CITY OF SANTA BARBARA

SUSTAINABILITY COMMITTEE AGENDA REPORT

AGENDA DATE: Thursday, February 29, 2024

TO: Sustainability Council Committee

FROM: Energy and Climate Division, Sustainability & Resilience Department

SUBJECT: Discussion of the State of California Sea Level Rise Guidance

RECOMMENDATION:

That the Sustainability Council Committee:

a. Receive an update and provide input on the *draft State of California Sea Level Rise Guidance: 2024 Science and Policy Update*.

b. Receive an update and provide input on the City's approach to incorporating sea level rise hazards into development regulations.

DISCUSSION:

Draft State of California Sea Level Rise Guidance

On January 19, 2024 the Ocean Protection Council (OPC) released for public comment the *draft State of California Sea Level Rise Guidance: 2024 Science and Policy Update* (Draft 2024 Guidance), which updates the 2018 State of California Sea Level Rise Guidance. While technically considered "guidance," the report is widely considered "best available science" on sea level rise and is cited in most state permit and planning requirements. Written comments on the document are due March 4, 2024. OPC is planning to review and adopt the final 2024 Guidance at its June 4, 2024, hearing.

OPC lists the key takeaways of the Draft 2024 Guidance as follows:

- *There is greater certainty and a narrowing range of the amount of sea level rise through 2050, with a statewide average of 0.8 ft of rise projected in the next 30 years.*

- *By 2100, statewide sea levels are expected to rise between 1.6 ft and 3.1 ft (Intermediate-Low to Intermediate Scenarios), and even higher amounts cannot be ruled out.*

- *Beyond 2100, the range of sea level rise becomes increasingly large due to uncertainties associated with physical processes, such as earlier-than-*

expected ice sheet loss and resulting future sea-level rise. By 2150, statewide sea levels may rise from 2.6 ft to 11.9 ft (Intermediate-Low to High Scenarios), although even higher amounts are possible.

- *The extreme sea level rise scenario (i.e., H++) from Rising Seas 2017 is much higher than the best available science suggests and is not included in the 2024 update.*

- *Vertical land motion (uplift or subsidence) is the primary driver of local variations in sea level rise across the state. Vertical land motion is incorporated into the sea level scenarios for the 13 tide gauges along the coast and in San Francisco Bay, providing more locally specific information.*

- *Sea level rise, when combined with extreme storms and higher tides, will result in accelerated cliff and bluff erosion, coastal flooding and beach loss, and mobilization of subsurface contaminants.*

The 2024 Guidance utilizes a new methodology for defining sea level rise scenarios that now aligns with the National Oceanic and Atmospheric Administration 2022 Sea-Level Rise Technical Report. Additionally, new guidance in the report outlines, in detail, how to assess sea level rise vulnerabilities and recommends that all jurisdictions utilize the United States Geological Survey CoSMoS model to analyze flooding, erosion, and groundwater impacts. This extra guidance and alignment with federally accepted science will help ensure the use of consistent data nationwide in federal, state, and regional planning and permitting.

The Draft 2024 Guidance analyzes five future sea level rise scenarios for California. Below is a table from the report that shows the likelihood of actual sea levels exceeding the scenarios in relation to how much warming may occur from different greenhouse gas emissions levels. Three degrees Celsius of warming by 2100 represents a continuation of current greenhouse gas emission levels.

Global Mean Surface Air Temperature 2081-2100	1.5°C	2.0°C	3.0°C	4.0°C	5.0°C	Low Confidence Processes, Low Warming	Low Confidence Processes, High Warming
Low Scenario	92%	98%	>99%	>99%	>99%	90%	>99%
Intermediate-Low Scenario	37%	50%	82%	97%	>99%	49%	96%
Intermediate Scenario	<1%	2%	5%	10%	23%	7%	49%
Intermediate-High Scenario	<1%	<1%	<1%	1%	2%	1%	20%
High Scenario	<1%	<1%	<1%	<1%	<1%	<1%	8%

According to the report, the range between the Intermediate-Low and Intermediate Scenarios represents the most likely range of sea level rise by 2100 based on current observations. The Intermediate-High Scenario and High Scenario include consideration of "low confidence" processes such as ice sheet failures where there is a low level of agreement between scientists and where limited evidence supports model outputs. The Intermediate-High Scenario represents the plausible high-end projection for 2100 should rapid ice sheet loss contribute to sea-level rise. As stated in the report, the High Scenario contains "deep uncertainties and ambiguity" that "frame a worst case beyond 2100 as we currently understand it, and a statement about the likelihood of reaching this scenario is not possible." As such the report states that the High Scenario "should be used with caution and consideration of the underlying assumptions in planning adaptation."

The sea-level rise projections for Santa Barbara contained in the Draft 2024 Guidance are attached to this report. A comparison of some of the key 2018 and 2024 projections are below. While different methodologies were used to develop the scenarios in 2024, the 2018 Medium-High Risk Aversion and Low Risk Aversion Scenarios are most similar to the 2024 Intermediate High and Intermediate Scenarios respectively in relation to probability of exceedance.

