

Memorandum

Date: August 7, 2012

To: Members of the California Water Commission
Members of the Public

From: Sue Sims
Executive Officer
California Water Commission
Department of Water Resources

Subject: Attached Draft Documents

The following are draft documents related to the methods for quantification of public benefits for water projects. As directed by the Commission in March 2011, they were prepared by the Department of Water Resources (DWR), in consultation with the Department of Fish and Game and the State Water Resources Control Board.

With the recent postponement of the water bond to 2014 (Chapter 74, Statutes of 2012) and the Commission's authority to adopt regulations contingent upon passage of the bond, these documents are being delivered to the California Water Commission at this time in their current draft form for discussion on any potential next steps.

The documents include:

- Working Draft: Language for Potential Regulation, SBX7-2
- Working Draft: Guidelines for Submitting Applications for SBX7-2 Chapter 8 Funding of Public Benefits
- Working Draft: Rationale for Potential SBX7-2 Regulation

California Code of Regulations
Title 23. Waters
Division xx. California Water Commission
Chapter yy. Safe, Clean, and Reliable Drinking Water Supply Act of 2012
Article zz. Methods for Quantification and Management of Public Benefits
(WORKING DRAFT)

§zz. Quantification of Public Benefits

Chapter 8 of the Safe, Clean, and Reliable Drinking Water Supply Act of 2012 provides up to \$3 billion of the proceeds from the sale of General Obligation bonds to fund public benefits associated with eligible water storage projects. Under the authority included under California Water Code §79744, the California Water Commission (Commission), in consultation with the Department of Fish and Game (DFG) and the State Water Resources Control Board (State Water Board) and the Department of Water Resources (DWR) is required to

develop and adopt, by regulation, methods for quantification and management of public benefits described in Section 79743 by December 15, 2012. The regulations shall include the priorities and relative environmental value of ecosystem benefits as provided by the Department of Fish and Game and the priorities and relative environmental value of water quality benefits as provided by the State Water Resources Control Board.

§79741 of the California Water Code defines projects for which public benefits are eligible for funding:

(a) Surface storage projects identified in the CALFED Bay-Delta Program Record of Decision, dated August 28, 2000, except for projects prohibited by Chapter 1.4 (commencing with Section 5093.50) of Division 5 of the Public Resources Code.

(b) Groundwater storage projects and groundwater contamination prevention or remediation projects that provide water storage benefits.

(c) Conjunctive use and reservoir reoperation projects.

(d) Local and regional surface storage projects that improve the operation of water systems in the state and provide public benefits.

The exception under part (a) above is for streams listed under the California Wild and Scenic Rivers Act. For further reference, §79743 of the California Water Code defines the public benefits for which public funds may be expended:

- (1) Ecosystem improvements, including changing the timing of water diversions, improvement in flow conditions, temperature, or other benefits that contribute to restoration of aquatic ecosystems and native fish and wildlife, including those ecosystems and fish and wildlife in the Delta.*
- (2) Water quality improvements in the Delta, or in other river systems, that provide significant public trust resources, or that clean up and restore groundwater resources.*
- (3) Flood control benefits, including, but not limited to, increases in flood reservation space in existing reservoirs by exchange for existing or increased water storage capacity in response to the effects of changing hydrology and decreasing snow pack on California's water and flood management system.*
- (4) Emergency response, including, but not limited to, securing emergency water supplies and flows for dilution and salinity repulsion following a natural disaster or act of terrorism.*
- (5) Recreational purposes, including, but not limited to, those recreational pursuits generally associated with the outdoors.*

§zz.1. Applicability

All applicants that request public funds to pay for public benefits of eligible water storage projects, as authorized in Chapter 8 of the Act.

Note: Authority cited: §79714, §79740-79749, Water Code.

§zz.2. Definitions

- a) For purposes of this article, the terms used are defined in this section.**
 - (a) "Act" means the Safe, Clean, and Reliable Drinking Water Supply Act of 2012.
 - (b) "Applicant" means the agency or group that is submitting information to the Commission and requesting funding for public benefits.
 - (c) "CALFED Bay-Delta Program" means the program described in the Record of Decision dated August 28, 2000.
 - (d) "Commission" means the California Water Commission.

