaptation space to identify additional training resources and opportunities.</p> <p>Consider the "training of trainers" approach: Invest in trainings and resources for adaptation champions to understand sector-specific risks, vulnerabilities, hazards, and adaptation approaches. Train the adaptation champions to build the adaptation competency of others in their departments. Encourage department champions to identify relevant sector-specific resources to share with their team.</p> <p>Set up regular check-ins or team meetings around a community of practice to share knowledge and build understanding.</p>	<p>Webinars:</p> <p>» EPA hosts webinars relating to climate change and water</p> <p>» ARCCA Learning Sessions provides webinars to help support local adaptation efforts</p> <p>» National Adaptation Forum webinars offer discussions on a variety of adaptation topics</p> <p>Local and Regional Plans</p> <p>» Georgetown Climate Center Preparing for Climate Change in California provides links to adaptation efforts and legislation at the state and local level</p> <p>» The ICARP Adaptation Clearinghouse provides resources to guide state, regional, and local decision makers in their adaptation efforts</p>

Level 3: Standardization

Strategy summary: Refine roles of adaptation staff to expand responsibilities, develop agency-specific resources and processes for technical support, and expand adaptation trainings for adaptation and non-adaptation staff.

Suggested Actions	Additional Guidance	Resources
<p>Refine the role of the adaptation point-person and expand responsibilities as needed.</p> <p>Recruit additional adaptation champions in key departments and formalize their roles by including adaptation responsibilities in their job descriptions.</p>	<p>Expand the responsibilities of the adaptation point-person, such as enhancement of their technical skills, development of tailored capacity-building trainings for agency staff, coordination and engagement in regional adaptation activities, etc. Consider providing a title promotion (e.g. chief resiliency officer or resiliency specialist) to compensate for added responsibilities.</p> <p>Elevate this role to a level (e.g. deputy department lead, management role, city/county manager’s office) sufficient to be effective across the organization and potentially elevate the role as appropriate to organizational goals.</p> <p>Identify departments for which adaptation considerations are most relevant. Identify opportunities to communicate the relevance and importance of connecting adaptation to key sectors.</p> <p>Begin to recruit adaptation champions from those key departments. Maintain a list of adaptation champions in various departments, and foster knowledge sharing and open lines of communication (e.g. through a regular team meeting) to increase capacity and identify potential areas for collaboration.</p>	<p>Job description examples:</p> <ul style="list-style-type: none"> » Climate Resiliency Specialist, County of San Mateo » City of Berkeley Chief Resilience Officer (CRO) Job Description (PDF)
<p>Streamline the process to access adaptation-related technical capabilities in order to address gaps and needs throughout the agency (using internal or external expertise), and enhance capacity-building information tailored to the agency's needs and processes.</p>	<p>Work with other departments to identify opportunities to integrate adaptation technical resources and capabilities in technical activities and decision-making throughout the agency (e.g. planning, public works, financing and capital improvements).</p> <p>Include costs for staff time and technical resources into program and departmental budgets.</p> <p>Consider integrating performance measures to evaluate technical assistance for accuracy and usefulness. Apply this evaluation to in-house versus third party technical resources. When external technical capabilities are necessary, aim to include a knowledge transfer component to enhance internal capacity.</p> <p>Identify a full suite of technical support options to address gaps and needs based on past sources of technical support, sources used by similar agencies, and online research. Update the resource library with these options.</p> <p>Tailor the library of capacity-building information to the agency's needs and processes. For example, categorize and map out the resources by each stage of the agency's program and project cycle.</p>	<ul style="list-style-type: none"> » Cal-Adapt resources provides access to climate projections, research, and other guidance » Georgetown Climate Center Preparing for Climate Change in California tracks the climate adaptation work and legislation being done in the state » Climate Central provides research and reports on the science and impacts of climate change » ARCCA Learning Sessions provides webinars to help support local adaptation efforts

		<ul style="list-style-type: none"> » Integrated Climate Adaptation and Resiliency Program includes the State Adaptation Clearinghouse and the Technical Advisory Council, which both support California adaptation efforts
<p>Provide ongoing professional development support so adaptation staff remain at the forefront.</p> <p>Provide required trainings for department heads and all staff to ensure base understanding is in place.</p>	<p>Focus adaptation competency-building activities on technical skills gaps and needs, particularly for integrated planning, monitoring, financing, and implementation. Consider drawing on external experts, such as local universities, to build internal adaptation competency.</p> <p>Develop agency-wide outreach and training to make all staff aware of climate risks to the community, importance of climate adaptation, adaptation planning process and how it relates to the agency, and internal and external resources. Use existing resources and tailor them to the agency, and further tailor them to the departments. Information could consist of a handout with tailored details about the relevance and process of incorporating climate change in the agency's process, a formal and recurrent training, etc. Materials should cover basics of what adaptation is, why it's important, climate stressors that are projected to have the greatest impact on the region, background on conducting vulnerability assessments and identifying adaptation options to enhance resilience, etc.</p>	<ul style="list-style-type: none"> » California Climate Change Adaptation resources provides a variety of technical resources across 8 sectors » NOAA Adaptation Planning for Coastal Communities is a course designed for local public employees to enhance their adaptation planning skills » EPA hosts webinars relating to climate change and water » ARCCA Learning Sessions provides webinars to help support local adaptation efforts » National Adaptation Forum webinars offer discussions on a variety of adaptation topics » Environmental and Sustainability Skills maps the skills and knowledge that are useful at different career levels » U.S. Climate Resilience Toolkit Trainings provides free courses

		<p>and tutorials to acquire tools, skills, and knowledge for managing climate risks and opportunities</p> <p>» Climate Resilience Framework: Training Materials are free and are composed of three series (Establish Resilience Principles, Understanding Vulnerability and Risk, and Resilience Planning), each of which includes -8 lesson sets</p>
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Level 4: Optimization		
Strategy summary: Elevate adaptation staff, and invest in technical resources to build in-house capabilities, develop agency-wide adaptation training plan to undertake all steps of the adaptation process.		
Suggested Actions	Additional Guidance	Resources
Elevate the role of adaptation staff and integrate with other senior staff.	<p>Specify career advancement opportunities for adaptation staff (e.g. discuss potential leadership positions, engage with staff to conduct self-assessments to explore their skills and interests, allow for rotation of roles across adaptation initiatives). Staff should feel like there is opportunity for career growth.</p> <p>Include in the job descriptions of senior staff to coordinate with the agency's adaptation lead. Provide a summary overview of planned and ongoing adaptation initiatives being undertaken by the agency.</p>	<p>» What a Chief Resilience Officer Does identifies actions and responsibilities of a CRO</p> <p>» Chief Resilience Officer, City of Santa Monica (PDF) is an example job description for CROs</p> <p>» Environmental and Sustainability Skills maps the skills and knowledge that are useful at different career levels, including what adaptation capabilities individuals at different levels should possess</p>
Continue to identify new areas of technical capabilities for investment, tied to	Assign adaptation staff to seek opportunities and resources to build agency's technical capacity for planning and implementing adaptation measures.	<p>Tracking tools and efforts</p> <p>» US Climate Resilience Toolkit provides updated information and tools to</p>

<p>adaptation planning and implementation efforts. Invest in high-quality technical resources to conduct in-house analysis and implementation of adaptation measures</p>	<p>Continuously use performance measures to assess and identify areas for improvement of technical capabilities. Use the agency's adaptation roadmap and status reports on adaptation implementation to inform technical capability needs.</p> <p>Continue to streamline institutional processes for staff to access technical capabilities.</p> <p>Track emerging adaptation tools and conduct evaluations to determine which are suitable for organizational investment.</p> <p>Pursue the integration of adaptation technical resources with other operational processes and resources so that climate change impacts are considered in decision-making throughout the agency.</p>	<p>help understand and address climate risk</p> <p>» Georgetown Climate Center Preparing for Climate Change in California tracks state, regional, and local adaptation efforts and legislation</p> <p>» The Adaptation Clearinghouse is an online database and networking site for adaptation resources</p> <p>» ILG Climate Adaptation and Resilience Resources provides resources for local agencies engaging in climate adaptation</p> <p>Performance Measures</p> <p>» BASE Evaluation Criteria for Climate Adaptation (BECCA) (PDF) includes a checklist for monitoring progress and success of adaptation efforts</p> <p>» Climate-ADAPT Urban Adaptation Support Tool: Monitoring and Evaluation provides guidance on monitoring and evaluating adaptation efforts</p>
<p>Develop an agency-wide adaptation competency-building plan and training curriculum and allocate appropriate resources for all staff to understand the adaptation process</p>	<p>Leverage adaptation champions within various departments to conduct outreach and promote adaptation awareness agency wide; incentivize adaptation integration in other roles not as directly related to adaptation activities (e.g. procurement, education, community engagement).</p> <p>Provide training to new staff on local/regional climate change impacts as they relate to the agency as part of onboarding, including the importance of both mitigating and adapting to climate impacts and initiatives being undertaken by the agency.</p> <p>Continuously evaluate and improve or update trainings as needed. If an annual internal agency survey exists, integrate questions to assess and monitor adaptation awareness.</p>	<p>» UC Berkeley Staff Sustainability Training provides an example of a training session geared to enhance the internal sustainability knowledge of employees throughout an organization</p> <p>» The CA Natural Resources Agency Climate Adaptation Storybook (PDF) serves as</p>

