

Water Storage Investment Program

CDFW Ecosystem Priorities

Outline of Presentation

- Ecosystem priorities
- Relative environmental values
- Current status and next steps

Proposition 1 Chapter 8

Proposition 1 continuously appropriates \$2.7 billion to the California Water Commission (CWC) for:

“public benefits associated with water storage projects that improve the operation of the state water system, are cost effective, and ***provide a net improvement in ecosystem and water quality conditions...***”

California Water Code §79754

CWC, in consultation with the CDFW, State Water Board, and DWR, to develop and adopt, by regulation, methods for quantification and management of public benefits by December 15, 2016. The regulations must include:

- Priorities and relative environmental value of **ecosystem benefits** as provided by the CDFW
- Priorities and relative environmental value of **water quality benefits** as provided by the State Water Board

Draft CDFW Ecosystem Priorities

1. Promote the recovery of endangered, threatened, and other at-risk native fish species and native fish assemblages through water project operations
2. Restore physical processes and flow regimes to improve native habitats and natural communities to promote the recovery of endangered, threatened and other at-risk native species
3. Enhance commercial and recreational opportunities
4. Reduce the negative impacts of non-native species on native species and natural communities
5. Prevent or reduce negative impacts from in-river structures on anadromous fishes
6. Increase quality and quantity of aquatic and riparian habitat and managed and unmanaged wetlands

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- I. Promote the recovery of endangered, threatened, and other at-risk native fish species and native fish assemblages through water project operations to achieve one or more of the following:
 - a) Provide cold water at the appropriate time and location to improve water temperatures for egg survival and fry rearing of salmon and steelhead in Central Valley tributaries.
 - b) Provide flows at the appropriate time and location to maintain adequate dissolved oxygen in redds and to prevent dewatering of salmon and steelhead redds in Central Valley tributaries.
 - c) Provide flows to reduce juvenile stranding of salmon and steelhead in Central Valley tributaries.

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- I. Promote the recovery of endangered, threatened, and other at-risk native fish species and native fish assemblages through water project operations to achieve one or more of the following (continued):
 - d) Operate facilities to avoid stranding of immigrating adult salmonids and sturgeons in floodways and bypasses.
 - e) Provide increased spring flows to improve conditions for juvenile and smolt rearing and out migration.
 - f) Provide summer flows to improve conditions for in-river rearing of juvenile salmonids.
 - g) Provide attraction flows at the appropriate time and location to benefit anadromous species during upstream migration to improve passage and reduce straying

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- I. Promote the recovery of endangered, threatened, and other at-risk native fish species and native fish assemblages through water project operations to achieve one or more of the following (continued):
 - h) Increase Delta outflow in spring, summer, or fall for pelagic fishes including Delta smelt and Longfin smelt; to increase survival of emigrating juvenile salmonids.
 - i) Restore and enhance seasonal patterns of flow and temperature to benefit life stage specific requirements of green sturgeon and white sturgeon including increased outflow to improve juvenile recruitment.
 - j) Operating as an integrated and coordinated system, use operational flexibility and water exchanges between state, federal and local storage projects to achieve goals and objectives described in this section.

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2. Restore physical processes and flow regimes to improve native habitats and natural communities to promote the recovery of endangered, threatened and other at-risk native species through achieving one or more of the following :
 - a) Provide pulse flows to activate fluvial geomorphological processes, including accretion and erosion, channel form and function, and sediment transport.
 - b) Enhance habitat complexity and quality including run-riffle-pool complexes, large wood introduction, and increased escape cover.
 - c) Restore historic salmonid habitat in channels or sloughs, including re-watering channels.

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2. Restore physical processes and flow regimes to improve native habitats and natural communities to promote the recovery of endangered, threatened and other at-risk native species through achieving one or more of the following (continued):
 - d) Increase the frequency, magnitude and duration of floodplain inundation to achieve multi-objective benefits of wetland habitat, primary productivity and food web support, juvenile fish rearing habitat, and alternative migration corridors.
 - e) Provide groundwater recharge and improve sediment quality and environmental water quality.
 - f) Restore access to anadromous fish habitat by improving fish passage.

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2. Restore physical processes and flow regimes to improve native habitats and natural communities to promote the recovery of endangered, threatened and other at-risk native species through achieving one or more of the following (continued):
 - g) Enhance salmonid habitat through implementation of sediment management plans.
 - h) Restore riparian communities to increase shading and reduce water temperatures for aquatic species and to support terrestrial species.
 - i) Enhance habitat through removal or modification of flood infrastructure, including levees and weirs.

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3. Enhance commercial and recreational opportunities through achieving one or more of the following:
 - a) Provide reservoir-based recreation, both consumptive and non-consumptive uses, including fishing, hunting, boating, swimming, nature observation, and education.
 - b) Increase populations of economically valuable commercial or recreational species.
 - c) Increase wildlife habitat on refuges or provide increased water supply to refuges.

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4. Reduce the negative impacts of non-native species on native species and natural communities by achieving one or both of the following :
 - a) Develop and implement invasive species management plans.
 - b) Develop and implement water project operations plans which use methods such as flushing flows and thermal control to suppress non-native species abundance and distribution and promote restoration of natural communities

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5. Prevent or reduce negative impacts from in-river structures on anadromous fishes by achieving one or more of the following:
 - a) Remediate unscreened or poorly screened diversions that entrain fish.
 - b) Remediate existing barriers to improve fish passage
 - c) Construct and operate facilities to reduce stranding and mortality of adult salmonids and sturgeons in floodways and bypasses.

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6. Increase quality and quantity of aquatic and riparian habitat and managed and unmanaged wetlands by achieving one or both of the following :
 - a) Provide water to enhance wetlands and riparian habitat for the benefit of aquatic and terrestrial species.
 - b) Enhance managed seasonal wetlands on wildlife refuges and other lands being managed for public ecosystem values.

Ecosystem – Relative Environmental Values

1. Number of ecosystem priorities addressed
2. Consistency with existing conservation/recovery plans
3. Water use efficiency
4. Measurable rather than descriptive benefits
5. Proximity to existing resources
6. Expected magnitude of the measurable benefits
7. Clear performance measures
8. Certainty of achieving the benefits

Continued...

Ecosystem – Relative Environmental Values

9. Immediacy of benefits provided
10. Duration or permanence of the benefits
11. Climate change adaptability and resilience

Next Steps

- Refine ecosystem priorities
- Develop an approach to consider the relative environmental values of ecosystem public benefits
- Prepare draft regulation and guidelines language for incorporation to benefits evaluation criteria by August 2015