

December 10, 2015

Secretary John Laird
California Natural Resources Agency
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

RE: Draft *Safeguarding California: Implementation Action Plans*

Dear Secretary Laird and Staff:

The Alliance of Regional Collaboratives for Climate Adaptation (ARCCA) welcomes the opportunity to provide comments on the draft report, *Safeguarding California: Implementation Action Plans*.

We thank the California Natural Resources Agency (CNRA) for producing this important document. *Safeguarding California* is a critical step in the successful implementation of EO B-30-15 and AB 1482, providing a comprehensive summary of climate change impacts across California and an extensive catalogue of current adaptation efforts, and available resources to support climate adaptation. We also appreciate the hard work that has resulted in this draft and the meaningful efforts to engage the public and seek their input.

About ARCCA

ARCCA is a network comprised of leading regional collaboratives from across California focused on building resilience to the impacts of climate change. ARCCA members are already coordinating and supporting climate adaptation efforts in their own regions to enhance public health, protect natural systems, build economies, and improve quality of life. Through ARCCA, member regional collaboratives have come together to amplify and solidify their individual efforts, as well as to give a strong voice to regionalism at the state and federal levels. ARCCA members share information on best practices and lessons learned; identify each region's most innovative and successful strategies; and determine how to adapt these strategies to another region's particular needs. As a result, ARCCA bolsters the efforts of member regional collaboratives and empowers those interested in forging new regional partnerships.

ARCCA represents regions that have developed governance structures that, where appropriate, include Metropolitan Planning Organizations (MPOs) and Councils of Governments (COGs), but are not necessarily bound by their service territories. The structures of ARCCA member regional collaboratives vary across the state to address issues unique to each region. By allowing each region to define its own boundaries, we are able to avoid issues that arise from top-down designation (e.g., exclusively using MPOs for program dissemination, thereby excluding rural areas from participating).

Recommendations

To realize success, we want to see the final draft, within the limits allowed, empower local communities and regional entities in all parts of the state – north and south, coastal and inland,



urban and rural – and across all sectors to take action and implement investments that strengthen the state’s overall economic, environmental, and social resilience in an efficient, effective, and equitable manner. Within this context, we offer a few broad comments, as well as chapter-specific comments (attached), that might strengthen the ability of local and regional agencies to take actions to build resilience and strengthen coordination and collaboration across sectors, across jurisdictions, and through the vertical hierarchy of government.

1. **Adopt a regional approach and framework** that prioritizes collaboration and cross-sectoral partnerships, especially with sectors that are not as engaged but are critical to achieving state goals and building resilience such as the business and technology sectors. We appreciate the acknowledgement of the importance of regional collaboration throughout the document, but its organization into sectors requires greater attention to the regional approach. As you know, climate impacts will vary in severity and nature between regions, as will each region’s ability to cope. The regional collaborative approach to building resilience makes their efforts more effective in addressing shared priorities, goals, and needs. Communities are bound together at a landscape-level by geography and mutual reliance on resources that span jurisdictions, such as watersheds, forests, agricultural lands, rangelands, and grasslands. We recommend that the Plan prioritizes investments in strategies that employ a regional approach to climate adaptation and work with the regional collaboratives already in place, such as ARCCA’s member collaboratives to improve coordination within and across regions.
2. **Prioritize implementation over research and data collection** – except in cases where research is needed to satisfactorily quantify relative benefit and co-benefits – to maximize the limited resources and capacity available to devote to climate adaptation. We will not be able to research every issue in downscaled detail, but we know enough to make informed investments in the right places. Many adaptation strategies are no-regret strategies that achieve other priority environmental and sustainability goals, such as water conservation, habitat restoration, and stormwater runoff reduction. These actions can and should be prioritized and implemented, without, for example, waiting for climate models to reduce the uncertainty in the change in precipitation. We recommend the CNRA to employ the following approaches to prioritize implementation:
 - a. Prioritize strategies that produce co-benefits to enable the state to achieve multiple goals with limited resources. The CNRA should prioritize strategies that employ landscape- or watershed-scale analyses and, in addition to risk reduction, include a special focus on natural system function and services such as water and food security, habitat protection, public health, recreation, jobs, and quality of life amenities. It is also essential to recognize greenhouse gas reduction as a key co-benefit of climate adaptation strategies. While it is essential to prepare for the impacts of climate change, we must also continue to aggressively reduce greenhouse gas emissions and enhance carbon sequestration.
 - b. Prioritize investments to support rural areas that steward important resources that the state relies upon. The well-being of all Californians is inextricably tied to the goods and services (e.g., clean water, clean air, carbon storage and recreation) that are provided by resource-rich, rural areas; thus supporting rural areas, particularly

the upper watershed, is critical to state adaptation strategies to increase water security, improve public health, enhance the quality of life, and support climate change mitigation. The CNRA should make greater efforts to leverage the value of rural areas in achieving state climate goals by seeking regular and productive input from rural communities, and provide or advocate for joint funding opportunities that support long-term urban sustainability goals in conjunction with the conservation, restoration and management of rural areas.