	<p>Train and increase skillset of local government staff in a variety of community engagement practices. Engagement practices should include eliciting community priorities, fostering trust, conflict resolution and producing material in de-jargoned language that is easy to understand.</p> <p>Ensure that all staff are able to clearly articulate the importance and value of climate change adaptation, key climate change impacts and the associated risks and vulnerabilities, and specific strategies to integrate adaptation into their work.</p>	<p>a primer for people working in a variety of fields to acquaint them with adaptation work being done in the state</p>
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Stakeholder Engagement & Partnerships

Stakeholder engagement and partnerships are critical for local governments to successfully and efficiently implement adaptation projects. Local governments may achieve community buy-in by increasing public understanding of the variety of climate change impacts and risks, the need for resilience-building strategies, and the uncertainties associated with climate impacts as well as possible solutions. Building and sustaining support requires engagement with a wide swath of the community, especially with disadvantaged communities, who may experience greater climate impacts. Integrating voices from citizens, businesses, faith groups, and industry groups into the planning process can enhance community ownership of adaptation activities, contribute to political support for action, and increase the ability of the community to adjust to changing circumstances.

In addition to building local community member engagement, local governments can avoid conflicting adaptation efforts, engage in shared legal considerations, and even gain efficiencies from collaboration with external partner entities who may be able to provide sector-specific expertise, shared resources, or regional scale perspective. Such partnerships may include regional agencies, neighboring municipalities, non-profit organizations, private sector companies, academia, and the science community. Collaborating with external entities allows for information sharing, coordination of activities, and leveraging of limited resources to conduct joint projects.

This section of the guidebook is designed to help local governments achieve robust and consistent coordination with and response to community stakeholders (both community members, other local governments, and outside experts) with respect to adaptation activities.

Level 1: Initiation <u>Strategy summary:</u> Develop basic understanding of climate risks to the community and potential adaptation options to address these risks, and share information with community members, and begin engaging the community and external regional stakeholders on adaptation.		
Suggested Actions	Additional Guidance	Resources
Begin sharing climate change risks with the community.	<p>Use publicly available resources to compile a basic climate risk profile, including key regional climate impacts and implications, for the community. Ensure that the climate risk profile is based on the best-available science. Identify potential adaptation options to address these risks.</p> <p>Share climate change information, risks, and opportunities with community members on an ad-hoc basis such as through existing newsletters or web pages. Focus on impacts and opportunities that are relevant to community members' lives such as heat and flooding.</p>	<ul style="list-style-type: none"> » Cal-Adapt provides resources on climate change projections and studies to help local adaptation planning and implementation efforts » Georgetown Climate Center Adaptation

		<p>Clearinghouse provides resources on a variety of sectors</p> <ul style="list-style-type: none"> » California Department of Public Health - Climate Change and Health Profile Reports provides regional and county-level data for climate projections and health risks » https://www.tpl.org/how-we-work/climate-smart-cities » Safeguarding CA Research provides information on the climate research that has informed the California Climate Assessment and adaptation plans
<p>Engage with community members on climate risks and adaptation on an ad-hoc basis.</p>	<p>Internally discuss and identify potential hot button issues (e.g. extreme heat, displacement) around climate change and assess how to frame climate change in outreach and education efforts.</p> <p>Participate in or share resources with existing community outreach events and connect messaging around climate change impacts to the topic of the event (e.g., public health, community safety). Seek to integrate climate risk profile information into events throughout the community, particularly in disadvantaged communities, to build the groundwork for equitable adaptation.</p> <p>Focus communications on being responsive to community members' concerns about climate and adaptation interests and needs.</p>	<ul style="list-style-type: none"> » Elements of Effective Engagement (PDF) provides best practices for community engagement based on Rebuild by Design's experience after Superstorm Sandy » Opportunities for Equitable Adaptation in Cities (PDF) provides lessons learned from a Georgetown Climate Center and Urban Sustainability Director's Network workshop on promoting environmental justice and social equity in climate adaptation » Climate and Health Community Engagement Toolkit (PDF) provides a step-by-step guide for facilitating community

		engagement on the topic of climate impacts to health
<p>Begin identifying climate impacts that are of most concern to the community.</p>	<p>Review existing plans and programs to pull out climate related concerns (e.g. safety, health, flooding) that the community has already expressed. Plans and projects may be sensitive to climate impacts even if they are not directly focused on addressing climate change impacts.</p> <p>Identify the community's priorities (e.g., clean air, safety), and services and assets that are highly valuable to the community (e.g., public park, local library). Build messaging that connects climate impacts and resiliency strategies to these priorities and use these as a starting point for discussions with communities.</p>	<p>» Community Resilience Planning Guide provides steps for setting priorities and allocating resources for pressing hazards, with a focus on buildings and infrastructure systems</p>
<p>Identify regional adaptation policy status.</p>	<p>Build a basic understanding of how others in the region are addressing climate risks and resilience to provide a foundation for coordination on policies such as by</p> <ul style="list-style-type: none"> • Looking at existing adaptation policies from the region to leverage and define potentially relevant models for the community. • Searching for climate adaptation plans and policy examples on websites of other governing bodies within the region. <p>Follow up with the governing bodies as needed to clarify or get additional details.</p>	<p>» 2016 Safeguarding CA Implementation Action Plans provide adaptation strategies across 10 sectors</p> <p>» Safeguarding CA Local and Regional Actions and Projects provides examples of adaptation work being done in the state by various governmental, non-governmental and private organizations</p> <p>» State Climate Action Team Working Groups provide examples of work being done at the state level by 10 working groups</p> <p>» CalBRACE represents California's climate impact and adaptation work in the public health sector</p> <p>» Georgetown Climate Center Preparing for Climate Change in California tracks the state's progress on its adaptation goals as well as legislation and agency and local and regional plans</p>
<p>Take ad hoc opportunities to</p>	<p>Create a contact list of potential adaptation collaborators at different levels of government, private companies, academics and/or NGOs. Consider</p>	<p>» ARCCA Member Regional</p>

<p>integrate adaptation activities into projects and activities.</p>	<p>reviewing the agency's past and current climate-sensitive projects to identify potential collaborators for partnerships (e.g. organizing by sector expertise, scale, risks, or other factors). Develop a brief document that illustrates the value of collaboration on adaptation efforts.</p> <p>Using existing network channels (working groups, coalitions, meetings, projects, etc.), build an understanding of adaptation projects and potential collaborators in the region such as by</p> <ul style="list-style-type: none"> • Cataloging regional adaptation activities, such as regional climate collaboratives, • Participating in external stakeholders' (stakeholders outside of the agency) requests to coordinate and collaborate on adaptation projects to demonstrate the agency's commitment, • Participating in regional projects as part of a technical advisory committee or on an ad hoc basis. <p>Use this engagement to learn about adaptation projects taking place in the jurisdiction or region, and to foster strong relations with potential external stakeholders for future collaboration.</p>	<p>Collaboratives include four regional organizations that focus on adaptation implementation in California</p> <p>» California Air Resources Board email listserv provides updates to climate work in the state</p> <p>» State Climate Action Team Working Groups provide examples of work being done at the state level by 10 working groups</p>
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Level 2: Development

Strategy summary: Identify key audiences and community leaders (champions) and begin to integrate adaptation into conversations as appropriate; allocate resources to conduct a review of external expertise needs and available resources.