- (e) “DFG” means the California Department of Fish and Game.
- (f) “Delta” means the Sacramento-San Joaquin Delta, as defined in Section 12220.
- (g) “DWR” means the California Department of Water Resources.
- (h) “Fund” means the portion of proceeds from bond sales authorized by the Act and identified in Chapter 8 as available to pay for public benefits of water storage projects.
- (i) “Monetary benefit” means the dollar value of the estimated or expected level of public or nonpublic benefit provided by a proposed project.
- (j) “Nonpublic benefit” means a benefit that does not fall within one of the five categories defined in §79743. Nonpublic benefits may nevertheless be paid for by a local, state, or federal public agency.
- (k) “Panel” means the project evaluation panel appointed by the Commission to review applications and advise it on the projects’ eligibility and quantification of public benefits.
- (l) “Proposed project” means the specific water storage project providing the public benefits for which funding is being requested.
- (m) “Public agency” means a state agency or department, district, joint powers authority, city, county, city and county, or other political subdivision of the state.
- (n) “Public benefit” means a benefit that falls within one of the five categories defined in §79743 and is being considered for State funding by the Commission.
- (o) “State Water Board” means the California State Water Resources Control Board.

Add other definitions as needed, including from the Methods Report glossary

Note: Authority cited: §79702.

§zz.3 Information Requirements

The Commission shall prepare and make available to all potential applicants at least xx days prior to accepting applications, a solicitation package providing details on project eligibility and available funding; the content, presentation and formatting of submitted information and analysis; the review process and schedule; evaluation criteria; and other guidance to assist applicants. The package shall include the guidelines for quantifying public benefits [reference here to the Guidelines].

a) Information to be Submitted by Applicants

Applicants shall submit a package of materials that includes:

- 1) Description and quantification of public benefits prepared in compliance with §zz.5 (may be included as a component of the feasibility study below).
- 2) Draft environmental documentation that is or has been available for public review.
- 3) Feasibility study for the proposed project that includes the following elements:

- i. Project purposes defining the benefits the proposed project is designed to provide.
 - ii. Project description, including facilities and operations and relationships with existing facilities and operations.
 - iii. Project costs, including mitigation for adverse environmental consequences as identified in the draft environmental documentation.
 - iv. Demonstration of technical feasibility, including a description of data and analytical methods, the hydrologic period, development condition, hydrologic time step, and planning horizon, and a water balance analysis showing, for the with and without-project condition, all flows and water supplies relevant to the benefits analysis.
 - v. Description and quantification of all project benefits, including public benefits and nonpublic benefits, using physical measures and, where possible, monetary benefits.
 - vi. Complete benefit-cost analysis showing benefits and costs to the State and its residents.
 - vii. Benefits-based allocation of costs sufficient to demonstrate that the project and the request for funding of public benefits comply with CWC §79746 and 79747.
 - viii. Financial analysis showing that sufficient funds will be available from public (including the funds requested in the application) and nonpublic sources to cover the construction and operation of the project over the planning horizon.
- 4) A list of supporting studies that have been or will be completed.
 - 5) A list of required permits and notices, and their status, showing that each of these has been or will be completed.
 - 6) Commitments for not less than 75 percent of the nonpublic benefit cost share of the project. Letters of commitment must be submitted verifying that the governing boards of entities receiving at least 75 percent of the nonpublic benefits have voted to pay for their allocated cost share.
 - 7) Description of how the public benefits address the priorities and relative environmental values of ecosystem and water quality benefits summarized in §zz.6.
 - 8) Draft operations, monitoring, verification and management plan for the public benefits (see §zz.7).

Note: Authority cited: §79747.

b) Public Hearing

The Commission will hold a public hearing on the solicitation package and evaluation process. The public hearing will allow the public to review and comment on the information and analysis required in applications; the review process including criteria, scoring and ranking; the

composition and role of the project evaluation panel (see §zz.4 below); and the Commission's decision process and timeline.

§zz.4 Process for Reviewing and Evaluating Funding Applications for Public Benefits

a) Project Evaluation Panel

The Commission will appoint a project evaluation panel (panel) composed of technical experts from DWR, other state or federal agencies, academic institutions, and/or private industry.

- 1) The panel shall include:
 - At least one member each from the staff of DFG and the State Water Board.
 - Members having relevant expertise to evaluate the technical information and analysis of public and nonpublic benefits contained in applications.
- 2) If a member of the panel, or a member of his or her immediate family, is employed by an applicant, or by a consultant or independent contractor employed by an applicant, or by any agency or private entity that has been materially involved in the development or planning for a proposed project, the panel member shall make that disclosure to the other members of the panel and to the Commission. The Commission may, at its discretion, appoint a replacement for that member.
- 3) The panel shall review the information provided by each applicant and advise the Commission on:
 - the completeness of the application and the merits of the proposed project's request for public funds (see §zz.3);
 - whether the proposed project provides measurable improvements to the Delta ecosystem or to the tributaries to the Delta;
 - the soundness of its analysis of public benefits (see §zz.5);
 - the relationship of the public benefits to the priorities and relative environmental values provided by DFG and the State Water Board (see §zz.6);
 - the expected return for public investment as measured by the magnitude of the public benefits provided; and
 - the adequacy and merits of the proposed plan for operations, monitoring, verification, and management of public benefits (see §zz.7).

