JOINT LEGISLATIVE COMMITTEE ON CLIMATE CHANGE POLICIES

ASSEMBLYMEMBER EDUARDO GARCIA, CHAIR
SENATOR HENRY STERN, VICE CHAIR

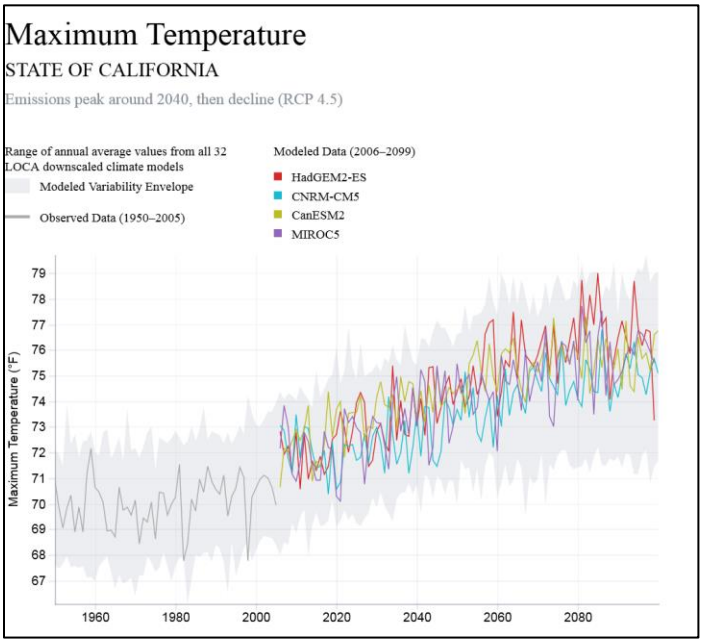
INFORMATIONAL HEARING:

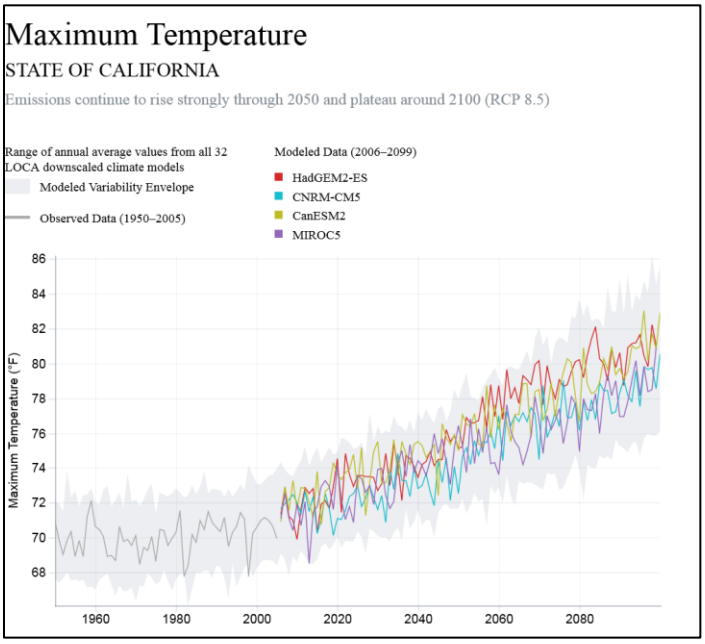
BUILDING A HEALTHY AND RESILIENT 2050
APRIL 19, 2018
1:00-3:00PM
STATE CAPITOL ROOM 126

PROJECTED CLIMATE IMPACTS IN CALIFORNIA

As climate change progresses, our state will see many shifts in weather, water, and fire – all of which have direct impacts on biodiversity, economic activity, infrastructure, and public health. The impacts of climate change will be felt by everyone in some way but the greatest impacts will be felt in communities disproportionately burdened by pollution as well as by children, elderly, medically vulnerable people, outdoor workers, and low-income households in our state. While decreasing our state's emissions will reduce these future impacts significantly, some level of climate change will occur regardless of state actions.

According to data from Cal-Adapt,[1] California's historical annual mean temperature for 1950-1990 was 69.9 degrees Fahrenheit, but annual mean temperature for 2050 is projected to be anywhere from 74.5 to 74.8 degrees Fahrenheit. The charts below show statewide maximum temperature trends for the low and high emissions scenarios based on four different models.