- c. Encourage creativity and invest in pilot projects to foster innovative strategies, technologies and partnerships, which will be critical to successful climate adaptation. California has thrived by advancing environmental goals, developing groundbreaking technology, and leading the nation with exemplary policies, models, strategies and tools. To foster this level of creativity will require fluidity and flexibility, which can be accomplished while still maintaining transparency and measurable outcomes in line with state priorities. By working at both the state and local levels to aggregate projects and match funding we can streamline implementation, better leverage private sector investments, and diversify funding mechanisms to create a strategic and sustainable approach to implementing local climate initiatives.
3. **Provide more concrete, actionable next steps** that include both planned and needed actions, timelines, the agencies that are or should be involved, and the resources and policies needed to succeed. As the title of the document indicates, the Plan should focus more heavily on implementation and presenting detailed action plans. The 'Next Steps' section of each chapter should be much more robust and consistent with all other chapters. Some chapters have detailed action plans while others are vague and will not lead to definitive or measurable outcomes. It is also critical that this plan and the administration explicitly identify resources and policies needed to successfully carry out the action items identified in the Plan. This will promote results and send a message to relevant stakeholders, including the legislature and private investors, on the need to mobilize resources in support of climate adaptation in California.
4. **Specify strategies to improve coordination between state, regional and local** agencies and efforts. Throughout the draft report, there are calls for integration, recognition of limited local capacities, and acknowledgement of significant coordination and streamlining necessary to achieve the State's adaptation goals. Simultaneously, each chapter recognizes the importance of local governments and local decision-making to successful climate adaptation, as well as the responsibilities that many state agencies have in supporting local governments (e.g., CCC, CEC, HCD, OES, OPR, SGC, Conservancies, etc.). However, the draft report does not provide specific strategies or concrete guidance on how state agencies will support local governments and carry out the recommendations set forth in this document. Local governments are recognizing that they also need to coordinate themselves, prepare to meet funding prerequisites, diversify their funding sources, and maximize project scoping and execution efficiencies so that overall they can evolve their approach to implementing projects. Local governments are now realizing they should be investing general fund dollars, using permit fees, passing bond measures, creating financing districts and partnering with the private sector to implement their integrated sustainability plans (climate action, energy,

sustainable community, and general plans).

To best support local governments in their adaptation efforts, the CNRA should consider how to offer more coordinated and streamlined approaches to ensure all critical players, from state agencies to local governments, can leverage every possible resource and opportunity to better implement strategies over time that achieve state (and local) climate goals. We strongly encourage the state to continue engaging with local governments and communities, offering agency or contracted technical assistance wherever possible, and seeking new stakeholders to gather input regularly through a variety of formats and venues to encourage greater engagement. It is also important for the state to provide outreach support and communications on its own actions to increase public buy-in and political support for building community resilience, which can lead to new funding opportunities. Outreach and communications should not be undervalued, as it is important for the public to understand both the threat of climate change as well as state actions to protect communities and resources. We also recommend building out the [Cal-Adapt](#) online portal to include a funding database, to enable users to submit resources and templates, and to host an online forum or message board for meaningful discussions that can also serve as another channel for the State to gather input from local governments. To be successful, the online portal must be updated regularly and promoted to reach new audiences.

5. **Foster cross-sectoral collaboration and integration** through a clear and comprehensive cross-sectoral strategy, outlined in the beginning of the document, and designed to facilitate collaboration among the various agencies and streamline engagement with regional collaboratives, local governments, and other stakeholders. Although cross-sectoral integration was important in the 2009 Adaptation Strategy and the Safeguarding California Plan, this draft report does not sufficiently fulfill this important goal. References to cross-sectoral coordination and collaboration are fragmented and scattered throughout the document and become easily lost. We recommend that the CNRA make a concerted effort to devise a clear and comprehensive cross-sectoral strategy that provides the framework for the sector chapters that follow. We recognize that the overarching challenge with adaptation planning is its interdisciplinary nature. A coordinated response requires a coordinated interface with the state agencies important to each facet.

The CNRA could also create incentives for cross-sectoral projects and partnerships that prioritize actions providing benefits across multiple sectors. For example, urban forestry is an excellent example of a multiple-benefit action, as it increases tree canopy while reducing energy demand and providing public health benefits by cooling urban heat islands and reducing air pollution. Similarly, rural forest management strategies can decrease wildfire emissions and protect stored carbon over the long-term, while also providing immediate feedstock for alternative energy and value-added products that help local economies.

6. Recommended structural changes to the document:

- d. Update the executive summary to be less of an introduction and more of a standalone document. The executive summary should present a clear, comprehensive cross-sectoral strategy, provide high-level next steps common across all sectors that convey the state's strategic direction and goals, and utilize

tables and graphics to better organize the information shared throughout the document (e.g., summarize vulnerabilities across all sectors by climate impacts, develop a matrix of actionable next steps, etc.). The executive summary should also clearly communicate the purpose of the document – including what it is, what it is not, and the process used to develop the plan. Added transparency around perspectives that may be missing or “quiet”, such as rural, tribal, and business, would be appreciated.

- e. Provide links to all documents and resources referenced throughout the document.
- f. Develop fact sheets to accompany the document. We recommend the CNRA to develop summaries of each sector chapter, a matrix or infographic of the strategies outlined (utilizing icons to depict the sectors involved in each strategy and making a clear distinction between leading and supporting agencies), and a compilation of resources and tools outlined throughout the document (update Cal-Adapt).

We hope these comments are helpful to your efforts and welcome the opportunity to provide additional clarification or support the development of specific language as desired. We look forward to supporting the implementation of the sector-based action plans and the State’s overall adaptation plan, and working with your team to find effective ways to realize our shared goals for all Californians.

Sincerely,



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Chapter Recommendations and Comments

This section highlights in greater detail ARCCA’s recommendations and comments for improving the draft report, *Safeguarding California: Implementation Action Plans*.

