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Climate Change Risks and the California Environmental Quality Act

Rising sea levels, massive wildfires, unpredictable flooding, increasing temperatures, changing precipitation patterns, reduced snowpack, and reductions in water supply are just some of the potential threats to California that are due to climate change. Traditionally, the California Environmental Quality Act (CEQA) has focused on assessing a project's impact on the environment. As the effects of climate change become clear, CEQA documents can also consider how climate change may affect a project and how a project may affect the ability of the State to adapt to the effects of climate change.

In August 2009, the California Natural Resources Agency released its 2009 California Climate Adaptation Strategy Discussion Draft (Draft CAS) for public comment.[1] The Draft CAS is the "…first statewide, multi-sector, region-specific, and information-based climate change adaptation strategy in the United States."[2] The goal of the Draft CAS is to ". . .begin a statewide, ongoing, and committed process of adapting to a changing climate in the context of other changes in the environment, the economy and society." Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research. Although it is intended to be used by state agencies in planning for climate impacts, the guidance can be of benefit to local jurisdictions in their assessment of climate risks in CEQA.

The Draft CAS contains strategies to reduce risks from different sectors, such as public health, water, and ocean and coastal resources. A couple of the strategies may be of interest to local jurisdictions. Ocean and Coastal Resources Strategy #4 of the Draft CAS recommends that local coastal plans and general plans be amended to address climate change adaptation by 2011, or within one year after development of tools or guidance to support amendments. It states that if funding is secured, all coastal jurisdictions, in coordination with the Coastal Commission, should begin to develop amended Local Coastal Plans that include climate change impacts, and local jurisdictions around San Francisco Bay should begin to update their general plans, in coordination with the San Francisco Bay Conservation and Development Commission. Cross Sector Strategy #2 of the Draft CAS recommends that cities and communities address risks from climate change in General Plans, and it includes:

- A discussion of climate change impacts (such as wildfire and sea level rise)
- Areas most vulnerable to these impacts (such as floodplains, coastal areas, and fire hazard areas)
- Risk reduction strategies using the Draft CAS as guidance

How does one address climate change risks to projects within the context of CEQA? The proposed amendments to the CEQA Guidelines[3] do not provide specific guidance for assessing the effects of climate change on a project, but the Resources Agency acknowledges the duty of lead agencies to consider such effects under existing law and CEQA Guidelines (see sidebar).[4] Thus, the assessment can be distributed within the current CEQA

The Effects of Climate Change on the Project

Existing CEQA Guidelines and case law already address the potential need to analyze the effects of climate change on a project. Section 15126.2, for example, states:

> The EIR shall also analyze any significant environmental effects the project might cause by bringing development and people into the area affected. For example, an EIR on a subdivision astride an active fault line should identify as a significant effect the seismic hazard to future occupants of the subdivision. The subdivision would have the effect of attracting people to the location and exposing them to the hazards found there.

Any lead agency will have to respond to evidence that is placed before it prior to project approval, however, as explained above, where evidence indicates that a changing climate may ultimately result in adverse effects on the project, CEQA requires a lead agency to analyze that potential effect. (*Protect the Historic Amador Waterways v. Amador Water Agency*, supra, 116 Cal.App.4th at 1109 ["in preparing an EIR, the agency must consider and resolve every fair argument that can be made about the possible significant environmental effects of a project, irrespective of whether an established threshold of significance has been met with respect to any given effect"].) Efforts are currently underway, for example, to develop regulatory guidance on adaptation strategies to protect against the effects of climate change. (See, e.g., Executive Order S-13-08 [requiring, among other things, the development of a state Climate Adaptation Strategy].) Depending on the state of the science, however, a lead agency may appropriately conclude that such impacts are speculative, and end the discussion. (State CEQA Guidelines, § 15145.)

Excerpt from the California Natural Resources Agency, Initial Statement of Reasons for Regulatory Action, Proposed Amendments to the State CEQA Guidelines, July 2009.

Guidelines Appendix G Checklist or within new questions, as suggested in Table 1. Table 1 summarizes climate risks, where they could be incorporated within CEQA documents, considerations when preparing the existing setting and project impact analysis, and adaptation and mitigation ideas. Note that not all environmental impacts will apply to a project. For each potential impact that is addressed, a significance finding or a determination that the impact is speculative should be identified.

Public health can be impacted by climate change through increased temperatures; greater incidence of infectious, vector-borne, water-borne, and food-borne diseases; increased pesticide use; increases in allergens; and increased air pollution. Public Health Strategy #1 of the Draft CAS indicates that communities that change infrastructure to combat obesity and chronic disease will be more resilient to health threats that are caused by climate change. A walkable community with access to healthy foods, urban forests, community gardens,[5] parks, and open space, could provide the means for residents to build the resilience to combat health threats caused by climate change.[6, 7, 8] Addressing this issue in CEQA could be a subject for future debate.