Suggested Actions	Additional Guidance	Resources
<p>Regularly compile and share climate risk information and resiliency strategies/resources with established community networks and the general public.</p>	<p>Create a process to regularly update and share climate risk information and make it available to community members via existing local government channels (website, newsletters, etc.). Include information on</p> <ul style="list-style-type: none"> • Sector- or issue-specific community climate vulnerabilities • Local government adaptation activities • Links to local government-commissioned climate vulnerability and adaptation reports • Ways in which community members can engage with and provide input to local government adaptation efforts • Links to additional resources for the public to learn more about climate impacts and adaptation 	<p>» Cal-Adapt resources provide information on climate projections, research by state agencies, and other resources to learn more about climate impacts and adaptation in the state</p> <p>» Georgetown Climate Center Adaptation Clearinghouse provides information on adaptation in a variety of sectors</p> <p>» Georgetown Climate Center Preparing for Climate Change in California provides links to state agency and local and regional adaptation</p>

		<p>plans</p> <ul style="list-style-type: none"> » California Department of Public Health – County Health Profiles provides climate impacts relating to public health » CCC Sea Level Rise Adopted Policy Guidance provides an overview of the best available science on sea level rise for California and recommended methodology for addressing this threat in planning and regulatory actions
<p>Deliberately bring adaptation needs and planning efforts to the attention of key stakeholders/audiences.</p>	<p>Review best practices on communicating about climate change. For consistency of messaging across the community, consider utilizing language developed by neighboring jurisdictions and regional agencies (e.g. councils of government, regional climate collaboratives, metropolitan planning organizations).</p> <p>Conduct an initial assessment of potential engagement challenges and conflicts that may arise. Prepare for climate skepticism and myth busting, including both social and scientific myths. Ensure that this is done in a respectful way that doesn't alienate the community.</p> <p>Identify relevant community engagement events across departments (hearings, town-halls, public events). Prepare department-specific information about climate adaptation issues (e.g. flooding information for public works versus habitat information for parks and recreation) so they can more easily integrate climate adaptation information into existing outreach and engagement activities. Engage department leaders to foster top-down support for adaptation. As applicable, seek opportunities to deliberately integrate adaptation information into department-specific events that may not be obviously climate related (e.g. public works meetings on new infrastructure).</p> <p>Identify key community events (e.g. fairs, holiday events) where sharing adaptation information may be relevant and seek opportunities to participate so as to support community adaptation conversations and information sharing.</p>	<ul style="list-style-type: none"> » Elements of Effective Engagement (PDF) is a best practices report based on the lessons learned in post-Hurricane Sandy rebuilding efforts » Opportunities for Equitable Adaptation in Cities (PDF) is a workshop summary report presenting findings on promoting social equity and environmental justice in climate preparation work » Climate and Health Community Engagement Toolkit (PDF) provides a step-by-step guide for facilitating community engagement on the topic of climate impacts to health
<p>Identify key audiences and community leaders (champions) to garner interest within the community for engaging</p>	<p>Use an existing committee of stakeholders (e.g., committees on the environment, public health, safety) to discuss climate concerns.</p>	<ul style="list-style-type: none"> » American Climate Perspectives (PDF) provides insights into American’s views on talking about climate

<p>in climate change adaptation planning processes.</p>	<p>See if an existing committee can add a standing adaptation agenda item to its scope, or create an informal committee or stakeholder group to continue engaging interested organizations and community members.</p> <p>Meet with community groups actively working on climate change issues to understand their mission, activities, resources, and interest in engaging in local government adaptation planning and implementation efforts.</p> <p>Work with key audiences and community leaders to elicit community members' adaptation understanding, needs, and priorities such as by conducting a preliminary survey on awareness of varied climate risks and adaptation concerns. Ensure that underrepresented and disadvantaged communities are engaged in any needs and understanding processes so outcomes reflect the full range of voices.</p>	<p>change with children</p> <p>» Community Resilience Planning Guide provides steps for setting priorities and allocating resources for pressing hazards, with a focus on buildings and infrastructure systems</p> <p>» Elements of Effective Engagement (PDF) provides best practices for community engagement based on Rebuild by Design's experience after Superstorm Sandy</p>
<p>Map out landscape for regional policy coordination.</p>	<p>Explore local, regional, state, and national climate networks to help identify active and engaged players in the adaptation policy at the variety of levels required (e.g. sector, issue, geography, constituency, or response strategy). Such engagement can build an understanding of the broad range of external stakeholders at different levels and with different roles and responsibilities. Such engagement can also help identify opportunities to leverage combined assets, skills, and resources to maximize results and reduce liabilities. Steps to map this landscape can include:</p> <ul style="list-style-type: none"> • Identifying key internal policy strengths and gaps related to adaptation and using this to identify key external adaptation policy opportunities to leverage or target influences (e.g., counties, air districts). • Seeking meetings and conversations with other governing bodies and stakeholders engaged in policy development or advocacy within the region to assess shared priority risks and/or potential shared response strategies. Use these conversations to discuss climate considerations when new regional policies are proposed. • Examining roles, responsibilities, and resources from key state agencies including; Office of Planning and Research (OPR), Environmental Protection Agency (EPA), Office of Emergency Services (OES), California Natural Resources Agency (CNRA), Strategic Growth Council (SGC), Caltrans, Department of Water Resources (DWR), and CALFIRE. Key federal agencies include EPA, National Oceanic and Atmospheric Administration (NOAA), United States Geological Survey (USGS), Federal Emergency Management Agency (FEMA), Department of Housing and Urban Development (HUD), Department of Transportation (DOT), United States Global 	<p>» State Climate Action Team Working Groups provide examples of work being done at the state level by 10 working groups</p> <p>» ARCCA Member Regional Collaboratives include four regional organizations that focus on adaptation implementation in California</p> <p>» AB 2800 Climate-Safe Infrastructure Working Group meets regularly to discuss the inclusion of climate change in the state design process and posts their meeting materials online</p> <p>» The American Society of Adaptation Professionals is a network connecting and supporting climate adaptation professionals</p> <p>» Georgetown Climate</p>

	<p>Change Research Program (USGCRP), and United States Department of Agriculture (USDA).</p>	<p>Center Preparing for Climate Change in California tracks adaptation efforts and legislation at the state, regional, and local levels</p>
<p>Seek out opportunities to engage external collaborators in targeted adaptation projects and activities.</p>	<p>Using risk profiles, identify ongoing or upcoming projects and activities that may have specific climate risks within the agency. Consider gaps in internal skills, expertise and/or knowledge of teams undertaking these projects and activities to identify what sector or disciplinary expertise (e.g., water, transportation, energy, legal, climate science) and types of organizations (e.g., private sector, nonprofits, community groups, academia) could enhance the ability of the agency to ensure the project or activity is climate resilient. Use this information to increase potential collaborations through actions such as:</p> <ul style="list-style-type: none"> • Identifying liaisons within external organizations to discuss potential for collaboration around identified risks for projects • Sharing a summary of the agency's project portfolio with external partners who can help identify those that may face climate risks. Seek options to integrate responses into projects or discuss plans to address risks. • Regularly participate in external stakeholders' requests to coordinate and collaborate on adaptation projects as a means to stay up to date on adaptation projects in the region. 	<p>» Safeguarding California is the state's roadmap for all state agency activities related to climate change impact preparation and adaptation</p> <p>» Cal-Adapt provides resources on climate change projections and studies to help local adaptation planning and implementation efforts</p>

Level 3: Standardization
Strategy summary: Refine community engagement practices (e.g., committee structures and feedback loops) to include adaptation goals,

activities, and reporting; and ensure that appropriate external collaboration is clearly defined in climate programs.

Suggested Actions	Additional Guidance	Resources
<p>Develop a platform or campaign to provide information to the community on climate change impacts and adaptation activities on a consistent basis.</p>	<p>Develop an online platform (by expanding existing outlets or creating new ones as needed) to share climate change information such as through social media, newsletters, and a dedicated page on the agency's website. Use this platform to regularly update the community on changing climate risks, adaptation progress across departments and sectors, and provide concrete opportunities for community members to provide input through newsletters, social media, website updates, and list serves.</p> <p>Establish mechanism to send alerts for extreme heat, extreme weather events, flooding, and other climate impacts through multiple channels (e.g. email, text, and phone). When sharing information about emergent climate risks, also include an update on how the agency is responding (e.g. fire risk reduction, flood management), as well as strategies that individuals can undertake to prepare for and build resilience to these risks (e.g. cooling strategies, flood preparation).</p> <p>Develop a process to regularly inform community members about voluntary actions that can be taken by residents, businesses, and community-based organizations and, if possible, provide incentives in the form of recognition, awards, and small grants. For example, provide property owners with information about preparing for specific risks, encourage businesses to assess their vulnerability, and encourage community centers to serve as cooling centers during extreme heat events.</p>	<ul style="list-style-type: none"> » County of Marin – Climate and Adaptation page provides information to the public on local efforts and resources » Philadelphia Corporation for Aging – Heatline is a number that individuals can call for advice on avoiding heat stress and refers those in need of help to Emergency Services » NOAA California County Forecast RSS Feed Listing provides county-level weather alerts
<p>Regularly engage stakeholders in dialogue about adaptation.</p>	<p>Develop a community engagement plan based on high priority climate risks facing the community and an understanding of community needs and goals. Ensure the plan has a process for updates as new risk information emerges). Provide multiple tools, formats, and channels for engagement in this plan. Include a conflict resolution process for community engagement. To engage the community in an equitable manner, ensure that the plan includes clear processes for effectively engaging disadvantaged communities.</p> <p>Use information about needs and priority risks to broaden understanding of adaptation and build relationships with trusted community groups and organizations to reach out to and engage as many community members as possible on potential risks and specific adaptation strategies, especially leading up to and during extreme weather events (e.g. access to cooling centers, flood response plans). Work to incorporate understanding of uncertainty into engagement to facilitate awareness of the changing nature of climate adaptation. Ensure that relationships with disadvantaged communities are cultivated by clearly addressing community concerns related to climate impacts (e.g. displacement, retreat). Hold regular public meetings with these groups to engage the community on adaptation and what they envision for community engagement moving forward. To better reach disadvantaged communities and those who do not typically show up to public meetings, hold meetings within the community, partner with community-based organizations, bring translators or staff who speak the</p>	<ul style="list-style-type: none"> » County of San Diego Public Outreach and Engagement Plan (PDF) summarizes strategies for public and stakeholder engagement in preparing a Climate Action Plan. This process can be translated into developing adaptation plans, albeit with certain changes (e.g., conducting a vulnerability assessment rather than a baseline emissions inventory) » Resilient Boston: an Equitable and Connected City (PDF) is the city's overarching resilience document, which included significant public engagement