Agricultural Sector Plan

Key Recommendations

- We recommend prioritizing support for agricultural practices that can achieve multiple benefits. With climate change increasing stress on all parts of our natural and social systems, it is imperative that our response strategies also strengthen multiple areas holistically.
 - The State should consider the possible benefits of dry farming techniques, including the ability improve soil moisture retention and reducing the need for irrigation.
 - The State should consider the possible benefits of flood or furrow irrigation, due to its low energy requirements and as a way to support groundwater recharge.
 - The State should encourage or incentivize on-farm ponds which can help reduce runoff, help recharge groundwater, capture rainfall and contribute to regional flood management efforts.
 - The State should encourage or incentivize the planting of hedgerows on farmland as an opportunity to sequester atmospheric carbon.
 - Practices such as creating pollinator habitats in urban spaces, replacing nitrogen fertilizers with organic soil amendments from composting and anaerobic digestion, farming fish in flooded rice fields, bringing “ugly” produce to market, supporting urban agriculture on unutilized urban lots, protecting existing rural agricultural land to encourage more compact growth in towns and cities and reduce conversion to higher-GHG-emitting uses, and more can all support multiple adaptation, mitigation, and conservation goals.
- We recommend providing financial incentives to farmers to pursue climate-friendly farming activities when the costs or perceived risks are especially high.
- We recommend ensuring that all research findings are translated into real opportunities and shared in an accessible way with relevant communities, and develop an iterative approach to incorporate new information.
- We recommend facilitating collaboration between two of California’s greatest assets – agriculture and technology. A growing number of tech companies are working on tools and apps for precision agriculture such as wireless remote sensors, aerial imaging, and more to help farmers conserve water and make decisions informed by precise data. More precision technology in agriculture can help farmers monitor moisture levels and target interventions, saving water, money, and other resources. However, farmers and Silicon Valley engineers may not speak the same language, and smaller farms may need significant financial and technical assistance to implement such technologies. We believe there is room

for the State and academic institutions to help facilitate and grow collaboration between the agricultural and tech sectors in California to help farmers access the latest tools to help them target resources and make decisions based on climate data.

- We recommend supporting and funding more active forms of engagement and assistance to promote education and implementation. The creation of online tools such as Cal-Adapt—however excellent—is not enough unless accompanied by robust outreach to communities.
- We recommend developing and supporting collaborative regional models for outreach and engagement to farmers to provide education on best practices and provide implementation assistance. Outreach should be scaled at the regional and local level so that information is tailored and comes from trusted messengers, and that farmers can hold a shared conversation with community peers. The University of California Cooperative Extension is a good model of researchers working with farmers to put good science into practice.

Chapter Comments

- It should be noted that groundwater pumping is extremely energy intensive, increasing the embedded energy in water (page 13).
- Within the Healthy Soils Initiative, the benefits of soil bacteria and worms should also be considered, in addition to soil organic matter. Emerging research shows that healthy communities of soil microbes can support root systems when water is scarce, increase nutrient absorption, control pests, and improve yields. Thriving soil bacteria can thus improve crop resilience to heat and water stress, while reducing reliance on agrochemicals that impact water and soil quality and harm farm worker health (page 15).
- Sustainable Groundwater Management should include a focus on land use and source water protection as mechanisms to achieve more resilient water management. This can be achieved through requiring land use and conservation interests to be represented on SGM Agencies and requiring that conservation and surface-groundwater interactions be addressed in SGM plans (page 18).
- To help reduce farmland conversion, the State should sponsor field tests of the compatibility of solar PV and agriculture, so that grazing lands could be used for distributed generation, for example. Information is needed about the types of crops or herds that are optimal, and also any necessary technical system enhancements to protect the equipment and optimize output. We suggest that CDFA and CEC collaborate to sponsor a pilot program (page 18).
- The final plan should include a proposal that would identify practicable barriers to keeping land in agriculture versus development and the climate costs of diverting land from agriculture to development. This would be a system analysis of the costs per acre in climate impacts of moving land from agriculture to development across a range of media (CO₂ produced, heat island, water use, increased VMT, carbon storage lost, etc.) (page 18).
- Vulnerabilities and other considerations that are not addressed:
 - Phenology: Current actions, research needs, and next steps do not address shifts in phenology, and potential loss in pollinators due to climate shifts and other causes. Long-term regional projections in these areas may be helpful in decision-making on what to plant and when.

- The vulnerability of food distribution systems – what happens to agricultural produce after it leaves the farm – is not addressed. Modern food distribution systems rely on long-distance transportation, centralized wholesale and distribution hubs, refrigeration, and concentrated food production sources. These systems may be vulnerable to extreme weather and flooding, while hotter weather will also increase energy needs to keep produce fresh on their way from producer to market. As a response, urban cities and major regions should analyze where their food comes from, their connections to rural producers in their region, and any dependence on distant food sources. In addition, disruptions in power can result in the loss of fresh food in transit, at processing plants, or in markets. Warmer temperatures and invasive pests may also increase the incidence of contamination and food spoilage. This will result in increased costs for producers, higher prices for consumers, and greater health risks.
- Land use change consequences of agricultural adaptation: As temperatures increase across the state, agricultural producers may consider buying additional land further north to shift production to more suitable climates. This may result in the conversion of forests to agricultural uses, which will have impacts for climate mitigation and adaptation that should be evaluated.

Biodiversity and Habitat Sector Plan

Acknowledgements

- We appreciate the explicit acknowledgement of the need for more research to identify and quantify benefits of natural resource conservation, restoration and management as a means of reducing GHG emissions and increasing carbon storage.
- We appreciate the acknowledgement that partners and stakeholders across sectors and connected geographies need to collaborate to develop sustainability metrics and quantification methodologies.
- We appreciate and support *Safeguarding's* approach of promoting nature-based solutions and using focused conservation to protect biodiversity, as called for by Governor Brown in his directive regarding state planning and investment.

Key Recommendations

- We appreciate the call for replacing outdated information with current research – a recommendation we would like to see made across all sectors, not just in the Biodiversity and Habitat sector plan.
- We recommend the State take a whole-systems approach to instream flow recommendations and impacts, specifically one that accounts for the downstream benefits of a healthy upstream system and addresses the interconnection of surface water and groundwater (page 28).

Chapter Comments

- Further clarification is needed on how streamflow priorities will be determined in watersheds with conflicting needs. For example, how will priorities be set in order to

maintain universal system health while balancing needs such as habitat, Delta restoration, and groundwater recharge? (page 35).