Source: http://cal-adapt.org/tools/annual-averages

[1] For more information: http://cal-adapt.org/about/

Californians will see an increased frequency in extreme heat days that can cause heat-related illness or death, in addition to increasing energy demand and increasing vulnerability in our food system. The chart below outlines the historic and future projected average annual number of extreme heat days for key California cities, which vary significantly between the high and low emissions scenarios. Cal-Adapt defined "extreme heat threshold" as the 98th percentile of historical maximum temperatures observed between April 1st and October 31st.

City	Extreme Heat Threshold	1950-1990 Average Days	2050 Average Days
El Centro	113.7˚	5	24-26
Fairfield	102.2˚	4.6	20-21
Fresno	106.3˚	4.4	23-31
Los Angeles	95.5˚	3.9	8-9
San Diego	89.0˚	4.2	21-27
San Francisco	87.0˚	4	5-7

Source: http://cal-adapt.org/tools/extreme-heat

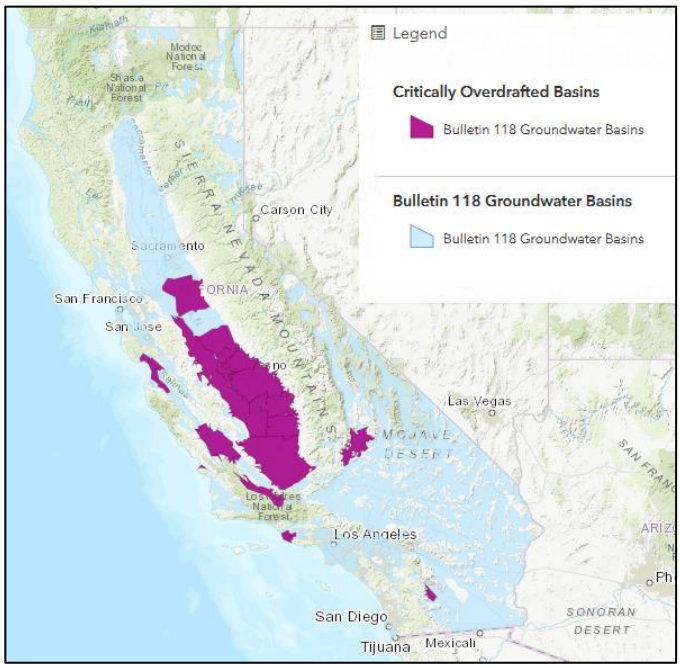
According to a 2013 state report on preparing for extreme heat,[2] populations in cooler areas in California are at greater risk for heat-related illness because residents are not acclimatized to heat and many buildings or recreational spaces are not designed to help users cope with extreme heat; for example, many homes in cooler parts of the state are not equipped with air conditioning units. The report also states that extreme heat can be exacerbated by urban heat island effect; buildings and pavement that absorb sunlight and heat that can cause temperatures in urban environments to be as much as 22 degrees warmer.

Warming temperatures will continue to reduce our snowpack, which serves to store and gradually release on average one-third of the state's annual water supply.[3] Peak time for the snowpack has historically been April 1st of each year, when the annual mean for 1950-1990 according to Cal-Adapt was 2.2 inches of snow water equivalent, a common measurement of snowpack. Projected depth of the snowpack in April of 2050 is 1 inch to 1.4 inches.[4] Declining snow pack and an increasing frequency of extreme weather events is putting stress on California's existing water storage system; the current reservoir system can hold approximately 43 million acre-feet of water, but have been inadequate to handle floodwaters or provide adequate drought reserves.[5]

In an assessment completed for the Sustainable Groundwater Management Act, the California Department of Water Resources identified 21 basins subject to conditions of critical overdraft.[6] According to the State Water Resources Control Board, in 2016 more than 300 of the state's 3,399 public water systems are not compliant with safe drinking water standards, with many more lacking access to affordable or reliable water supplies.[7] As climate change progresses, water security and water quality will impact many Californians in addition to our state's plants, animals, and overall environment.