The panel shall comply with the review process provided to applicants as part of the solicitation package described in §zz.3, and shall provide a written evaluation to the Commission explaining its conclusions.

- 4) If the review of an application requires expertise not represented on the panel, the panel may request that the Commission appoint an additional member, or allow it to consult outside experts. Outside experts shall also be subject to the disclosure and restrictions in §zz.3.a.2.

- 5) The panel may request additional information from an applicant within YY days of its initial submission if the project appears potentially eligible but additional information is needed to evaluate the merits of the project.
- 6) Once an application package is complete (including additional information requested by the panel), the panel shall provide its written evaluation and recommendation to the Commission within XX days.

b) Determination by the Commission

For each application, the Commission will:

- 1) Review the information provided in the application and the recommendations and analysis provided by the panel.
- 2) Rank potential projects based on the expected return for public investment as measured by the magnitude of the public benefits provided.
- 3) Prepare draft findings and recommendation for funding. The draft findings shall include: [is there a need to list the various findings required in Chapter 8 here?]
- 4) Hold a public hearing to receive comments on the draft findings and funding recommendation.
- 5) Provide its final findings and recommended funding for public benefits to the legislature.

Based on when applications are received and at its discretion, the Commission may hold a hearing and submit recommendations for one or multiple applications at a time.

Note: Authority cited: §79740-79747.

§zz.5 Quantification of Public Benefits

In order to be considered by the Commission, applicants must provide a quantification of the public benefits for which funding is requested. The physical change in each public benefit provided by the project must be quantified. The following steps must be included in the quantification:

- 1) Define the proposed project life and the without-project condition, including the future status of the physical resources for which benefits will be claimed, related facilities and water supplies. .
- 2) For each public benefit, quantify the physical change provided by the proposed project as compared to the without-project condition, and show the annual pattern of the benefit over the proposed project's planning horizon.
- 3) Identify any cost savings enabled by the proposed project, defined as the cost of other activities or projects that would be avoided or eliminated as a result of the proposed project.
- 4) Identify and describe feasible alternatives for providing each public benefit.

- 5) Where possible, estimate the monetary benefit corresponding to each public benefit's physical change. A range of acceptable methods for estimating monetary benefits is provided in [reference here to the Guidelines and/or the Methods Report]. Methods include avoided or alternative costs; direct observation or estimation of users' willingness to pay for the benefit; and use of statistical methods to extrapolate benefits estimated for other projects and other areas.
 - i. Other methods of monetary quantification not specifically identified in [reference to Guidelines and Methods Report] may also be used, but must be documented and justified.
 - ii. If monetary benefits are not estimated for a public benefit, provide justification why none of the available methods could be used.
 - iii. The project evaluation panel will review the methods, justifications, and results, and will make recommendations to the Commission regarding their soundness.
- 6) Use discounting procedures defined in [reference to Guidelines] to convert estimated benefits to a common point in time.
- 7) In order to calculate cost shares and benefit shares for compliance with CWC §79746 and 79747, display project costs and nonpublic benefits provided in the feasibility using the same discounting procedures.
- 8) Provide documentation of information, assumptions, methods, calculations, and results.

§zz.6 Priorities and Relative Environmental Values

Applications for funding shall demonstrate how the public benefits claimed and quantified for the project relate to priorities provided by DFG and the State Water Board. Relative environmental values shall be evaluated by the Panel and Commission.

a) Ecosystem Priorities

Priority ecosystem improvements identified by DFG achieve one or more of the following (in no order of preference):

- Provide recovery for endangered and other at-risk species and native biotic communities;
- Rehabilitate natural processes;
- Maintain or enhance populations of selected species for sustainable commercial or recreational harvest;
- Protect or restore functional habitat types;
- Prevent or reduce negative impacts from non-native species; and

- Improve and/or maintain water and sediment quality conditions that support healthy ecosystems.