Year	2018 Medium-High Risk Aversion Scenario	2024 Intermediate-High Scenario	2018 Low-Risk Aversion Scenario	2024 Intermediate Scenario
2030	0.7 feet	0.3 feet	0.4 feet	0.3 feet
2050	1.8 feet	0.9 feet	1.0 feet	0.6 feet
2100	6.6 feet	4.5 feet	3.2	2.8 feet

In addition to providing updated projections, the Draft 2024 Guidance provides policy guidance on how various scenarios should be used for planning. As stated in the report:

> *For most planning and projects, it is recommended to evaluate Intermediate, Intermediate-High, and High Scenarios to assess a spectrum of potential impacts, consequences, and responses…*
>
> *For low risk averse projects, …the Intermediate scenario could be applied, at a minimum. For medium-high risk averse applications, the Intermediate-High Scenario is recommended, and for extreme risk aversion applications, the High Scenario should be applied.*

The Draft 2024 Guidance clarifies that low-risk averse projects include easily adaptable projects such as trails, medium-high risk averse projects include most structures, and extreme risk aversion projects include critical infrastructure. The Draft 2024 Guidance recognizes that project design will often be unable to be achieved utilizing these scenarios and that projects may be designed for lower sea-level rise projections if adaptive pathways are identified over time.

City staff are preparing a comment letter from the City and are closely coordinating with the Coastal Cities Group of the League of California Cities and the California State Association of Counties on a joint letter from those organizations. The primary concern raised in comments is the use of the High Scenario for sea level rise planning for critical infrastructure given the deep uncertainties associated with that scenario. It is OPC's and California Coastal Commission's staff position that there is no harm in considering extreme scenarios amongst other more likely scenarios and that planning for critical infrastructure should employ a precautionary approach. At a local implementation level, though, cities and counties have identified over the last five years several negative impacts of utilizing extreme scenarios for planning including: loss of credibility with the public and decisionmakers over time; expenditure of public funds and effort on scenarios that are very difficult to adapt to and where the probability is so low that it is unlikely that decisionmakers would choose to adapt to those scenarios at this time; and loss of momentum and focus on more reasonable adaptation projects that can more feasibly be achieved and which could provide the first steps to public acceptance of adaptation to climate hazards. In addition, the Intermediate-High Scenario is already a precautionary projection that has only a one percent chance of being exceeded given information known at this time.

Staff recommends that the Draft 2024 Guidance be amended to direct that for extreme risk aversion situations such as highly critical infrastructure, the high scenario be disclosed as a possible future to be tracked over time, but that the detailed adaptation planning focus analysis on the Intermediate and Intermediate-High Scenarios.

In discussions with the Coastal Cities Group, other substantive comments raised include:

- Appreciation that the new guidance aligns with federal policy and science;
- Appreciation that the guidance addresses topics such as impacts to groundwater and toxic sites;

- Requests for more examples and explanations as to how various scenarios should be applied at the project level so that there is alignment amongst state agencies as to how the policy guidance will be interpreted;
- Requests to shift focus away from extreme sea level scenarios and instead focus on changes in rainfall patterns from climate change and consequences of El Nino and other conditions that are more likely to be problematic in the next 50 years and for which we need to start planning for immediately; and
- Requests to include local government representation on the State Sea Level Rise Collaborative that was closely consulted in the development of the Draft 2024 Guidance and which considers other sea level rise policy issues.

Sea Level Rise in Development Review Requirements

Given questions raised recently by the Committee, staff will also review the City's approach to addressing sea level rise hazards in permitting. Relevant documents include the 2019 Coastal Land Use Plan, which incorporates consideration of sea level rise into coastal development permitting requirements, and the 2021 Sea Level Rise Adaptation Plan.

BUDGET/FINANCIAL INFORMATION:

There are no direct budget implications for this item.

ENVIRONMENTAL REVIEW:

This item is informational only.

ATTACHMENT(s): Sea Level Rise Scenarios for Santa Barbara

PREPARED BY: Melissa Hetrick, Resilience Program Supervisor

SUBMITTED BY: Alelia Parenteau, Sustainability and Resilience Director

Attachment

Sea Level Rise Scenarios for Santa Barbara

Draft State of California Sea Level Rise Guidance: 2024 Science and Policy Update

Table 9. Sea Level Scenarios for Santa Barbara.
Median values of Sea Level Scenarios, in feet, for each decade from 2020 to 2150, with a baseline of 2000. All median scenario values incorporate the local estimate of vertical land motion.

Year	Low	Int-Low	Intermediate	Int-High	High
2020	0.1	0.2	0.2	0.2	0.2
2030	0.2	0.3	0.3	0.3	0.4
2040	0.3	0.4	0.4	0.5	0.6
2050	0.3	0.5	0.6	0.9	1.1
2060	0.4	0.6	0.9	1.4	1.8
2070	0.5	0.7	1.2	2.0	2.7
2080	0.5	0.9	1.6	2.8	3.8
2090	0.5	1.1	2.1	3.5	5.0
2100	0.6	1.2	2.8	4.5	6.3
2110	0.6	1.4	3.4	5.3	7.5
2120	0.7	1.5	4.0	6.0	8.6
2130	0.7	1.7	4.4	6.6	9.5
2140	0.7	1.9	4.9	7.1	10.4
2150	0.8	2.0	5.5	7.6	11.3