Incorporation of climate change issues within the context of CEQA is still an evolving regulatory and legislative challenge. California is in the process of implementing strategies to adapt to climate change risks; therefore, it follows that local jurisdictions can address potential climate risks and implement adaptation strategies in CEQA documents utilizing the Draft CAS as a guide.

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Table 1: Addressing Potential Climate Risks in CEQA Documents

Potential Climate Risk Impact	Placement within CEQA Document	CEQA Existing Setting and Impact Discussion Considerations[9]	Potential Adaptation and Mitigation
Water Supply Reduction The predicted change in rain and snowfall patterns over the 21st century varies by climate scenarios and models; however, most models suggest a 12- to 35-percent overall decrease in precipitation, with more precipitation occurring as rain rather than snow.[1][CW3] This could lead to water shortages, as communities in California depend on runoff from established snowpack to provide water during the drier months. This problem is exacerbated by higher temperatures, which increase evaporation and snowmelt.[1]	Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed? (Appendix G, Impact XVI[d])	Identify applicable water management plan(s) and/or adaptation strategies prepared by the Department of Water Resources or other agency. Describe various scenarios of reduced water supply and snowpack loss from climate change. Assess project water requirements under normal, dry, and multiple dry year conditions. Where would the project obtain its water? Would the project obtain water from the Sierra Nevada snowpack?	1) Water conservation.[10] Water Strategy #3 in the Draft CAS has a goal to achieve a statewide 20-percent reduction in per capita water use by 2020. 2) Water storage. Water Strategy #6 in the Draft CAS recommends expansion of water storage and conjunctive management of surface and groundwater resources. Projects could store water onsite through rainwater harvesting percolation areas.
Half of recent **Sea Level Rise** is attributed to thermal expansion (water expands as it warms) and melting land ice.[11] Human-induced processes (groundwater extraction, wetland drainage, deforestation) may also contribute. A 1.4-meter (55-inch) sea-level rise and a 100-year flood could endanger 480,000 people and $100 billion in property in California.[12]	Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? (Appendix G, Impact VIII[i]) Alternatively, this impact can be addressed in a new question such as, "Would the project be significantly impacted by sea level rise?"	Discuss existing and future sea levels under various climate change scenarios.[13] Is the project vulnerable at its proposed elevation? Consider secondary effects such as sea water intrusion into aquifers, soil instability, and liquefaction.	Setbacks, increased elevation, coastal protection structures, soft protection solutions (e.g., a barrier beach or wetland used instead of a seawall), an alternate design or location. According to Ocean and Coastal Resources Strategy #2 in the Draft CAS, guidance for preparation of adaptation plans is forthcoming.
Flooding may become more frequent. Changes in precipitation resulting from an average increase in temperatures may produce more rainfall than snow.	Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? (Appendix G, Impact VIII[i])	Describe the historical flood magnitude and frequency in project area, existing flood-control facilities and management strategies, and future or planned flood control improvements.	Water Strategy #4 in the Draft CAS indicates that local governments should implement land use policies that decrease flood risk. Mitigation can include redesign, setbacks, and/or increased elevation.
Impacts to **Agricultural and Forest Resources** from wildfires, pests, flooding, etc. may be caused by climate change. Development on productive farmland or forestry reduces land available for adaptation.	Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use? (Appendix G, Impact II[c])[14]	Describe the existing agricultural and forest resources on the project site and in the surrounding area. Could the land be used to support urban agriculture?	Agriculture Strategy #5 in the Draft CAS supports smart growth (urban growth boundaries, in-fill) and protecting and conserving productive farmland.
Wildfires have increased in frequency and intensity, as demonstrated by recent wildfires that ravaged Southern California. Warmer temperatures, longer dry seasons, reduced winter precipitation, and early snowmelt contribute to the increase in wildfires.[15] Low- to moderate-intensity fires can be beneficial to ecosystems; there are no benefits from high-intensity fires.[1]	Would the project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands? (Appendix G Impact VII[h])	Describe the historical frequency of wildfires in the project area; identify the fuel load in the area; describe the topography and elevation, weather patterns, wind speeds, and relative humidity; and identify the project location relative to the wildland-urban interface (developed areas that are near forest and grassland areas). Identify agency or district wildfire prevention and fuels management programs. If available, reference climate modeling maps.	The project could prepare a Community Wildfire Protection Plan.[16] Mitigation could also include fire-resistant building materials, metal roofs, fire truck access, appropriate landscaping, at least 100 feet of defensible space,[17] and ensuring that onsite water storage systems have attachments compatible with a fire hose.