b) Water Quality Priorities

The State Water Board's highest priorities for funding of water quality benefits associated with water storage projects include projects that (in no order of preference):

- Improve water temperature conditions in water bodies on California's Clean Water Act (CWA) Section 303(d) list that are impaired for temperature;
- Improve dissolved oxygen conditions in water bodies on California's CWA 303(d) list that are impaired for dissolved oxygen;
- Mitigate or control mercury in water bodies on California's CWA 303(d) list that are impaired for mercury;
- Reduce salinity concentrations in water bodies on California's CWA 303(d) list that are impaired for sodium, total dissolved solids, chloride, or specific conductance/electrical conductivity;
- Result in Delta tributary stream flows that more closely mimic natural hydrograph patterns or other flow regimes that have been demonstrated to improve conditions for aquatic life;
- Create additional supply capacity south of the Delta, and offset/reduce the current or future water demand from the Delta and its tributaries;
- Clean up or restore groundwater resources in high use basins.

c) Relative Environmental Value

DFG and State Water Board place no preference on the relative importance associated with the priorities. Proposed projects may vary widely in the magnitude, mix, location, and timing of benefits. DFG and State Water Board will assess each proposed project and determine the relative environmental value of its benefits. Relative environmental value will be assigned separately for ecosystem and water quality benefits. Greater relative value will be assigned if:

- The benefit addresses one or more of the priorities.
- The expected magnitude of the measurable benefit is greater: for example, larger increases in population numbers or habitat area for ecosystem benefit, or larger reduction in concentrations or reduction in the frequency of exceedance for water quality benefit.
- The uncertainty of achieving the benefit is lower: for example, the proposal's operational commitments provide greater assurance that the benefit can be achieved, or the ecosystem benefit provides a greater likelihood of species

recovery or significant habitat enhancement, or the water quality benefit provides a greater likelihood of bringing the affected water body into compliance.

- The benefit will be implemented sooner.
- The benefit will be more likely to result in a long-term or permanent improvement.

Other characteristics specific to individual proposed projects may also be considered in the determination of relative environmental value. A more detailed list of priorities and additional guidance on relative environmental value is provided in [reference to full DFG report on priorities here] and [reference to full State Water Board report on priorities here].

§zz.7 Monitoring, Verification, and Management of Public Benefits

Applications for funding shall demonstrate how the proposed project will be built and operated to provide the public benefits claimed. The applicant must provide the following:

- A detailed operations plan shall be submitted with the application, describing how the proposed project will be operated to provide the public benefits under the anticipated range of hydrologic conditions. The plan shall also describe how operational decisions will be made if conditions fall outside the range of anticipated conditions. The operations plan must be consistent with the analysis used to quantify benefits.
- A monitoring and reporting plan, including expected budget, shall be submitted with the application, identifying how operations will be monitored and verified, the physical benefits that will be measured, and the location and frequency of measurement. A report shall be prepared every QQ years that includes the monitoring data, compares it to levels projected in the benefits analysis (§zz.5.2), and explains differences between projected and actual levels of public benefits. The report shall also include a comparison of actual operations to those described in the operations plan.
- The applicant shall prepare a list of operational, monitoring, and reporting commitments. This list will be provided to state and federal regulatory and permitting agencies for inclusion, at each agency's discretion, as conditions of or articles in a permit or license.

Working Draft

Guidelines for Submitting Applications for SBX7-2 Chapter 8 Funding of Public Benefits

**Prepared for
California Water Commission**

**by
Department of Water Resources
in consultation with
Department of Fish and Game
and
State Water Resources Control Board**

July, 2012

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I. Introduction

A. Purpose

(NOTE TO READER: this draft of the Guidelines focuses on quantification of public benefits. Other sections of the Guidelines that address grant eligibility, the review process, and other administrative matters are included for completeness, but are not fully developed.)

The purpose of these guidelines is to establish the general process, procedures and criteria that the California Water Commission (Commission) will use to solicit, evaluate, award, and administer grants for public benefits of water storage facilities under Chapter 8 of the Safe, Clean, and Reliable Drinking Water Supply Act of 2012 (Act). The Act authorized the issuance of \$11.14 billion of bonds, of which \$3 billion would be allocated

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.

The Act directs that the Commission develop and adopt guidelines for project solicitation and evaluation:

79708. (a) Prior to disbursing grants pursuant to this division, each state agency that is required to administer a competitive grant program under this division shall develop and adopt project solicitation and evaluation guidelines. The guidelines may include a limitation on the dollar amount of grants to be awarded.