	<p>language(s) predominantly spoken within the community, and/or provide childcare at meetings.</p> <p>Make sure to provide mechanisms for feedback about community understanding of specific risks and adaptation strategies that enhance the agency’s ability to address community concerns in planning and responding to climate risks especially as they change over time.</p>	<ul style="list-style-type: none"> » Climate Community Action for Resilience through Engagement (CARE) in East Boston (PDF) is a plan for implementing resilience in East Boston through thorough community engagement » Sacramento Area Council of Governments Engagement and Communications Plan (PDF) describes this regional government’s implementation of engagement and communications best practices
<p>Integrate community stakeholders into formal adaptation planning processes.</p>	<p>Develop a formal process for gathering community stakeholder input on adaptation related actions and integrating into agency processes for general plan updates, climate action plan updates, and other major visioning and planning activities such as:</p> <ul style="list-style-type: none"> • Establishing or expand an existing committee of community members to formalize role in adaptation goal-setting and related activities. Ensure this committee has a process to integrate new risk information or learn about emerging response strategies so it can update goals and activities based on changing conditions. • Ensuring planning processes include steps to integrate stakeholder and external committee recommendations into planning and policy actions. • Using risk profiles and community concerns to identify community groups who may face specific risks to engage with on adaptation issues, including local schools and universities, NGOs, faith groups, marginalized populations, local businesses, hospitals and public health groups, neighborhood associations, and other community groups and leaders. 	<ul style="list-style-type: none"> » Adapting to Rising Tides Good Planning Guide: Stakeholder Engagement (PDF) helps with developing an approach for engaging stakeholders in an adaptation working group » NOAA Introduction to Stakeholder Participation (PDF) provides guidance for involving stakeholders in coastal resource management » City of Albany Sustainability Committee provides an example of local government public outreach concerning their sustainability initiatives (that can be translated to adaptation work) » Community Engagement Principles and Strategies (PDF) describes American’s perspectives on discussing climate

<p>Create formal mechanisms and roles to engage in external policymaking to better integrate climate risks and adaptation.</p>	<p>Develop or participate in a committee with other governing bodies and stakeholders engaged in policy development, legal framework coordination, or regional advocacy that aims to: assess and document regional risks (e.g. through shared research, common assessments, or collaborative legal review); collaborate on efforts to keep informed about changes in scientific information about climate risks and emerging practices; integrate climate change adaptation into regional policies (e.g. through coordinated planning with MPOs, Air Districts, etc.), as well as identify important local policies (e.g. flood, fire standards) that relate to regional conditions and could be adopted by individual jurisdictions. Scoping activities for such a committee could include activities such as:</p> <ul style="list-style-type: none"> • Identifying by sector or by risk the channels and mechanisms for influencing regional change, appropriate regional scale partners for collaboration (e.g. universities, regional NGOs), and shared planning policy priorities that require development or modification. Define and document partner roles. • Establishing short-, mid-, and long-term goals for high-priority policies and defining processes to integrate adaptation considerations into those policies. The goal is to provide regional consistency and broad legal protection (e.g. building code changes, flood standards, fire control strategies) for local adaptive measures. • Collecting, reviewing and highlighting specific community activities or external stakeholder activities to document best practices (or challenges) in order to ensure that agency actions are aligned and not counterproductive. 	<p>change with children</p> <p>» Plan Bay Area is a long-range transportation, land use and housing plan for 9 counties and their cities in the bay area and looks at drivers of regional change and identifies planning priorities and goals</p> <p>» The Pacific Coast Collaborative is an example of large-scale cooperation among states (including California) to promote sustainable, resilient, and clean economies in the region</p>
<p>Proactively identify and plan for collaboration opportunities on adaptation projects and activities.</p>	<p>Work within departments to apply risk profiles and community concerns to assess climate change planning and project needs 2-3 years in advance (e.g. applying heat projections in review of building codes). Use this process to:</p> <ul style="list-style-type: none"> • Identify, by risk priority or by sector or by response strategy, those partners needed to enlarge opportunities for collaboration across jurisdictions or with technical experts. Use this process to identify pathways for regional experts on climate impacts and adaptation to contribute to project planning and implementation. • Consider which projects, if any, would be better managed and implemented at a regional or sub-regional scale and use this to advocate for regional agency action. • Determine logistics and administrative processes for engaging with external collaborators on projects. • Develop relevant criteria to RFQ / RFP process to ensure external collaborators meet resource and technical needs. • Regularly update other external stakeholders (e.g. neighbor jurisdictions, regional agencies) on adaptation activities and 	<p>» Green Infrastructure in Parks: A Guide to Collaboration, Funding, and Community Engagement provides guidance on identifying and engaging stakeholders, building relationships, and other steps to achieving successful green infrastructure projects</p> <p>» NCCARF Stakeholder Engagement Plan provides guidance for stakeholder engagement and communication in adaptation efforts. While this is an Australian</p>

	<p>progress on projects to build a cohort of relevant technical experts, ensure alignment of activities, and potentially identify opportunities for shared action.</p>	<p>document, it contains best practices and example formats that can be used in California</p>
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Level 4: Optimization
Strategy summary: Ensure that community input is central to adaptation goal setting and that community and expert input are tracked and reported comprehensively.

Suggested Actions	Additional Guidance	Resources
<p>Continually update public facing information platform on climate change impacts and activities. Connect communication engagement platform with key performance indicators to inform the community of action and success.</p>	<p>Facilitate ongoing and fluid community engagement by continually updating community-facing communication platforms with new climate change findings and relevant local government policies, programs, and initiatives. Undertake creative strategies (e.g. art and technology) to share information about climate change impacts and adaptation efforts to reach a broader audience (e.g. youth).</p> <p>Incorporate climate impacts and activities into other communication efforts to mainstream climate change discourse.</p> <p>Ensure that key climate performance indicators and metrics are connected to the community engagement platform, that indicators include measures of agency success in sharing local climate risks and adaptation strategies with community members, and that indicators are updated regularly to reflect current conditions and responses.</p>	<ul style="list-style-type: none"> » STAR Community Rating System is an example of a community-level, stakeholder-driven program that maintains up-to-date information on local climate initiatives » The Art of Climate Change Science Featured at San Diego Central Library (PDF) is an example of an outreach strategy that builds on existing community structures and resources
<p>Systematically adjust and broaden the community engagement plan based on changing conditions and input from community (e.g., expand outreach to the general population, widen the range of forms of engagement).</p>	<p>Regularly refine engagement plan (using qualitative and quantitative indicators and metrics) to assess how well and how equitably community input is being addressed and how well responses are addressing community needs and concerns.</p> <p>Include processes in the engagement plan to identify organizations and community groups that are not yet engaged in the agency's formal community engagement process. Seek opportunities to engage these groups by expanding the reach of notices and opportunities for public input. Make announcements and related information easily accessible, and consider different venues (cultural centers, businesses, etc.) and platforms (online, in-person, etc.) to reach new audiences.</p>	<ul style="list-style-type: none"> » Using Metrics to Track Community Outreach Progress (PDF) provides guidance on developing metrics for successful community engagement » The Stakes are Rising: Lessons on Engaging Coastal Communities on Climate Adaptation in Southern California provides insight into barriers and best and promising practices for successful stakeholder engagement in regional adaptation planning

<p>Formalize processes to track integration of stakeholder input.</p>	<p>Formalize processes to track stakeholder input and agency responses (e.g. incorporated into plan, needs further input, etc.).</p> <p>Design assessments to evaluate stakeholder input such as by looking at:</p> <ul style="list-style-type: none"> • Which risks or responses community members engage in more actively (e.g. across sectors) and how the community responds to changing risks or shifts in policy responses that emerge from changing conditions (e.g. changes in sea-level rise requirements). • Diversity of community members engaged in adaptation conversations. • Equity in community member access to information and input as well as whether members feel their concerns and input are heard and respected. • Comparative level of engagement in other local government efforts. 	<p>» UC Berkeley Staff Sustainability Training provides an example of a training session geared to enhance the internal sustainability knowledge of employees throughout an organization</p>
<p>Participate in fully developed regional coordination activities so policies are as aligned as possible and resources are shared effectively.</p>	<p>Establish formal processes to engage with other governing bodies and stakeholders on a regional adaptation pathway. Engagement activities may include policy development (e.g. targets, strategies, etc.); coordination on shared regional, state, or federal legislative advocacy efforts (e.g. funding, legal frameworks, codes); and shared investment in research, program development, and implementation among others.</p> <p>Effective regional engagement is likely to include:</p> <ul style="list-style-type: none"> • Commitments by member agencies to regional goals and targets. • Measures of effectiveness in terms of shared policies, collaborative program results, organizational engagement and transparency. 	<p>» The Resilience Dialogues are a forum for adaptation and resilience practitioners to engage with one another via facilitated online dialogues</p> <p>» Hawaii’s Climate Change Mitigation and Adaptation Commission provides an example of interagency collaboration to move towards climate goals</p>
<p>Establish ongoing partnership agreements or contracts with external stakeholders on adaptation efforts.</p>	<p>Use regularly updated risk profiles and sector-specific projections to regularly review alignment of in-house adaptation needs and the capabilities of technical experts to fill identified gaps.</p> <p>Ensure that the ongoing partnership agreements for adaptation, which may outline roles, duties, and expectations, are sufficiently flexible to incorporate new partners, allow for innovation, and adapt to new circumstances. Incorporate performance metrics to measure results.</p> <p>Schedule regular meetings with external stakeholders to ensure staff are well informed about both changing conditions and response strategies, to share specific adaptation initiatives, and, where appropriate, collaborate with them to implement adaptation projects and programs.</p>	<p>» Cal-Adapt provides up-to-date climate data that can be used for assessing risk and projecting climate impacts</p> <p>» California Water Boards Notice of Stakeholder Meetings (PDF) is an example of a public notice piece supporting stakeholder engagement</p> <p>» California Department of Fish and Wildlife</p>