Emergency Management Sector Plan

Key Recommendations

- We recommend incorporating downscaled climate models and impact assessments, where they exist, to give local responders better access to relevant information to make better response decisions.
- We recommend providing more detail on how the state assists communities with assessing their vulnerable resources. Additionally, it would be valuable if the document can provide examples of each type of assistance offered by the state to locals: grants, planning assistance and guidance, mutual aid agreements, post-disaster recover, and hazard mitigation. Local entities would benefit from more specific information on how each type of assistance works with examples.
- We recommend providing more specific information for the Next Steps section. The Next Steps seem very high-level for an implementation plan and details on how each of the programs and efforts will work would be helpful.
 - What kind of outreach and to whom?
 - What will the materials look like?
 - Where will they be located?
 - Will local jurisdictions be involved with their development?
- We recommend articulating more specific research needs and how they should be addressed (e.g., 4th assessment).

Chapter Comments

- Further clarification is needed on how the newly formed California Fire Service Task Force on Climate Impacts will work across sectors to address adaptation and resilience issues as a way of minimizing wildfire emissions and increasing stored carbon in coordination with forest management through the Forestry sector (page 46).
- Information on how local jurisdictions can participate in the Cal OES Capstone exercise series would be very helpful (page 46).
- Further explanation is needed on how Cal OES promotes the implementation of the APG at the local level. An example of a local jurisdiction that has done this would be helpful, along with a link to their hazard mitigation plan (page 46).
- Under Proposed Actions relative to integrating climate projections and sea level rise into the MyHazards and MyPlan tools, would this also include projections affecting rural communities, such as fire risk, water quality/supply, etc.? (page 47).
- Cooling centers should be included in the “essential facilities” list (page 47).

- Further clarification is needed on whether the development of forest and fuel reduction treatments could be considered eligible for planning funds under “pre-disaster mitigation,” as a means of reducing future fire emissions (page 48).

Energy Sector Plan

Acknowledgements

- We appreciate that the plan referenced very current research and the joint CEC/CPUC workshop on climate adaptation held in June.
- The Vulnerability Assessment presented a good summary, pointing out the clear departure from historic natural variability and need for the energy sector to modify its planning models.
- We greatly appreciate that the CEC is studying the link between mitigation and adaptation for the energy system.
- We acknowledge the challenges of coordinating between state agencies and appreciate that the CEC and CNRA are synching up the scenarios they will use for planning, which is very useful.

Key Recommendations

- There is a need to integrate research, policy and planning for “net positive” initiatives that have both mitigation and adaptation benefits and can cross multiple sectors. Given that the energy sector will still be emitting GHG for many years into the future, coming up with ways to sequester carbon that also provide adaptive local co-benefits is in the state’s interest. Coordination from the state to assist with funding and accelerate their adoption and impact would be very beneficial for efforts that touch many resource areas. A few examples of efforts currently being undertaken are listed below.
 - With many partners, SMUD is supporting research into the carbon sequestration potential of Delta Wetlands, which can also mitigate flooding and address subsidence that threatens the agricultural sector in the region.
 - SMUD is also working with Placer County to conduct research and develop GHG offset protocols for forest fuel management activities that mitigate wildfire risk.
 - Sustainable Silicon Valley is spearheading an ambitious plan to make their region “net positive,” sequestering carbon and expanding local water supplies and food production.
- The next steps outlined are vague and need to be expanded to include collaboration with other sectors, particularly with the emergency management, forestry, transportation and water sectors. Some opportunities for collaboration with other sectors are below:
 - Integrated water planning to optimize water use and upgraded equipment to increase efficiency.

- Improved vegetation management and collaborative planning throughout the distribution system to protect key infrastructure and minimize grid disruptions, such as those caused by wildfire.
- Fuel transport assets, including port facilities, can be hardened to mitigate the risks from sea level rise, reducing the likelihood of damaging coastal erosion and flooding events. Some equipment can also be sealed in waterproof enclosures to prevent damage during flood events.

Chapter Comments

- The plan mentions coastal flooding, but should also address inland flooding, which will be exacerbated by changes in precipitation patterns and storm surges. Also, increased electricity demand will also come from increased groundwater pumping load, not just higher temperatures (page 52).
- The Natural Gas section references the Radke et al study of Delta pipeline infrastructure, but this study assumed no breaks in the levees. However, there is already a risk of levee failure, plus potential for significant damage from earthquakes in that region. We recommend the State fully assess vulnerabilities for the 200 miles of gas transmission lines referenced (page 52).
- The E3 energy modeling that the state undertakes to plan for feasibility of GHG reduction targets does not take physical impacts of climate change into account. We recommend the State be very transparent about how this would change inputs and assumptions (pages 51-2).
- The plan includes a list of things expected to be funded by WET. It would be greatly appreciated if the final plan can include dollars to assess and demonstrate the potential to jointly plan and utilize distributed water storage capacity, advanced monitoring and controls, and autoDR to achieve reduced system pressures, reduced leakage and measurable and reliable energy savings (page 59).

Forestry Sector Plan

Acknowledgements

- We appreciate the support of research to identify and quantify benefits of natural resource conservation, restoration, and management, specifically in the agriculture and forestry sectors, as a means of further reducing greenhouse gas emissions and increasing carbon storage.
- We appreciate the recognition of the need for proportionately more funding for forest health improvements through management practices on both public and private lands, particularly because this is a key element of the Governor's five climate change pillars. We additionally appreciate the recognition of the explicit connection of forest health and watershed protection, where forest management is able to provide aid in safeguarding the state's water supply and reliability.
- We appreciate the recognition that better management of forests improves public health, reduces loss of carbon to severe fire or disease, and decreases overall emissions, including

the short-lived but dangerous black carbon pollutants. We also support the concept of removing the surplus portion of forest and agricultural biomass that is not required for ecological health and converting it into feedstock for alternative energy or other products as a means of reducing emissions, increasing net carbon storage, replacing use of higher-emitting fossil fuels and diverting waste material to better use.