(b) Prior to disbursing grants, the state agency shall conduct three public meetings to consider public comments prior to finalizing the guidelines. The state agency shall publish the draft solicitation and evaluation guidelines on its Internet Web site at least 30 days before the public meetings. One meeting shall be conducted at a location in northern California, one meeting shall be conducted at a location in the central valley, and one meeting shall be conducted at a location in southern California. Upon adoption, the state agency shall transmit copies of the guidelines to the fiscal committees and the appropriate policy committees of the Legislature.

The Chapter 8 SBX7-2 public benefits grants are designed to encourage water storage projects that provide public benefits in the form of ecosystem, water quality, flood control, emergency response, and recreation benefits for Californians. These Guidelines provide more background information on general procedures for quantification of public benefits, including optional quantification methods that applicants can use. The Guidelines are intended to form part of the solicitation package for grant applications. Two other documents also address the quantification of benefits:

- Pursuant to §79744, the Commission is developing, by regulation, methods for quantification and management of public benefits. The regulation will define standards and procedural steps for quantifying benefits.

- “Description and Screening of Potential Tools and Methods to Quantify Public Benefits of Water Storage Projects” is a longer description of the principles underlying the economic quantification of public benefits. It provides additional information on specific studies, methods, and data that could be used to quantify benefits.

B. Program websites and contact information

To be added.

C. Usage of Terms

The following terms are used consistently in these guidelines

Act. Chapter 8 of the Safe, Clean, and Reliable Drinking Water Supply Act of 2012

Accounting perspective. The group of people whose economic benefits are being counted in an analysis.

Alternative cost. The cost of a different project or action that provides at least the same level of physical benefit as the proposed project.

Applicant. The agency or group that is submitting information to the Commission and requesting funding for public benefits.

Avoided cost. An economic cost that would be incurred without the proposed project but that would not be incurred with the proposed project.

Benefit. The net change in a good or service provided by a project. It may be expressed as a physical benefit or a monetary benefit.

Benefit Transfer. A method of estimating the monetary value of a benefit based on benefits estimates from a different location.

CALFED Bay-Delta Program. The program described in the CALFED Record of Decision dated August 28, 2000.

Commission. The California Water Commission.

Cost. Costs are the value of resources and materials required for a specified economic activity.

Cost effective. A project is cost effective if no other action or combination of actions can provide at least the same levels of physical benefits at lower economic cost.

Development condition. The facilities in place, border levels of water and land use, and other factors that are held constant in a water balance model to determine how hydrologic variability affects water levels, flows, and supplies. Normally expressed as a year, for example, 2020.

DFG. The California Department of Fish and Game.

Delta. The Sacramento-San Joaquin Delta, as defined in CWC §12220.

Discount Rate. The annual rate at which projected future real benefits and costs are reduced relative to the present.

Discounting. The process by which benefits and costs that occur at different times during a planning horizon are adjusted to account for society's preference for enjoying benefits sooner rather than later.

DWR. The California Department of Water Resources.

Economic benefit. The dollar value of the estimated or expected level of public or nonpublic benefit provided by a proposed project. Used interchangeably with "monetary benefit".

Fund. The portion of proceeds from bond sales authorized by the Act and identified in Chapter 8 as available to pay for public benefits of water storage projects.

Hedonic Pricing. A method of valuing attributes of a good or resource, typically real property, using an analysis of observed market prices.

Hydrologic Period. The period of recorded precipitation and inflows used to develop a hydrologic probability distribution for a water balance model.

Hydrologic Time Step. The time over which measures in a water balance model are calculated; usually daily, monthly, or annually.

Joint cost. The share of project cost that cannot be attributed to any single purpose; usually, the total cost less the sum of separable costs for all project purposes.

Monetary benefit. The dollar value of the estimated or expected level of public or nonpublic benefit provided by a proposed project.

Nonpublic benefit. A benefit that does not fall within one of the five categories defined in §79743 of the Act. Nonpublic benefits may nevertheless be paid for by a local, state, or federal public agency.

Non-use values. Economic benefits that people claim for a good even though they have no intention of consuming, viewing or otherwise using the good.

Opportunity Cost. The value of other goods and services that are given up by using a resource for a particular purpose. The economic benefit that is foregone, the benefit of the next best use is the opportunity cost.

Panel. The project evaluation panel appointed by the Commission to review applications and advise it on the projects' eligibility and quantification of public benefits.

Period of Analysis. The future period over which benefits and costs of a project are compared. Generally, the period of analysis begins at the first year of construction and extends until the end of the forecasted useful life of the project.