Professionals on the Move

Hunsaker & Associates Associates (H&A) is pleased to announce the following promotions/additions to their team:

Oscar Aguilar, Planning Project Manager comes to H&A with more than 14 years of land development design and master planning experience throughout Southern California.

Principals **Jeannine Giem** and **Jason Fukumitsu** obtained Leadership in Energy and Environmental Design Accredited Professional (LEED-AP) accreditations. Ms. Giem has also acquired certification by the American Institute of Certified Planners (AICP).

Jeannine Giem

Jason Fukumitsu

Environmental Science Associates (ESA) is pleased to announce the following promotions/additions to their team:

Bill Boynton has been promoted to Technical Computing Manager for the firm. Bill will oversee and manage all application development for ESA, adding value to clients and increasing project efficiency.

Emily Bacchini has joined the firm's Biological Resources and Land Management Group as Managing Associate in ESA's Central Valley/Sierra Regional office, located in Sacramento, California.

Bill Boynton

Emily Bacchini

Cal Poly-San Luis Obispo's nationally prominent City and Regional Planning Department has a new leader. **Professor Hemalata Dandekar** has been named department head for City and Regional Planning at Cal Poly, bringing a strong interdisciplinary and international background to the position.

Professor Hemelata Dandekar

Climate Change Risks

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[1] California Natural Resources Agency. 2009 California Climate Adaptation Strategy, Discussion Draft, a Report to the Governor of the State of California in Response to Executive Order S-13-08. www.climatechange.ca.gov/adaptation/index.html. Note: The draft was released August 3, 2009, and the comment period occurs through September 17, 2009; a final version is anticipated in October 2009.

[2] California Natural Resources Agency. "State Climate Adaptation Strategy (CAS)." 2009. www.climatechange.ca.gov/adaptation/meetings/2009-08-13_meeting/Draft_CAS_Presentation_Aug_09.pdf.

[3] The Governor's Office of Planning and Research sent recommended Amendments to the CEQA Guidelines to the Natural Resources Agency on April 13, 2009; the Agency is in the rulemaking process for certifying and adopting these amendments. http://ceres.ca.gov/ceqa/guidelines/.

[4] California Natural Resources Agency. 2009. *Initial Statement of Reasons for Regulatory Action, Proposed Amendments to the State CEQA Guidelines*. July.

[5] Public Health Law & Policy. 2009. Establishing Land Use Protections for Community Gardens. www.healthyplanning.org/modelpolicies/communitygardenpolicies.pdf.

[6] Parker, L., Burns, A.C., and Sanchez E. (Eds.). 2009. Institute of Medicine and National Research Council of the National Academies. Local Government Actions to Prevent Childhood Obesity. www.rwjf.org/files/research/20090901iomreport.pdf (see Chapter 5).

[7] Public Health Law & Policy. 2007. General Plans and Zoning, a Toolkit for Building Healthy, Vibrant Communities. www.healthyplanning.org/toolkit/finalbook.pdf.

[8] Refer to the Centers for Disease Control and Prevention, Health Places website for additional papers on this topic. www.cdc.gov/healthyplaces/.

[9] Sources: The author's experience, and information from Alling, Curtis. 2009. "Adaptation: Advising Cities on Climate Change Vulnerability." League of California Cities, City Attorneys' Conference - LAX. February 25.

[10] There are many resources for water conservation, including California Attorney General. 2008. The California Environmental Quality Act: Addressing Global Warming Impacts at the Local Agency Level. December 9. http://ag.ca.gov/globalwarming/pdf/GW_mitigation_measures.pdf.

[12] Bindoff, N.L., et al. 2007. Observations: Oceanic Climate Change and Sea Level. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY. www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-chapter5.pdf.

[12] Heberger, Matthew, et al. 2009. The Impacts of Sea Level Rise on the California Coast. PIER Research Report, CEC-500-2009-024-D, Sacramento, CA: California Energy Commission.

[13] Cayan, Dan, et al. 2009. Climate Change Scenarios and Sea Level Rise Estimates for the California 2008 Climate Change Scenarios Assessment. California Energy Commission. CEC-500-2009-014-D.

[14] From the non-amended CEQA guidelines; in the draft amended CEQA guidelines, this would be II(e).

[15] Moser, Susie, et al. 2009. The Future Is Now: An Update on Climate Change Science Impacts and Response Options for California. California Energy Commission, PIER Energy-Related Environmental Research Program. www.energy.ca.gov/2008publications/CEC-500-2008-071/CEC-500-2008-071.PDF.

[16] Williams, Victoria and Joseph J. Fluder III. "Planning for Disaster." AEP Environmental Monitor. Winter 2009: 4.

[17] California Department of Forestry and Fire Protection. www.fire.ca.gov/communications/communications_firesafety_100feet.php.