		<p><u>Climate Change Stakeholders provides an example of a state agency has arranged formal external stakeholder engagement</u></p>
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Operations & Institutionalized Processes

Institutionalizing adaptation efforts into agency processes ensures that the varied aspects of resilience are consistently and systematically assessed and where appropriate responded to, and that adaptation efforts – which will change over time, and face significant uncertainties - are continually monitored, evaluated, and improved. Institutionalization of adaptation starts with efforts to mainstreaming adaptation efforts and over time moves towards a more holistic “adaptive management” approach that builds flexibility and responsiveness into government operations. Such a process looks at integration of adaptation considerations in existing agency processes, development of processes to assess, track, and report on multi-sector progress on climate adaptation implementation, understanding and integration of legal considerations, and creation of mechanisms for ongoing multi-year adaptation funding tied to ongoing risk assessment and awareness of effective response strategies. At the optimized level, climate risks and adaptation are fully integrated into agency decision making, planning processes, and financial considerations, and project and program outcomes are tracked against an agency-wide measure of adaptive capacity.

Level 1: Initiation		
Strategy summary: Identify and include adaptation considerations as appropriate to specific projects, and begin to identify funding needs, opportunities, and sources.		
Suggested Actions	Additional Guidance	Resources
Identify ad hoc opportunities to integrate climate change adaptation considerations into projects and begin to identify priority agency processes that could be adjusted.	<p>At the start of a new project, identify where climate change impacts should be included or considered in the project scope.</p> <p>Add adaptation language (e.g. responding to and protecting against climate risks) to project goals where appropriate.</p> <p>Review the agency's operations and begin to identify processes that may be impacted by climate change or provide opportunities to increase resilience. For example, a matrix of climate stressors and the municipality's processes could show which processes should have priority, based on potential climate impacts, opportunities for action, and potential legal considerations.</p> <p>Key agency processes to review include procurement, budgeting, hiring and onboarding, technology and IT, emergency operations planning, land use planning, building codes, transportation, and capital improvements.</p> <p>Review examples of programs or processes that other agencies have already flagged as vulnerable to climate change and have made adjustments to. Identify those that are most amenable to adoption by your agency and share with decision-makers.</p>	<ul style="list-style-type: none"> » Local Government Energy Assurance Guidelines (PDF) provides guidance for integrating adaptation and resilience concerns into local energy planning » Cal OES Continuity Planning provides guidance on including resilience considerations in continuity planning » Sacramento Region Transportation Climate Adaptation Plan (PDF) provides an example of a local agency integrating adaptation into its transportation planning » EO B-30-15 Technical Advisory Group Guidance (PDF) provides guidance for building and investing in infrastructure resilience

<p>Leverage existing performance metrics related to climate change.</p>	<p>Look at existing environmental and other tracking mechanisms and identify those which could serve as a proxy or indicator in lieu of formal tracking of adaptation measures (e.g. heat index, flooding events, and storm surge).</p> <p>Utilize available projections (e.g. Cal-Adapt) to build on existing metrics (safety, public health, environmental, economic, social equity) to create initial adaptation measures across the organization and community. Begin tracking existing projects along these metrics.</p> <p>Note that comprehensive and standardized metrics to measure adaptation and climate resilience is an ongoing area of research.</p>	<ul style="list-style-type: none"> » Cal-Adapt resources provides up-to-date climate data and projections » Georgetown Climate Center Adaptation Clearinghouse maintains a database of climate adaptation resources » Safeguarding California is the State’s roadmap for all current and planned adaptation action » 100 Resilient Cities – The City Resilience Framework describes characteristics of a resilient city » Assessing the Effectiveness of Climate Adaptation (PDF) provides an overview of the current state of adaptation monitoring and reporting » Healthy Communities Data & Indicators Project: Core List of Indicators describe qualities of a healthy community from a public health perspective » Caltrans Resiliency Metrics for Transportation Planning (PDF) provides insight into how transportation organizations are integrating resilience into transportation planning
<p>Identify funding needs and sources for adaptation strategies.</p>	<p>Identify a finance staff point-person and hold informal discussions to gain a better understanding of how to leverage the agency's financing processes and potential funding opportunities. Make sure to bring projection information to this conversation, so as to inform finance staff that adaptation risks and costs are likely to increase over time. Use outcomes of discussions to summarize key constraints, barriers, challenges, and</p>	<ul style="list-style-type: none"> » ARB Funding Wizard provides weekly updates for sustainable funding opportunities » U.S. Climate Resilience Toolkit – Funding

	<p>opportunities to financing adaptation activities (e.g. legal, risk assessment, lack of strong metrics, etc.).</p> <p>From discussions and other initial assessments, develop:</p> <ul style="list-style-type: none"> • A high-level assessment of funding needs and opportunities for potential adaptation strategies (both short and long-term). • Ways in which adaptation might fit into existing financing programs/strategies. • Existing funding sources that could better tie to adaptation (e.g. stormwater funding, street repairs, fire protection) to develop a list of possible external resources. <p>Develop a high-level means to start tracking availability and applicability of external resources to specific projects and activities.</p> <p>Start considering what local revenue streams (e.g. sewage, trash, and taxes) could be used as leverage to secure external funding or financing streams if they were connected to adaptation efforts.</p>	<p>Opportunities provides a list of funding sources and further information to support resilience activities</p> <p>» Atlas Marketplace provides support to local governments in their efforts to invest in greener, more resilient infrastructure</p> <p>» A Public-Private Partnership Approach to Climate Finance (PDF) describes a framework for financing green infrastructure</p> <p>» Climate Resilient & Equitable Water Systems Capital Scan (PDF) is meant to develop strategies with clear paths for using capital tools</p>
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Level 2: Development		
<u>Strategy summary:</u> Identify opportunities to start to formally integrate adaptation into agency processes, begin to evaluate adaptation efforts from operational and legal standpoints, begin to develop a funding plan, and obtain funding on a project-to-project basis.		
Suggested Actions	Additional Guidance	Resources
<p>Define and implement high-level steps to integrate adaptation into priority agency processes, and work with agency planners and decision makers to better align adaptation activities and needs with agency goals.</p>	<p>Utilize a vulnerability assessment or a more detailed analysis to determine which climate impacts are of greatest concern.</p> <p>Identify by risk, sector, or potential response strategy, specific entry points for adaptation integration within existing agency processes and goals.</p> <p>Identify agency programs and priority near-term goals that are likely to be affected by climate impacts, as well as business processes for which decisions made in the short term may lock in longer-term risks. Identify long-term agency goals that consider longer term risks and seek to identify institutional changes that move the organization as a whole towards mainstreaming adaptation into operational activities. As part of this process, identify when in an existing cycle (e.g. building and infrastructure update cycles) might be the least intrusive adoption point for new processes or goals.</p>	<p>» U.S. Climate Resilience Toolkit provides information and tools for understanding and addressing climate risks</p> <p>» Guidance for Incorporating Sea Level Rise into Capital Planning in San Francisco provides an example of instructions for integrating sea level considerations into capital project implementation</p>