[2] California Environmental Protection Agency and California Department of Public Health, "Preparing California for Extreme Heat: Guidance and Recommendations," October 2013. Available at http://www.climatechange.ca.gov/climate_action_team/reports/Preparing_California_for_Extreme_Heat.pdf
[3] Public Policy Institute of California, "Priorities for California's Water," October 2017. Available at http://www.ppic.org/wp-content/uploads/r_1017ehr.pdf
[4] Note: data for the snowpack on Cal-Adapt was pulled for the entire state of California, not just the Sierra region, so may differ from other estimates.
[5] Public Policy Institute of California, "Priorities for California's Water," October 2017. Available at http://www.ppic.org/wp-content/uploads/r_1017ehr.pdf
[6] California Department of Water Resources, "Critically Overdrafted Basins." Available at https://www.water.ca.gov/Programs/Groundwater-Management/Bulletin-118/Critically-Overdrafted-Basins
[7] California Department of Water Resources, "California Water Plan Update 2018: Working Draft," January 2018. Available at https://www.water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/California-Water-Plan/Water-Plan-Updates/Files/Update-2018/Water-Plan-Update-2018-Working-Draft.pdf

The California Department of Water Resources estimated in 2013 that one in five Californians lives in a floodplain, and more than $580 billion in assets (property, infrastructure, crops, etc.) were at risk from future floods.[8] According to the working draft for the California Water Plan Update 2018, every county in the state of California has seen a flooding event at least once in the last 20 years.[9] Flood risk applies to inland and coastal communities, who could see as much as two inches in sea-level rise per year by the end of the century – a rate that is 30-40 times faster than sea-level rise seen in the last century – which will put a significant amount of property and economic activities at risk.[10]



Source: California Department of Water Resources, "Critically Overdrafted Basins (B118)." Available at https://dwr.maps.arcgis.com/apps/Styler/index.html?appid=cb13d84e7a90434fbac050cc377f6c42

OVERVIEW OF ADAPTATION

Climate adaptation refers to actions to address the impacts of climate change, either to minimize any vulnerability or maximize any opportunities presented. Many adaptation efforts can have additional co-benefits such as reducing local air pollution, providing local employment opportunities, and generally increasing the quality of life for residents.

Examples of adaptation strategies include, but are not limited to:

- Building weatherization measures to reduce energy usage and protect against extreme weather
- Developing alternative energy and energy storage projects to improve grid reliability
- Urban green infrastructure projects to capture water and reduce urban heat island effect
- Water storage and efficiency efforts to ensure adequate water supply
- Coastal habitat restoration to absorb water as sea levels rise
- Forest habitat restoration to reduce fire risk, improve water storage, and mitigate damage to biological diversity
- Wetlands restoration to improve water storage and mitigate damage to biological diversity
- Vulnerability assessments and coordinated local, state, and federal planning inclusive of private landowners to ensure emerging community and environmental needs are identified and addressed

CURRENT STATE ADAPTATION EFFORTS

Adaptation efforts take many forms: individual grant applications, local general plans, statewide or local hazard mitigation plans, regional coordination efforts, and much more. This hearing will highlight three key state-level efforts that pull together multiple legislative and community priorities with the goal of increasing health and resilience.

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[8] California Department of Water Resources, "California's Flood Future: Recommendations for Managing the State's Flood Risk," November 2013. Available at https://www.water.ca.gov/LegacyFiles/sfmp/resources/California_Flood_Future.pdf

[9] California Department of Water Resources, "California Water Plan Update 2018: Working Draft," January 2018. Available at https://www.water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/California-Water-Plan/Water-Plan-Updates/Files/Update-2018/Water-Plan-Update-2018-Working-Draft.pdf

[10] California Natural Resources Agency and California Ocean Protection Council, "State of California Sea-Level Rise Guidance: 2018 Update." Available at http://www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20180314/Item3_Exhibit-A_OPC_SLR_Guidance-rd3.pdf

California was the first state in the nation to develop a comprehensive adaptation strategy. **Safeguarding California** is the state's roadmap for adaptation and is updated every three years.[11] The most recent update was released in early 2018 and includes over 1,000 ongoing actions and next steps under 76 policy recommendations in 11 sectors. This report identified seven overarching principles as foundational to the state's approach to adaptation:

- Consider climate change in all functions of government.
- Partner with California's most vulnerable populations to increase equity and resilience through investments, planning, research, and education.
- Support continued climate research and data tools.
- Identify significant and sustainable funding sources to reduce climate risks, harm to people, and disaster spending.
- Prioritize natural infrastructure solutions that build climate preparedness, reduce greenhouse gas emissions, and produce other multiple benefits.
- Promote collaborative adaptation processes with federal, local, tribal, and regional government partners.
- Increase investment in climate change vulnerability assessments of critical built infrastructure systems.