- We appreciate the recognition that forest management work, including biomass utilization for energy and other products, serves not only an important economic sustainability purpose, but also a climate resiliency purpose.
- We support the use of inter-regional groups like ARCCA to bring various regions and sectors together to identify connections, mutually beneficial strategies and best practice methods that can augment adaptation efforts on a larger scale.

Key Recommendations

- We recommend the inclusion of the concept of investing in "proof of practice" forestry demonstration projects, similar to what is included in the Agriculture sector implementation section, as part of the overall Forestry Adaptation Strategy.
- We strongly recommend that the Forest Climate Action Team (FCAT) and Implementation Plan processes be brought into alignment with one another so that FCAT's recommendations regarding carbon accounting and storage are reflected in the Implementation Plan (as well as in other GGRF planning processes, such as ARB's scoping plan update, the 2nd Investment Plan update, and ARB's overall Funding Guidelines development).
- We recommend that land conservation be viewed more broadly than just through existing CalFIRE programs such as Forest Legacy and CFIP. Conservancies serving forested areas, such as the Sierra Nevada or Tahoe for example, can also play an important role in supporting and expanding conservation goals by virtue of their local knowledge and relationships with landowners in their regions (pages 73-4).
- We recommend that the Forest Sector Implementation Plan be more explicit for actions necessary to support retention of existing and additional expansion of biomass infrastructure to meet the Governor's stated goals of doubling the State's biomass capacity (as well as goals related to legislation, such as SB 1122). Instead of just listing the efforts of others under *Action 3: Biomass Utilization*, the implementation plan should include more specific recommendations that can help meet some of the challenges currently faced by the industry in terms of financing, transportation costs and utility tie-ins (pages 77-8).

Chapter Comments

- We recommend including a wider range of potential co-benefits under #1, such as bioenergy that can offset the use of higher-emitting fossil fuels, public health improvements due to fewer wildfire emissions and less short-lived carbon pollution and the protection of forest-related recreational opportunities (page 71).
- We recommend expediting the quantification of GHG, carbon benefits and co-benefits under #5, including the benefits of forest management on water quality and supply reliability, so that projects may be fairly evaluated for overall impact. Since vegetation and tree canopy data exists, we recommend that a similar protocol is established in correlation with what

has already been established for urban forest management (see pages 76-7 for urban forestry carbon storage and avoided emissions description) (page 72).

- We recommend the inclusion of more specific recommendations for action under *Action 4: Watershed Health*. The current narrative describes the cost-avoidance benefits of forest and watershed health but does not address specific actions that could improve conditions, such as increased fuel reduction, meadow restoration or other activities to reduce fire severity and mitigate storm events that contribute sediment into waterways and reservoirs (page 78-79).
- We recommend inclusion in the research section under *Action 5*, a mention of additional research needed to better quantify the GHG, short-lived carbon, carbon storage, water quantity and quality, as well as other co-benefits associated with better forest management. The actions described appear more focused on simply updating existing programs, rather than tying in new and additional research necessary to prove benefits in this sector (page 79).

Land Use and Community Development Sector Plan

Acknowledgements

- We appreciate the creation of the Land Use and Community Development Sector for the *Safeguarding California* update. We also appreciate the emphasis that this plan puts on protecting the people of California.
- We strongly agree that “the key for state policy is to ensure that communities are located in places and developed in ways that make them more able to withstand and recover from climate threats.”
- We support the notion that “The State should not impose land use or community development policies, but rather help build regional, local, and grassroots capacity for climate adaptation.”
- We appreciate that the sector plan offers a guiding set of principles that can be referenced across the activities as a measure and metric.

Key Recommendations

- We appreciate the organized structure of this action plan and recommend the State to use it as a model for the other chapters.
- We request for the development of a rural issues advisory group to engage rural communities directly in the development of rural strategies across all appropriate sectors, not just in the Land Use and Community Development sector (page 92).
- We support the adoption of resiliency principles in the State Housing Law Program and/or the Building Standards Commission.
- Throughout the chapter, there is much discussion of collaboration with local and regional (and tribal) stakeholders, but no discussion of how this collaboration will be resourced. It is relatively easy to suggest greater engagement, but without resources for state staff to

engage in this collaboration, it is less likely to be realized. We suggest framing collaboration within the context of actual resources and programs or identifying the gaps that are present as a need to be filled in order to realize the goals laid out in this plan.

Chapter Comments

- Although we agree the state should “not impose land use or community development policies, but rather help build regional, local, and grassroots capacity for climate adaptation,” the help that is needed is increasingly technical and complex due to the uncertainties related to climate change. We recommend the State to take a strong role in providing robust decision-support resources to local governments to make effective choices.
- While the APG is a very strong document, referencing its availability does not serve the purpose of providing a Vulnerability Assessment for the purposes of this chapter in the Plan. We recommend that this chapter provide some discrete details of community and land use vulnerabilities that the state is in the best position to document and connect to state activities. It may be useful to draw from Cal-Adapt or other known studies (page 83-4).
- As many of the identified items and activities are already underway, we suggest greater specificity for next steps to be taken as well as measuring progress and refinements made over time (page 90).
 - Will there be a more regular update to the General Plan Guidelines?
 - Can this chapter refer to and provide guidance on how the state will support the implementation of SB 379?
- If the State is going to consider resiliency in Housing or Building standards, we recommend ensuring that standards specifically address how to resolve potential conflicts between greenhouse gas reduction goals (e.g., SB 375) and resiliency policies that might emerge in order to avoid the development of cross-purposes (page 90).
- We recommend building out the discussion of steps to improve alignment of existing programs and investments to be more specific about what processes might be pursued (e.g., through AB 1482) to review and evaluate resiliency in state investments. This is particularly important as local governments start to identify their own resiliency investment needs so they and the state can begin to work from a common framework for evaluating and funding resiliency measures (page 90-1).
- We strongly agree that the emphasis on tools and resources should be directed at converting “document resources into online decisions support tools whenever possible.” Local decision-makers are at an extreme disadvantage when it comes to resiliency planning, and State resources that align with existing planning processes (e.g., the general plan) and enhance capacity to factor in resiliency direct to models, planning tools, and policy documents are going to be very well received (page 91).
- We suggest going beyond coordination with MPOs on the SCSs, but specifically identifying where and how resiliency goals might be aligned with or at cross-purposes with the SCS in order to ensure that long-term mitigation planning does not undermine adaptation responses and vice versa (page 92).

