COASTAL AND OCEAN RESOURCES SECTOR – 2012 CLIMATE ADAPTATION STRATEGY

JULY 5, 2012 SCOPING OUTLINE

(Please send comments by close of business on Friday, July 20th to coastalclimate@resources.ca.gov)

The California Natural Resources Agency, working through the Climate Action Team (CAT), is developing the 2012 Climate Adaptation Strategy. This resource will outline proactive steps to take now to protect public health and safety, infrastructure and the economy, and California's unique natural environment in the face of climate change. The 2012 Climate Adaptation Strategy will include chapters on agriculture, biodiversity, forestry, land use and infrastructure, public health, transportation, energy, emergency preparedness, fresh water, and ocean and coastal resources but will also highlight various cross-cutting recommendations.

The Coastal and Ocean Climate Adaptation Team (CO-CAT), comprised of over 16 state agencies, is developing the coastal and ocean chapter of the 2012 Adaptation Strategy. This scoping outline is intended to identify and engage the public in a discussion of the issues that should be addressed in this chapter. We welcome your thoughts on whether we have identified the correct issues and your thoughts on how to approach these issues.

A draft of the full 2012 Climate Adaptation Strategy will be available for public comment in early fall, along with specific opportunities to comment on the coastal and ocean chapter. A final version is expected at the end of this year.

I. **Coastal and Ocean Resources Vulnerability** (This section is intended to identify the major drivers of vulnerability from climate-induced impacts on coastal and ocean resources (i.e. infrastructure, communities, beaches/public recreation, wetlands, etc.)
   - A. sea-level rise and erosion
   - B. extreme events such as El Niño storms, atmospheric rivers
   - C. ocean acidification
   - D. other physical, chemical and biological changes

II. **Highlights of Steps Taken to Date and Success Stories** (This section is intended to highlight some of the steps taken to date to adapt to climate impacts on coastal and ocean resources. In addition to commenting on the items below, we welcome the public to submit descriptions and photos of innovative adaption projects to coastalclimate@resources.ca.gov).
   - A. CO-CAT and OPC Science Advisory Team developed guidance on sea-level rise and OPC adopted resolution to support the guidance and conducted outreach to over 45 state agencies, commissions and other governmental bodies.
   - B. Many state agencies (BCDC, State Lands Commission, Caltrans, Delta Conservancy) have developed sea-level rise guidance and policies and significant relevant state grant programs have incorporated SLR into funding decisions (e.g. Coastal Conservancy, Department of Water Resources, Strategic Growth Council).

C. High-resolution elevation data (LiDAR) are available for nearly entire coastline to support detailed sea-level rise vulnerability assessments and thanks to partnership with NOAA Coastal Services Center, this data is being incorporated into interactive sea-level rise inundation viewer tool.

D. Regional collaborations are assessing vulnerabilities and developing adaptation plans.

III. Coastal and Ocean Adaptation Goals and Strategies (This section is intended to identify the recommended strategies for adapting to coastal and ocean impacts of climate change. In many cases, the identified strategy is cross-sectoral and will be highlighted as such in the final report.)

A. Protect public health and reduce harm to coastal and bay communities from extreme events and sea-level rise.

1. sea-level rise hazard avoidance, sustainable development in low hazard areas
2. vulnerable populations
3. emergency preparedness for extreme events that are made worse or compounded by sea-level rise *(e.g*. increased flooding and erosion from storms and tsunamis, and levee failure and liquefaction from earthquakes)
4. improved forecasting and projections
5. wastewater treatment and stormwater management facilities
6. harmful algal blooms and exposure to water-borne pathogens
7. hazardous waste sites
8. hotspots for saltwater intrusion into water supplies

B. Improve understanding and protect public trust resources from sea-level rise impacts.

1. vulnerability of public trust resources such as public access, water supplies, navigation, wildlife, etc. and costs and benefits of adaptive management to address vulnerabilities.
2. education on how a changing shoreline (from erosion and inundation as the mean high tide line moves inland) affects private property boundaries and public trust lands
3. evaluation of possible changes to laws and policies to remove barriers to effective state actions

C. Support local, regional and state agencies and collaborations, tribes, land-owners and resource managers in addressing sea-level rise and extreme events.