	<p>Ask agency counsel to review legal risks and considerations for identified adaptation process and goal changes, especially longer term risks.</p> <p>Form a working group to identify the specific steps to integrate climate change into these prioritized agency processes. Foster mechanisms for bottom-up and regular feedback from staff about adjustments to processes and operations so that adjustments respond to and better incorporate changing climate risks and emerging adaptation solutions.</p> <p>Share information with agency planners and decision makers to raise awareness of the role of agency processes in resiliency efforts and begin to define shared adaptation goals across departments. For example, create internal fact sheets and guides on the value of integrating adaptation considerations into specific agency processes.</p> <p>Begin to document adaptation integration into these entry points as a starting point for a longer-term internal plan for integration of adaptation into internal processes.</p>	<p>» Dane County, Wisconsin Climate Change and Emergency Preparedness Plan provides an example of a local government reviewing internal operations and investments and developing a plan to prepare for climate risks</p>
<p>Begin to organize performance metrics to evaluate adaptation program performance.</p>	<p>Research and develop a list of ideal adaptation performance metrics such as:</p> <ul style="list-style-type: none"> • The degree to which risk was reduced. • The benefit to the public. • Whether the project impacts the population in an equitable manner. • How much progress has been made in assessing vulnerability. • How much progress has been made in reducing vulnerability and enhancing resilience. <p>Compile information on data and tools needed to utilize ideal metrics across various risk sector and/or response strategies. Outline costs and resources needed to support establishing ideal metrics. Look for opportunities to add metrics data or tools through existing processes or programs (e.g. using a project budget to purchase software for more general use). Stay up-to-date on the latest research on adaptation metrics to incorporate new methods, particularly those that are becoming widely utilized in California.</p> <p>In lieu of adaptation-specific quantitative metrics, consider conducting qualitative surveys of progress and outcomes across project areas.</p> <p>For existing adaptation-related projects, create a simple summary assessment of expected outcomes to serve as a starting point for measuring progress.</p> <p>Allocate staff time to stay up-to-date on the latest research, practice, and tools on methods and metrics to measure adaptation.</p>	<p>» Advancing Climate Justice in California provides principles and recommendations for integrating environmental justice concerns into adaptation planning in California</p> <p>» Voluntary Resilience Standards provides guidance for local leaders in creating policies to encourage adopting resilient building techniques and standards</p> <p>» Resilience Dividend Valuation Model is a modelling framework that can be used to estimate the net benefits of a resilience project</p> <p>» Social Vulnerability to Climate Change in California (PDF) provides an index and data to measure social vulnerability to climate impacts, which can be used to show reduction in vulnerability due to</p>

		<p>adaptation initiatives</p> <p>» City of Berkeley Sustainability Metrics provides an example of a local organization identifying and tracking progress on measurable adaptation goals</p>
<p>Create revenue-raising plan and begin to obtain funding for adaptation-related projects.</p>	<p>Assess adaptation financing needs at a more detailed level once a set of priority adaptation strategies have been identified and work to overcome agency's constraints to financing adaptation work (if any are identified), for example by:</p> <ul style="list-style-type: none"> • Continuing to review financial mechanisms and document any that discourage integration of risk reduction or climate impacts projections. • Creating comparative evaluations of adaptation financing needs against costs avoided over time as a result of adaptation actions taken. • Working to define financing metrics relevant to adaptation. • Identifying external funding sources for specific projects and providing finance staff with an outline of steps for accessing these funds. • Provide staff with trainings on accessing climate adaptation funding. 	<p>» Understanding the Basics of Municipal Revenues in California: Cities, Counties, and Special (PDF) districts provides an overview of revenue sources for local governments in the state</p> <p>» Local Government Commission Funding Strategies Guidebook (PDF) describes strategies that local governments can employ for obtaining funding for community improvements</p> <p>» City of Watsonville Carbon Fund is an example of a local funding strategy that provides funding for climate activities while promoting sustainable development</p> <p>» Financing High-Performance Infrastructure (PDF) provides guidance on obtaining the financing to build high-performance (e.g., resilient) infrastructure via mechanisms such as green bonds</p> <p>» A Guide to Assessing Green Infrastructure Costs and Benefits for Flood Reduction provides example guidance on</p>

		<p>assessing the costs and benefits of a flood resilience strategy, including a checklist of data needs for an economic assessment</p> <p>» Community Resilience Economic Decision Guide for Buildings and Infrastructure Systems (PDF) provides guidance for evaluating adaptation investments in buildings and infrastructure</p>
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Level 3: Standardization
Strategy summary: Set clearly defined internal policies and procedures to integrate adaptation into agency processes, begin measuring performance in a quantitative and systematic way, develop and implement a plan to provide predictable funding over several years.

Suggested Actions	Additional Guidance	Resources
<p>Codify steps to integrate adaptation into agency processes.</p> <p>Develop and/or update an “adaptation roadmap” on a regular basis.</p>	<p>Staff, executive leadership, and agency counsel work together to establish an “adaptation roadmap” at the agency policy level that formalizes integration of adaptation risk assessment and response activities into agency decision-making and planning processes (e.g., emergency management and planning, land use planning, public health planning, water resource planning, transportation planning, public works standards, building codes, project siting decisions, product procurement design standards, etc.).</p> <p>As part of the adaptation roadmap, involve multiple departments and decision makers to build out comprehensive adaptation mainstreaming steps and guidance for the agency's operations plan. Conduct thorough legal review of proposed actions to ensure that any changes in operational approaches reduce risks and respond to changing conditions while still complying with all necessary legal requirements. Especially look to define cross-cutting agency processes and individual department processes that should be adjusted to align with the adaptation roadmap (e.g. procurement, time-horizons for planning). Also review and update department-specific plans and standards to incorporate climate adaptation (e.g., public works standards for capital improvement projects, building codes, etc.).</p> <p>On a regular basis (e.g., every six months to every year), review and update the adaptation roadmap to ensure it is maintaining alignment with changing conditions and is ultimately increasing adaptive capacity in agency processes. Include a review of changing legal frameworks, risks, and liabilities to ensure that legal implications of operational changes are considered and addressed.</p>	<p>» Santa Clara Valley Water District 2012 Water Supply and Infrastructure Master Plan includes considerations of resilience and adaptation to climate change impacts in the area’s water resource planning</p> <p>» Guidance for Incorporating Sea Level Rise into Capital Planning in San Francisco provides sample guidance for a municipality to include climate (sea level rise) considerations into projects considered for city funding</p> <p>» San Francisco’s Climate and Health Adaptation Framework (PDF) is an example of the work done by a local public health program to prepare for climate change impacts to</p>

	<p>Cultivate a strong feedback loop between key departments, executive leadership, legal counsel, and adaptation program staff. Develop protocols for staff responsible for policy, planning, finance, implementation, and maintenance to coordinate how they account for climate uncertainty, widespread climate risks, and an extended time horizon. Make sure to regularly confer with agency counsel to ensure that legal implications of risk responses are well considered. Staff working to develop and advance agency policies should coordinate with planners and adaptation program staff to ensure policies reflect appropriate standards and practices so as to ensure alignment with long term planning and adaptation processes.</p>	<p>human health</p>
<p>Create and follow a plan for implementing quantifiable performance metrics to evaluate adaptation program progress.</p>	<p>Refine metrics (moving towards quantifiable key performance metrics) for adaptation performance and activities (across risk sectors, departments, and response activities) so they tie into the overall adaptation plan, policy goals, and organizational metrics.</p> <p>Ensure that performance metrics are integrated into standing agency reporting and governing body reporting.</p> <p>Support integrated metrics reporting by developing a progress report process that delivers updates on a regular basis (e.g., at end of project or once or twice a year).</p> <p>Create feedback loops between activities, outcomes, and metrics (e.g. review progress reports to identify gaps in adaptation implementation and policy or program barriers that contribute to those gaps).</p>	<p>» FEMA Training: Measuring Hazard Mitigation Success (PDF) describes a methodology for measuring success of hazard mitigation activities</p> <p>» City of Berkeley Sustainability Metrics provides an example of a local organization identifying and tracking progress on measurable adaptation goals</p>
<p>Update Adaptation funding plan (revenue allocation and revenue-raising) to provide predictable funding to meet adaptation needs over the next 2-3 years, and support acquisition of associated funding.</p>	<p>Collaborate with the finance department to create a 2-3-year funding plan that is tied into the agency's annual budgeting process. The plan should address both internal revenue allocation (e.g. integration of adaptation criteria in capital investment plan or allocations from the general fund) and external revenue raising (e.g. seeking out grants).</p> <p>Collaborate with other departments to incorporate adaptation needs and support into their funding applications, where relevant.</p> <p>Establish a process for regular finance department review of project financing screening criteria so as to ensure that the budget process can adequately respond to changing climate change risks across sectors and response strategies such as:</p> <ul style="list-style-type: none"> • Valuation of avoided costs that reflect increasing risk profiles in specific sectors, based on emerging science. • Valuation of co-benefits for projects that are not adaptation-specific (e.g. energy efficiency for load management and energy reliability) but have a resiliency benefit. 	<p>» Guidance for Incorporating Sea Level Rise into Capital Planning in San Francisco provides sample guidance for a municipality to include climate (sea level rise) considerations into projects considered for city funding</p>

Level 4: Optimization

Strategy summary: Adopt a comprehensive “adaptation in all policies” approach across all departments, regularly collaborate with agency leaders to integrate adaptation into planning and investment decisions, and continuously evaluate and improve adaptation program in light of changing conditions, emerging practices, and shifting legal considerations.