- The metrics for monitoring and evaluating adaptation progress spans a range of items that the state can and cannot directly manage or track its role in realizing. We recommend the metrics be more closely aligned to state activities (e.g., percentage of state resources invested in x, etc.), to provide a more direct feedback loop to progress (page 94).
- The appendices list a number of key next steps taken by HCD, but not by OPR or SGC. We recommend better articulating any specific actions (especially planned actions related to alignment of existing programs and investments) if those are known (page 165).

Oceans and Coastal Resources and Ecosystems Sector Plan

Acknowledgements

- We appreciate all of the efforts that the State has undertaken and supported to address coastal issues, including more recent efforts to address climate change.
- We appreciate that state agencies are actively partnering, supporting and funding projects at the regional and local level to enhance understanding of impacts and enhance local capacity to respond.

Key Recommendations

- We recommend providing more tangible, concrete actions that will be implemented, with timelines, such as indicating which state agencies will work with which local/regional collaborations or agencies to accomplish what by when.
- We recommend encouraging cross-over partnerships between the Ocean and Coastal sector and the Ocean and Coastal, Forestry, Water and Land Use sectors. Management and adaptation upstream, such as fire risk reduction, compact development, and meadow restoration, can help reduce coastal climate-related impacts like flooding, erosion, and saltwater intrusion downstream (page 97).
- We recommend adding to the list of adaptation efforts, “Continue investing in training and capacity building efforts at the state, regional and local level to develop a community of practice among coastal managers and community leaders” (page 110).

Chapter Comments

- Additional activities underway that could be captured in the final document include:
 - In Southern California, the SCC is providing funding to the USC Sea Grant Program to help build capacity in Southern California’s coastal communities as they begin to plan for impacts from sea level rise. USC Sea Grant is providing technical assistance, training and outreach to local practitioners from Point Conception to the U.S./Mexico border to enable coastal jurisdictions to utilize scientific information in adaptive adaptation planning, including training on CoSMoS model for the Southern California region (page 105).
 - The State is also leveraging efforts and partnering with other organizations tasked with conducting outreach and training on sea level rise at the local and regional levels. For example, SCC provided funding to the USC Sea Grant Program under its AdaptLA project to widen its training and capacity building program to all of

Southern California. AdaptLA is a series of training workshops and webinars that provide opportunities for municipal leaders to delve deeper into the topics critical to effective coastal impacts planning (page 109).

- Additional context to include:
 - We recommend including information about the [CA Coastal Climate Change Adaptation Needs Assessment](#) in the introduction and/or section 3.1 on improving management practices: “In 2011, CCC and OPC partnered with USC Sea Grant and 12 other CA organizations to conduct a coastal adaptation needs assessment, surveying over 600 coastal professionals. This study assessed coastal professionals’ concerns with climate change impacts, their activities to date to plan and prepare for impacts, and the needs and barriers they encounter in planning for climate change. The results of this study have helped inform statewide efforts to provide appropriate trainings and technical assistance to California coastal professionals, and to link them to the existing information and tools, and identify opportunities to develop new resources.”
 - We recommend including information about CoSMoS in the introduction of the Vulnerability Assessment section. CoSMoS represents a significant state investment and should be highlighted alongside other tools such as Surging Seas and the Pac Institute study on CalAdapt.

Public Health Sector Plan

Acknowledgements

- We appreciate that this sector plan referenced other chapters, such as the Emergency Management Sector Plan to emphasize the cross-sectoral nature of climate impacts and adaptation efforts.

Key Recommendations

- We recommend the California Department of Public Health to develop a replicable model for cross-sector coordination and collaboration since the public health sector overlaps with each of the sectors identified in the Plan. The importance of cross-sector coordination is clearly communicated throughout this chapter and the importance of public health to the State and all Californians presents a key opportunity to improve integration and coordination.
- We recommend the inclusion of Metropolitan Planning Organizations to help scale regional mitigation and adaptation implementation in support of the local county Public Health Departments.
- State implementation relies on cooperation from the local governments. We recommend including the following: The Public Health Sector must include and engage more comprehensively with Planning, Transportation and Community Development Departments (at the local level), but these sectors also must reach out and engage with Public Health. It cannot be overstated that health needs to be significantly represented in these other sectors and expand beyond general plan policies. Health, sustainability and climate resiliency

should be implemented through zoning codes, design guidelines and improvement standards.

- We request for the Implementation Action Plans to require alignment with ARB's Short-Lived Climate Pollutants plan, as it relates to black carbon and methane released from wildfires. The document calls out the public health importance of dealing with the issue of wildfire emissions and lists further research as an action; however, the Short-Lived Climate Pollutants plan, while identifying wildfire-generated methane and other emissions as extremely harmful, has delayed action on this important item until the Forest Climate Action Plan is completed in late 2016 (page 119).