1. updates to Local Coastal Programs (LCPs), General Plans, Local Hazard Mitigation Plans, and other land use documents that are key adaptation implementation tools
2. develop sample language for LCPs, General Plans, etc.
3. pilot projects on innovative adaptation approaches that reduce risk and achieve co-benefits *(e.g*. planned retreat, living shorelines)

4. regional sediment management
5. more data and education on socioeconomic impacts of different adaptation options
6. education on tools for addressing sea-level rise (e.g. transfer of development credits, rolling easements, setbacks, tax and fee incentives)
7. tidal wetlands and beaches –predicted changes, upland areas suitable for migration inland, actions to address sediment supply, innovative projects that enhance or restore functions and resiliency

D. Incorporate best available scientific understanding of sea-level rise and extreme events into decision-making.

1. coastal hazard maps that can be used in land use decisions and real estate transactions
2. accessibility of geospatial data (e.g. LiDAR) to improve vulnerability analyses
3. improved understanding of shoreline change
4. collaborations with insurance and investment partners
5. planning and decisions on infrastructure investments

E. Monitor and adaptively manage changes to biologic, chemical and physical processes that are important for coastal and ocean biodiversity and ecosystem functions.

1. ocean acidification – monitoring on both a spatial and temporal scale to help identify hotspots and target management actions
2. Marine Protected Areas – monitoring for changes to indicator species, to help inform adaptive management of MPAs
3. fisheries – synthesize information on impacts and integrate into management
4. sediment management – understand changing coastal sediment budgets and processes and conduct regional sediment management

IV. **Adaptation Research Needs in the Coastal and Ocean Resources Sector** (This section is intended to identify key research needs that will help the state of California and other entities to more effectively adapt to climate change impacts.)

A. Monitor, document and distribute information on shoreline changes and impacts from storms (e.g., beach and cliff erosion) and revise methodologies for predicting shoreline evolution

B. Updated methodology for flood frequency under changing climate

C. Improved forecasting of extreme events such as atmospheric rivers (extreme precipitation)

D. Co-location of land-based GPS and tidal gauge stations to improve monitoring of local relative sea- level

E. Improve monitoring and understanding of land elevation changes, such as subsidence and tectonic activity (*e.g.* Cascadian fault system)

F. Development of consistent methods for monitoring ocean acidification

G. Socioeconomic data(including quantification of ecosystem services) on impacts of different adaptation approaches (*e.g.* seawalls, managed retreat, artificial reefs, and no action/business as usual)

H. Evaluation of innovative adaptation efforts (*e.g.* living shorelines) in reducing risk or vulnerability to climate-related hazards

V. **Related Planning, Investment and Regulatory Processes** (This section identifies planning, investment and regulatory processes that may present an opportunity for integration of the above strategies. This section is meant to inform a discussion about cross-sectoral opportunities and will probably appear in the Appendix to the 2012 Climate Adaptation Strategy, not within the ocean and coastal chapter itself.)

A. Updates to Local Coastal Programs (Coastal Commission, Coastal Conservancy, OPC, Strategic Growth Council) - state grant funding, coordination, review of amendments

B. Update to General Plan Guidelines (OPR)

C. SB 375 Sustainable Communities Strategies (CCLU-IN)

D. Funding pilot innovative and effective adaptation projects (Coastal Conservancy, SWRCB)

E. California Water Plan – especially role of desalination and recycled water (DWR)

F. Integrated Regional Water Management Plans (DWR)

G. Transportation vulnerability hot spot map (CalTrans)

H. SLR impacts on groundwater basins, desalination & wastewater (SWRCB.)

I. Integrated climate vulnerability screening (Department of Public Health)

J. Incorporation of SLR into applications related to state leases and grants (ports, marinas, harbors, etc. – State Lands Commission)

K. Regional habitat plans (e.g. Bay Area Baylands Goals Update, Our Coast Our Future – SF Bay Area, Southern California Wetland Recovery Project)

L. Regional Coastal/Bay Climate Planning Projects (e.g., San Diego Climate Strategy, LA Regional Collaborative, Southern Monterey Bay Coastal Erosion Project, Adapting to Rising Tides/BCDC, One Bay Area Climate Strategy, Humboldt Bay Initiative, etc.)

M. State Wildlife Action Plan (DFG)

N. Marine Protected Areas -monitoring for climate change impacts, coordination on ocean acidification monitoring (OPC/Ocean Science Trust, DFG)

O. CA Coastal Mapping Program – elevation & habitat data & maps (OPC etc.)

P. Sea-level rise guidance (internal draft guidance document) (State Parks)

Q. Disclosure on risk from climate change impacts (Insurance Commissioner)

R. Granted land trustees (ports and coastal cities, primarily) preparation for sea level rise action plans (State Coastal Commission).

S. Incorporate climate data into basin and ocean plans (SWRCB)

T. Areas of Conservation Emphasis mapping and modeling tool (ACE-II) (DFG)

U. Natural Communities Conservation Planning Program (NCCP) and Habitat Conservation Plans (DFG, Coastal Conservancy)

V. California State Multi-Hazard Mitigation Plan (CalEMA)

W. Local Hazard Mitigation Plans (CalEMA)

X. Sea level rise guidance document for use by transportation planners (Caltrans)

Y. AB 162- Flood risk and local land use planning. (DWR, CVFPB)