Suggested Actions	Additional Guidance	Resources
<p>Continuously update adaptation roadmap as needed based on monitoring and evaluation of program.</p> <p>Implement an overarching adaptation policy that integrates adaptation into all relevant agency decision making and planning processes.</p>	<p>Ensure that the process and timeline for updating the adaptation roadmap is well-documented so that the program is resilient to changes in climate risks, staff allocations, leadership engagement, and political will.</p> <p>Identify any remaining entry points within agency planning, legal review, and budgeting processes where adaptation integration may be relevant, in order to ensure full integration within the agency's processes. Ensure that input from the community, agency executives, key departments and other stakeholders, as well as best-available science and new models, continue to guide the development, expansion, and enrichment of the agency's adaptation roadmap.</p> <p>Look at integrating staffing and management strategies that are conducive to the changing nature of climate risks and varied response strategies such as:</p> <ul style="list-style-type: none"> • Utilization of “adaptive management” practices into general staffing and leadership strategies so that staffing development supports an approach that is proactive and not reactive across the organization. • Adoption of high reliability organization management principles to be attentive to emergent climate vulnerability problems and deploy the right set of resources to those problems. 	<p>» Smart Growth Fixes for Climate Adaptation and Resilience: Changing Land Use and Building Codes and Policies to Prepare for Climate Change (PDF) offers strategies for working climate adaptation considerations into regular community processes and policies</p> <p>» Building Resilient States: A Framework for Agencies provides guidance for state governors and their agencies to create and support adaptation programs and actions, including integration into state policy</p> <p>» Building Resilient States: Profiles in Action provides guidance for disaster preparedness professionals to integrate land use and transportation issues into resiliency discussions</p>
<p>Continuously improve adaptation program based on quantitative progress indicators and collect testimonies that are fully integrated into organizational metrics as a whole.</p>	<p>Formally integrate Adaptation Roadmap metrics into other organizational metrics so they are fully mainstreamed across the agency and support integration of climate adaptation into overarching policies and programs.</p> <p>Evaluate feedback loops (approximately every year) from tracking progress to ensure that project and program approaches are benefitting from evaluation, monitoring, and verification (EMV) findings (at the end of project activities).</p> <p>Conduct overall evaluation of programs (approximately every 2-3 years) to find overarching and specific opportunities for improvement especially as it relates to long-term risk reductions. As appropriate, consider using a third party to conduct this evaluation and validate its outcome.</p>	<p>» Resources for Evaluating and Monitoring Climate Change Adaptation Actions in Coastal Regions: An Annotated Bibliography (PDF) provides numerous resources for planning and evaluating adaptation measures, particularly related to coastal communities</p>

	<p>Create a system to evolve metrics tracking systems as climate conditions and implementation steps evolve by building in periodic system review and enhancement (approximately every 3-5 years).</p>	<ul style="list-style-type: none"> » Measuring Climate Change Adaptation (PDF) provides guidance from the state Safeguarding California plan and includes sample resilience outcomes metrics » City of Chula Vista Climate Adaptation Strategies Implementation Plans (PDF) provides an example of a California municipality identifying strategies, performance metrics, timelines, and budgets for implementing adaptation activities » City of Los Angeles Sustainable City pLAN: 2nd Annual Report (PDF) includes adaptation among its sustainability goals and provides examples of reporting on specific, measurable, time-bound goals
<p>Embed climate adaptation funding into overall organizational budgeting systems and ensure it is aligned with adaptation program roadmap.</p>	<p>Gain finance department's commitment to the agency's adaptation roadmap and the need to develop a multi-year funding plan. Integrate adaptation goals into overall organizational funding systems.</p> <p>Work with the finance department to review the adaptation roadmap and goals to inform funding plan. Ensure that funding can be distributed and coordinated across multiple departments, to account for multifaceted nature of adaptation needs.</p> <p>Tie funding plan to agency annual budget process and obtain ongoing funding through general fund allocation in budget.</p> <p>Tie fiscal measures across the organization to resiliency metrics to ensure that funding is moving towards resiliency and away from maladaptation.</p>	<ul style="list-style-type: none"> » County of Marin Proposed Budget FY 2016-2018 (PDF) provides an example of a local government institutionalizing adaptation measures by setting aside funds in their budget and including such activities in their goals

APPENDIX G: Regional Stakeholder Workshops: Toolkit Refinements

Feedback from the first and second phases of the workshops resulted in a number of modifications to the initial CMM Matrix and Roadmap, and a number of additions to the Roadmap. Participant feedback and subsequent modifications to the tools are summarized below.

- Participants felt that the initial number of process areas (nine) was too large and made the matrix difficult to digest. As a result, the research team grouped these into four high-level process areas with various capability sub-areas.
- Participants felt that the initial number of maturity levels (five) was too large, and that it was often difficult to distinguish between the levels, especially the middle levels (levels 2-4). Therefore, the research team reduced the number of maturity levels to four.
- Participants felt that oftentimes, their agency had not even reached the first maturity level and needed guidance on how to reach it. Consequently, the research team included a “Level 0 to Level 1 Initiation” matrix in the Roadmap.
- Participants suggested edits to language that was overly specific or prescriptive to make the CMM Matrix relevant to a broad range of local government agencies. The research team reviewed CMM Matrix language to ensure applicability for a broad range of local governments including small, rural jurisdictions.
- Participants suggested a number of capabilities that a local government at the highest capability maturity level should have and actions that local governments could take to achieve those advanced capabilities, which were incorporated into the CMM Matrix, Self-Assessment Checklists, and Roadmap.
- Participants suggested a number of edits to the language of the CMM Matrix and Roadmap to make the tools easier to understand and more applicable to local governments.
- Many participants did not have a clear understanding of the meaning of climate change adaptation, or the difference between climate change, climate change and greenhouse gas mitigation, sustainability, and climate change adaptation. As a result, the research team included a description of climate change adaptation in the introduction to the guidebook. This lack of understanding of climate change adaptation also highlights a need for more outreach to local government staff about climate change adaptation, its relationship to sustainability and greenhouse gas mitigation efforts.
- Participants suggested a number of resources that were incorporated into the Roadmap.

APPENDIX H: Pre-focus Group Questionnaire

CMM Self-Assessment

INTRODUCTION

As part of California's Fourth Climate Change Assessment, we are developing a Local Government Climate Adaptation Capability Maturity Model (CMM) and conducting focus group workshops to test this new tool. In advance of the workshop, we ask that participants complete this self-assessment survey.

First, please provide a high-level assessment of your agency's adaptation capabilities along 4 levels of capability with respect to the 4 operational areas identified. The remainder of the self-assessment survey is organized by operational area and asks you to select the *highest level of action* that your agency has achieved. We recognize that the identified sequence of action may not reflect your agency's processes, but ask that you do your best to select an answer.

Levels of Capability

1. Initiation (lowest)
2. Development
3. Refinement and Standardization
4. Optimization (highest)

Operational Areas

1. Staff Capacity
2. Leadership and Organizational Culture
3. Institutionalized Processes
4. Stakeholder Engagement and Partnerships

* 1. Please provide the following information, which will only be used for the focus group workshop.

Name

Title

Agency

* 2. Please rate at a high level your status with respect to these 4 operational areas.

	Level 1 Initiation	Level 2 Development	Level 3 Refinement and Standardization	Level 4 Optimization
Staffing and Technical Capacity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Leadership & Organizational Culture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Institutionalized Processes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stakeholder Engagement & Partnerships	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments

STAFFING ALLOCATION & TECHNICAL CAPACITIES

Having well-developed and dedicated staff capacity to address climate change risks and adaptation is fundamental in order to internally advance the agency towards achieving resilience goals. The process to build staff capacity can be broken down into: a) increasing technical capacity to identify climate change risks to decision making and implement adaptation activities; and b) ensuring that there is sufficient staffing allocated to adaptation activities, as well as sufficient investment in staff development to increase ability to plan for and implement adaptation. Given that climate change risks and adaptation are cross-cutting, staff capacity is needed across multiple departments.

* 3. Please indicate the highest level of action that your agency has taken to **allocate staff to adaptation roles**.

- 1. Identified internal adaptation "champions" among existing staff who are interested in working on adaptation efforts
- 2. Assigned or hired at least one internal adaptation point person with at least part time responsibility.
- 3. Refined the role of the adaptation point person and expanded responsibilities. Recruited additional adaptation champions in key departments and formalize their roles by including adaptation responsibilities in their job descriptions.
- 4. Elevated the role of adaptation staff and integrate with other senior staff.

* 4. Please indicate the highest level of action that your agency has taken to **enhance adaptation technical capabilities (including technical skills and technology resources)**.

- 1. Identified needs and gaps in the current set of available adaptation-related technical skills and technology resources, and began to identify resources to develop basic climate change adaptation knowledge base.
- 2. Focused on addressing technical capability needs on a project-by-project basis while continuing to expand access to technical resources throughout the agency.
- 3. Streamlined the process to access adaptation-related technical capabilities in order to address gaps and needs throughout the agency (using internal or external expertise), and enhanced capacity-building information tailored to the agency's needs and processes.
- 4. Identified new areas of technical capabilities for investment, tied to adaptation planning and implementation efforts. Invested in high-quality technical resources to conduct in-house analysis and implementation of adaptation measures.