Chapter Comments

- Additional impacts of climate change on human health that should be addressed include:
 - Severe weather: injuries, fatalities, and mental health impacts
 - Water quality impacts: cholera, cryptosporidiosis, campylobacter, leptospirosis, etc.
 - Environmental degradation: forced migration, civil conflict, and mental health impacts
 - Vector borne impacts
 - Increased Food insecurity
 - Impacts on the homeless populations
- The four priority areas should provide mitigation implementation examples for greater cross-sector understanding and action (page 113).
- Housing affordability and availability should be added to the section on how vulnerability to climate change is influenced by a complex interplay of environmental conditions, including the built environment. Housing affordability and availability must be addressed, especially as it relates to the growing homeless population who will be severely impacted. This also serves as a good example of why the public health and land use and community development sectors need to be better linked in this document (page 115).
- Additional comments are recommended to address the reliance of human resiliency on the strength of social connectedness. Throughout the public health sector, social interaction and connectedness should be inherent in all resiliency plans and preparedness. Building neighborhood and community connectedness serves people year round, but particularly during emergencies and extreme events (e.g., connect with a friend, neighbor or family member on a place to stay should their street or house flood, set up a check in system - welfare check - for single, vulnerable residents ahead of time) (page 116).
- Recommendation 1 should consider the localized impacts, not just the "extreme" events. While there may not be an extreme flood event, a local flood situation can be just as impactful to human health. The Plan should provide tools and adaptation options to assist local governments and residents (page 117).
- Recommendation 2 should also include homes and housing. Cool roofs, cool paving, and other methods to reduce urban heat island impacts and help reduce the need to turn on air conditioning would be helpful to include. Maintaining trees and tree canopy should also be

included with the planting of appropriate trees that do not increase allergens. Trails as part of urban greening should be added and serve as an alternate transportation route when roadways may not be passable. Urban greening is also incredibly important to urbanized areas; as cities become denser, people will need green spaces to relieve stress, escape heat, and help improve mental health (page 118).

- For Recommendation 3, we recommend that the CDPH consult with local Public Health Departments and their epidemiologists to identify the additional coding needed to more accurately identify emergency room visits and causes of death related to climate impacts. More data collection is needed to identify areas of communities most vulnerable in order to focus resources on solutions (page 119).
- We recommend adding language that expands the capacity building to raise awareness and foster action to also include: community health clinics, WIC and SNAP Ed programs, mental health centers, health navigators and other community groups and trusted community organizations (NGO) with a client base. This needs to be broader than just public health and medical professionals (page 119).
- We recommend adding language that expands BRACE to include connecting with other sectors including planning, community development, and transportation. BRACE cannot be effective without including these other sectors, development projects, and public works infrastructure (page 120-1).
- We recommend adding language that also includes other sustainable building programs, such as “Living Buildings,” in Action 1. While certification can be more expensive than USGBC, elements of Living Buildings could be added to USGBC that expands building benefits to include more than just the inside of the building. Living buildings are sustainable, zero-net energy, incorporates livability inside and outside, and promotes physical and mental health (page 121).
- Local bodies of water including rivers and lakes should be added to Action 2: “Emerging health impacts from algal blooms in the Pacific Ocean *and in local bodies of water...*” (page 122).
- For Additional Needed Actions-Action 1, we recommend adding that CDPH engages with all the Local Health Officers and Departments in the state to help operationalize strategies that can be implemented at the local level. This is important information that should not be limited to sharing at the state level only (page 122).
- For Action 3, additional activities should be listed in conjunction with air conditioning installation to incorporate other urban heat reducing practices including: cool roofs, weatherization, shade tree planting and similar elements so that the outside temperatures can be more tolerable if the power goes off and the air conditioner cannot be operated. Additionally, more air conditioning units will increase GHG emissions and energy demands (page 122).
- Typo error in the last sentence of the last paragraph: the correct word is impervious “surfaces,” not “services” (page 123).

Transportation Sector Plan

Acknowledgements

- We appreciate the recognition of how vital downscaled climate modeling is to local decision-making.

Key Recommendations

- We recommend providing a description of how local and regional agencies will be involved. This chapter does not include sufficient discussion regarding how state agency work is incorporating the needs and efforts of local jurisdictions and regional agencies.
- We recommend providing more detail on the roles of each state agency involved in implementing the transportation action plan. It would be helpful to include the assets that each agency is responsible for, as well as their specific duties.
- We recommend the State support tracking of all local work across sectors that impact transportation infrastructure. We appreciate the mention of the efforts being undertaken by the Bay Area and Marin County and would like to see other efforts throughout the state tracked.

Chapter Comments

- In the Introduction, there should be a statement regarding how the transportation infrastructure of the state is closely aligned with goods movement and the economy – local, state and national. Although this statement seems obvious, it is well worth reminding the audience that climate impacts have an economic effect (page 124).
- A new heading before launching into the work of each state agency such as “State Planning and Coordination” will be helpful to improve the organization of this chapter (page 126).
- Including the report with the findings from the High Speed Rail Authority that identify potential climate issues of relevance to the future system infrastructure would be very useful (page 128).
- Additional details around the Cal OES California Emergency Function meetings would be appreciated, especially on the meetings’ other participants. This meeting should also be mentioned in the Emergency Management Sector Plan (page 128).
- More specificity on how Caltrans is engaged in helping to “spur innovation and implementation of clean vehicle technology” would be helpful (page 129).
- Information on how Caltrans is connecting with locals to utilize their research, data and analysis and how Caltrans is connecting the state’s transportation assets to locally controlled transportation assets would be helpful (page 129).
- We recommend expanding the Information Sharing and Education section to identify the partners that Caltrans and High-Speed Rail are working with to implement climate change information and education. Additionally, links to resources and training materials would be very valuable. Greater transparency is needed around the transportation stakeholders who co-hosted the March 2015 workshop and how local agencies will be included in developing the Guidance Plan for Emergency Management and Infrastructure Protection (pages 132-3).