The California Natural Resources Agency was the lead agency on that document, and will release an assessment later this year on the progress of measures identified in Safeguarding California as required by AB 1482 (Gordon, 2015). The current metrics for climate impacts and government responses can be found in Appendix E of the Safeguarding California update.

The Governor's Office of Planning and Research, or OPR, periodically releases **General Plan Guidelines** for local general plans. The 2017 edition[12] reviews statutory requirements, OPR recommendations, resources, and best practices for general plan updates. Since the last update was in 2003, the 2017 guidelines were the first to provide a chapter on addressing climate change at the local level and on integrating climate planning into the Safety Element (as required by law) and through other local efforts. Some opportunities to align local work with climate adaptation goals include:

- Industrial permitting processes
- Land use and transportation planning
- Zoning and urban growth decisions
- Building codes and other standards
- Municipal operations
- Climate Action Plans
- CEQA mitigation or streamlining

OPR is also responsible for preparing and maintaining an Environmental Goals and Policy Report. The most recent draft was released in 2015,[13] and includes goals and objectives involving land use, demographics, natural resources, air quality, water quality, and state programs and policies that align with those goals. The Environmental Goals and Policy Report is intended to align with a public tracking tool, California @ 50 million,[14] to ensure that California stays on track to achieve:

- A strong, resilient economy
- Thriving urban areas and prosperous rural regions
- A clean environment with healthy and resilient natural systems
- A clean and efficient energy system
- Efficient and sound infrastructure

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[11] California Natural Resources Agency, "Safeguarding California Plan: 2018 Update." Available at http://resources.ca.gov/climate/safeguarding/
[12] Governor's Office of Planning and Research, "State of California General Plan Guidelines," 2017. Available at https://www.opr.ca.gov/docs/OPR_COMPLETE_7.31.17.pdf
[13] Governor's Office of Planning and Research, "Environmental Goals and Policy Report," 2015. Available at https://www.opr.ca.gov/docs/EGPR_Nov_2015.pdf
[14] California @ 50 Million. Available at http://ca50million.ca.gov/

The California Department of Public Health has started the **California Building Resilience Against Climate Effects (CalBRACE)**[15] to enhance the agency's ability to plan for and reduce health risks associated with climate change. The BRACE Framework outlines five steps to guide the work of local health departments to incorporate climate projections and epidemiology analyses into traditional planning processes:

- Step 1: Identify the scope of the most likely climate impacts.
- Step 2: Estimate the additional health burden.
- Step 3: Identify the most suitable health intervention.
- Step 4: Develop and implement a strategy for climate change that includes strategies to address health impacts.
- Step 5: Evaluate the planning process to inform future work.

In furtherance of these objectives, CalBRACE has produced county-level climate and health profile reports as well as resources to help local stakeholders assess social vulnerability and adaptive capacity.

DISCUSSION QUESTIONS

The first panel on "Local Perspectives on Vulnerability and Resiliency" will highlight three key vulnerabilities: access to water, extreme heat, and increased risk of floods. That panel will allow committee members to better understand how climate change is already impacting communities and what local groups are currently doing to minimize those impacts.

The second panel on "State Efforts to Guide Adaptation" will highlight how state agencies are working together and with local stakeholders to identify and address the impacts of climate change. That panel will highlight the state's adaptation-related initiatives and the guidance that is given to local agencies to help them prepare for and mitigate the impacts of climate change.

Potential questions for panelists:

- What does adaptation in California look like? What areas are state jurisdiction, local jurisdiction, or up to actions of the general public?
- What are the top priority adaptation efforts currently underway?
- How do we know if we are accurately identifying and addressing community vulnerabilities?
- How are we measuring progress toward achieving resiliency in our communities? What accountability exists for interagency collaborative efforts? What resources are needed to ensure we can track our efforts and respond in a timely matter?
- How are local governments working to address adaptation? What barriers exist for them to create and execute adaptation plans? What more could the state be doing to support those efforts?
- How integrated are the various adaptation needs? What opportunities exist to align state efforts to reduce administrative burdens on local communities?
- Is there any work being done to ensure emissions reduction or emergency response efforts support adaptation efforts?
- What gaps in adaptation work still need to be addressed? Are there any stakeholders that are not at the table that should be?

[15] California Department of Public Health, "California Building Resilience Against Climate Effects (CalBRACE)." Available at https://www.cdph.ca.gov/Programs/OHE/Pages/CalBRACE.aspx