* 5. Please indicate the highest level of action that your agency has taken to develop adaptation competency of staff.

- 1. Empowered interested staff to seek out information and build expertise as it relates to their existing projects.
- 2. Ensured that project staff participate in relevant adaptation competency-building activities especially prior to undertaking projects.
- 3. Provided ongoing professional development support so adaptation staff remain at the forefront. Provided required trainings for department heads and all staff to ensure base understanding is in place.
- 4. Developed an agency-wide adaptation competency-building plan and training curriculum and allocate appropriate resources for all staff to understand the adaptation process

LEADERSHIP & ORGANIZATIONAL CULTURE

Fostering support for adaptation through leadership and organizational culture ensures that adaptation is advanced throughout all levels of the agency. Leadership from agency executives and local elected officials is essential in driving adaptation, and establishing adaptation as an agency priority can codify this leadership. Creating a culture which values internal coordination and empowers staff enables an organization to more smoothly and effectively advance adaptation efforts.

* 6. Please indicate the highest level of action that your agency has taken to **engage and elevate the role of agency executives in adaptation activities.**

- 1. Identified and informally reach out to executives about climate change risks
- 2. Deepened agency executives' understanding of climate change adaptation.
- 3. Helped executives become adaptation champions who provide strong leadership and institutional support for climate resilience.
- 4. Established mechanisms to ensure continuity of strong executive support as elected officials and executive staff change.

* 7. Please indicate the highest level of action that your agency has taken to **engage and elevate the role of local elected officials in adaptation activities.**

- 1. Identified priorities and interests of elected officials and connected to climate change.
- 2. Deepened elected officials' understanding of climate change adaptation.
- 3. Encouraged elected officials to actively participate in adaptation-related activities.
- 4. Helped elected officials become adaptation champions who provide strong leadership for climate resilience.

* 8. Please indicate the highest level of action that your agency has taken to **establish adaptation as an agency priority / strategic goal.**

- 1. Identified models of strategic plans and goals related to adaptation.
- 2. Identified areas within existing agency priorities and strategic goals where adaptation should be incorporated.
- 3. Developed a high-level set of adaptation goals or principles for consideration and adoption.
- 4. Comprehensively integrated adaptation policies and strategy as core elements of the agency's general plan.

* 9. Please indicate the highest level of action that your agency has taken to **empower staff to engage in adaptation**.

- 1. Identified ad hoc opportunities to build internal awareness about climate change and resilience.
- 2. Worked with leadership to implement opportunities to build internal awareness about climate change and resilience.
- 3. Highlighted voluntary climate change measures that staff can take in the office and at home.
- 4. Built climate change into overall employee empowerment and recognition efforts.

* 10. Please indicate the highest level of action that your agency has taken to **improve internal coordination for adaptation activities**.

- 1. Internal adaptation champions have undertaken informal efforts on coordination and collaboration.
- 2. Adaptation point person meets semi-regularly with champions / collaborators in other departments to discuss adaptation status and upcoming relevant initiatives.
- 3. Formalized interdepartmental coordination efforts on adaptation.
- 4. Established and implemented a robust system for coordination and information sharing on adaptation.

INSTITUTIONALIZED PROCESSES

Institutionalizing adaptation efforts into agency processes ensures that resilience is consistently and systematically considered, and that adaptation efforts are continually monitored, evaluated, and improved upon. Institutionalization includes mainstreaming adaptation efforts into existing agency processes, developing processes to track and report on progress on climate adaptation implementation, and creating mechanisms for predictable multi-year adaptation funding. At the optimized level, climate risks and adaptation are fully integrated into agency decision making, planning processes, and financial considerations, and project and program outcomes are tracked against an agency-wide measure of adaptive capacity.

* 11. Please indicate the highest level of action that your agency has taken to **mainstream adaptation into agency processes**.

- 1. Identified ad hoc opportunities to integrate climate change into projects and began to identify priority agency processes that should be adjusted for climate change.
- 2. Defined and implemented steps to integrate adaptation into priority agency processes, and worked with agency planners and decision makers to better align adaptation roadmap with agency goals.
- 3. Codified steps to integrate adaptation into agency processes. Developed and/or updated adaptation roadmap on a regular basis.
- 4. Continuously updating adaptation program plan as needed based on monitoring and evaluation of program. Collaborating with other agency decision makers and planners to implement adaptation policy and integrate adaptation into all relevant agency decision making and planning processes.

* 12. Please indicate the highest level of action that your agency has taken to **implement processes for tracking and measuring progress on climate adaptation implementation**.

- 1. Leveraged existing performance metrics related to climate change.
- 2. Began to apply performance metrics to evaluate adaptation program performance.
- 3. Created and followed a plan for implementing quantifiable performance metrics to evaluate adaptation program progress.
- 4. Continuously improving adaptation program based on quantitative progress indicators and collecting testimonies.

* 13. Please indicate the highest level of action that your agency has taken **to build momentum for predictable funding for adaptation initiatives on a multi-year scale.**

- 1. Identified funding needs and sources for adaptation strategies.
- 2. Created revenue-raising plan and begin to obtain funding for adaptation-related projects.
- 3. Updated revenue-raising plan to provide predictable funding to meet adaptation needs over the next 2-3 years, and obtained associated funding.
- 4. Embedded climate adaptation funding into overall organizational budgeting systems and ensured it is with aligned with adaptation program roadmap.

STAKEHOLDER ENGAGEMENT AND PARTNERSHIPS

Stakeholder engagement and partnerships are critical for local governments to successfully and efficiently implement adaptation projects. Local governments may achieve buy-in from citizens, businesses, faith groups, and industry groups by increasing public understanding of climate change impacts and risks and the need for resilience-building strategies and by integrating community voices into the planning process. Additionally, local governments can avoid conflicting adaptation efforts and even gain efficiencies from collaboration with regional agencies, neighboring municipalities, non-profit organizations, private sector companies, academia, and the science community to share information, coordinate activities, and leverage limited resources to conduct joint projects. This section of the guidebook is designed to help local governments achieve robust and consistent coordination with and response to community stakeholders (both community members, other local governments, and outside experts) with respect to adaptation activities.

* 14. Please indicate the highest level of action that your agency has taken to disseminate information to the community regarding climate risks and adaptation activities.

- 1. Began sharing climate change risks with the community.
- 2. Regularly compiling and sharing climate risk information and resiliency strategies/resources with established community networks and the general public.
- 3. Developed a platform/ campaign to provide information to the community on climate change impacts and adaptation activities on a consistent basis.
- 4. Continually updating public facing information platform on climate change impacts and activities. Connecting communication engagement platform with key performance indicators to document success in sharing progress.

* 15. Please indicate the highest level of action that your agency has taken to engage community members and solicit input.

- 1. Engaging with community members on climate risks and adaptation on an ad-hoc basis.
- 2. Deliberately bringing adaptation needs and planning efforts to the attention of key stakeholders/audiences
- 3. Regularly engaging stakeholders in dialogue about adaptation.
- 4. Adjusted and broadened the community engagement plan based on input from community (e.g., expand outreach to the general population, widen the range of forms of engagement).

* 16. Please indicate the highest level of action that your agency has taken to **integrate stakeholder input into agency planning, policy making, and programming efforts.**

- 1. Began identifying climate impacts that are of most concern to the community.
- 2. Identified key audiences and community leaders (champions) to garner interest within the community for engaging in climate change adaptation planning processes.
- 3. Integrated community stakeholders into formal adaptation planning processes.
- 4. Formalized processes to track integration of stakeholder input.

17. Please indicate the highest level of action that your agency has taken to **coordinate and engage regionally to fill gaps internally, build multijurisdictional response, and streamline efforts.**

- 1. Identified regional adaptation policy status.
- 2. Mapped out landscape for regional policy coordination.
- 3. Created formal mechanisms and roles to engage in external policymaking to better integrate climate risks and adaptation.
- 4. Participating in fully developed regional coordination activities so policies are as aligned as possible and resources are shared effectively.

* 18. Please indicate the highest level of action that your agency has taken to **actively work with external collaborators on specific initiatives.**

- 1. Taking ad hoc opportunities to integrate adaptation activities into projects and activities.
- 2. Seeking out opportunities to engage external collaborators in targeted adaptation projects and activities.
- 3. Proactively identifying and planning for collaboration opportunities on adaptation projects and activities.
- 4. Established ongoing partnership agreements or contracts with external stakeholders on adaptation efforts.

CMM Self-Assessment

* 19. Please reassess your agency's capabilities and rate at a high level your status with respect to these 4 operational areas.

	Level 1 Initiation	Level 2 Development	Level 3 Refinement and Standardization	Level 4 Optimization
Staffing and Technical Capacity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Leadership & Organizational Culture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Institutionalized Processes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stakeholder Engagement & Partnerships	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20. Do you have any comments regarding this self assessment survey or other feedback that you would like to share with researchers?