- Questions to be addressed in the Next Steps section include:
 - What exactly is “clean transportation”? Active transportation and EVs?
 - The analysis regarding how fish and wildlife connectivity may shift should include an evaluation of habitat changes and a shift in the range of different species. Will there be additional research funding for data gaps?
 - Is there any information available regarding each of the anticipated efforts and programs outlined in Next Step #2? Any detail would be helpful.
 - What will the grant funding be available for?
 - How often will educational forums occur and what are the goals for these forums?
 - How will state agencies encourage collaboration between State, regional, and local adaptation efforts? Are there any specific efforts or strategies in mind?
- Regarding metrics, it will be helpful if maps can be created of the networks mentioned. An analysis of communities served would also be helpful (pages 135-6).

Water Sector Plan

Acknowledgements

- We appreciate the State taking a regional approach to address climate change impacts in water resource management. Most action items acknowledge that resource management ultimately takes place at the local and regional scale.
- We appreciate that the plan focuses on providing resources (i.e., guiding documents, funding programs, and technical assistance) to regional and local governments.
- The sub-section entitled, “Diversify Local Supplies and Increase Water Use Efficiency,” provides a thorough review of available resources for local governments to address climate change in their planning process. The emphasis is on evaluating existing resources, developing new tools, and streamlining the adaptation planning process. This model
- should be followed in other sub-sections, to call attention to important resources available to local governments (pages 143-4).

Key Recommendations

- We recommend the State expand upon the linkage between water resource management and local land use planning. This is an extremely important concept that needs to be emphasized. The plan should provide more instruction on how to integrate water resource management into local land use planning efforts and decision-making.
- Although the plan emphasizes coordination between state, federal and local governments in water resource management, and the State incorporates feedback from local governments into water management plans and provides technical and financial assistance to local governments to meet state mandates, there is little opportunity for up-the-ladder engagement. That is, state leadership supporting local efforts to improve water resource management in the face of climate change. Many proposed action items will only be

effective while they are funded. Support for locally based efforts, such as local Climate Action Plans, will promote self-reliance and resilience at the local level. The plan should discuss options for consistent funding streams to sustain action items and adaptation efforts over the long term. The Greenhouse Gas Reduction Fund may be a potential source of revenue for coordination of local land use planning and water resources management.

- The Water Section describes important research that DWR and other agencies are conducting. Widely distributing this research and ensuring it is easily accessible should be prioritized. This is especially true of regional vulnerability assessments and assistance programs (financial, technical, tools, etc.). We suggest a centralized, uniform, and publicly accessible database to house this information.
- The Plan provides little cross-sector guidance in this document. Water resource management must be coordinated across all levels of government and all water use sectors. The Plan should provide instructions for stakeholder engagement and collaboration across water resource management and land use planning.
 - The Plan should provide guidance on collaborating between agricultural, rural, and urban sectors in planning and decision-making with disadvantaged populations. State leadership must ensure open dialogue among local leaders, agricultural industry leaders, agricultural industry workers, and community leaders to address water-related impacts of climate change.
 - The plan should address efforts to alleviate the impacts of climate change on communities outside of a municipal water network (i.e. Census Designated Place communities) and emphasize the importance of including their voice as a stakeholder in decision-making processes.

Chapter Comments

- Sub-section A: Specifically outline the responsibility of local governments in planning for flooding. Local governments should take action to expand river and bypass in their jurisdiction by increasing levee setbacks in their Zoning Code, setting conditions on development projects to enhance wildlife and fishery habitats, etc. (pages 141-2).
- Sub-section B: Further development to emphasize the need for GSAs to coordinate with other local land use authorities in their basin as well as those that govern water upstream, and to recognize GSP as a local planning document (i.e. General Plan consistency), is needed. This sub-section focuses on DWR's responsibilities in SGMA implementation rather than the GSA's responsibilities to achieve groundwater sustainability (pages 142-3).
- Sub-section D: This section leaves out a mechanism for local land use planners to have a voice in reducing climate change vulnerability in the Delta. Cities, counties, water agencies and irrigation districts all have a stake in how the Delta is managed. Each agency has differing authority, and can take various actions against saltwater intrusion and levee failure within their jurisdictions. The plan should encourage local land use authorities and water managers to mitigate threats against the Delta by restoring wetlands and discussing alternative infrastructure investments. Additionally, this section does not explicitly recognize the connection with upstream source areas that generate that freshwater flow, including the Sierra. This section should reference the Forestry sector plan, as it relates to forest management and restoration as tools to address downstream climate concerns. In

other words, investment in upstream source areas is, in itself, a downstream adaptation strategy (pages 144-5).

- This sub-section is an example of where the Plan can benefit from providing more direction on how to collaborate with diverse stakeholders in the Delta. Local land use authorities and water managers need guidance in how to communicate the impacts of large infrastructure projects (such as the California WaterFix), and the importance of restoring wetland habitat. An open dialogue among agriculture industry leaders, agricultural workers, local leaders, disadvantaged communities, landowners, and water managers -- including those who manage source water areas upstream -- is critical to protecting the Delta against climate-related threats.
- Sub-section F: The plan should specifically identify climate change impacts (e.g., prolonged drought, extreme heat, flash flooding, sea level rise) to farm laborers. The plan should provide direction on how local governments in disadvantaged communities – especially those comprising farm laborers – can ensure safe drinking water and usable irrigation water in a declining economy. The State should encourage discussion at the local level of transitional employment for farm laborers and provide resources for alternative job training (page 146).
 - The State should also include tools and assistance for long-term water planning for disadvantaged communities to better prepare for future climate impacts (drought, flood, etc.). This can include how to sustain programs for drought-tolerant landscaping, erosion control, flood preparedness, and safe drinking water beyond State-funded programs. The State should also encourage local communities to continue open dialogue about how to manage the Delta, for what purposes, and under what conditions planned retreat should be an option.
- Sub-section H: This section should include guidance for MS4 permit holders to incorporate LID standards into their planning documents (page 147).