Physical benefit. The quantity of a desirable good or service provided by a project, expressed in measureable values, such as area (acres of habitat), distance (miles of stream), flow (cubic feet per second), concentration (parts per million of a water quality constituent), volume (acre-feet of water supply), or in the case of recreation, usage (visitor-days of recreation use).

Public agency. A state agency or department, district, joint powers authority, city, county, city and county, or other political subdivision of the state.

Public benefit. A benefit that falls within one of the five categories defined in §79743 of the Act and is being considered for State funding by the Commission.

State Water Board. The California State Water Resources Control Board.

Real. Free of or adjusted for inflation. Dollar values are often adjusted for inflation to reflect a common base year.

Remaining amount of physical benefit. The amount of physical public benefit that remains to be valued after accounting for avoided costs.

Remaining benefit. In a cost allocation, for each benefit category, the quantified benefit minus the separable cost allocated to it.

Risk. Variability or chance that can be represented by a probability distribution, usually because there is a historic record.

Separable cost. The share of total cost that is clearly attributable to a project purpose, usually estimated as project's total cost minus what the project would cost if the purpose were excluded.

Travel Cost Method. A statistical method to estimate the value of recreation use for a recreation site based on visitation and the travel costs incurred to visit the site.

Willingness to Pay. The maximum value of other goods and services (generally measured as monetary value) that people would be willing to give up to obtain or enjoy a specified good or service.

Without Project Condition. The without-project condition is the most likely status of resources, economy, development, and demographic conditions expected in the future in the absence of a proposed water storage project.

D. Definition and Scope of Public Benefits

“Public Benefit” means an ecosystem, water quality, flood control, emergency response, or recreation benefit as defined and qualified by the Act. From §79743:

- *Ecosystem improvements include changing the timing of water diversions, improvement in flow conditions, temperature, or other benefits that contribute to restoration of aquatic ecosystems and native fish and wildlife, including those ecosystems and fish and wildlife in the Delta.*
- *Water quality improvements include improvements in the Delta, or in other river systems, that provide significant public trust resources, or that clean up and*

- restore groundwater resources.*
- *Flood control benefits include, but are not limited to, increases in flood reservation space in existing reservoirs by exchange for existing or increased water storage capacity in response to the effects of changing hydrology and decreasing snow pack on California's water and flood management system.*
 - *Emergency response includes, but is not limited to, securing emergency water supplies and flows for dilution and salinity repulsion following a natural disaster or act of terrorism.*
 - *Recreational purposes include but are not limited to those recreational pursuits generally associated with the outdoors.*

1. The Distinction between Physical and Economic Measures of Benefit

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The five categories of public benefits defined above are a subset of all benefits that could be created by storage projects. Examples of non-public benefits include water supply and hydropower production.

Most benefits can be expressed in terms of physical measures involving amounts such as populations, concentration, weight or volume. Some benefits, such as aesthetics, may defy physical measurement. Some benefits, such as cost savings or value of goods or services, can be expressed in economic terms. All public benefits can be considered for funding, even if they cannot be expressed in physical or economic terms.

An economic (or monetary) benefit is defined as the net change in total willingness to pay for a good or service provided by a project. An economic benefit is an improvement that can be expressed in dollar terms (monetized) based on willingness to pay. Willingness to pay is the maximum monetary value that a person would be willing to give to obtain the benefit. The total monetary value of a benefit provided by a water storage project is the aggregate willingness to pay for the benefit. This monetary value is the economic benefit.

Economic benefits include net revenues to sellers or producers, net cost savings, and willingness to pay above price actually paid by users or consumers. Avoided costs are an economic benefit because the beneficiary should be willing to pay up to the amount of the cost saved.

Some economic benefits can be estimated by observing what people actually pay within a well-functioning market. Some kinds of benefits are not easily monetized because no market exists in which the unit monetary value can be observed. In such cases, other ways of estimating the willingness to pay can be used. In the absence of observable information on willingness to pay or avoided costs, benefits may be estimated using indirect approaches that rely on stated preferences (such as responses to surveys).

2. Additional Guidance on the Scope of Public Benefits

The following clarifications to public benefit definitions are needed for quantification purposes

[NOTE TO READER: the following clarifications are interpretations proposed by staff for consideration by the Commission].

- The five public benefit categories may include some benefits that are normally regarded as non-public. For example, private landowners or water users may capture a share of a public benefit, such as water quality improvement. Nevertheless, any benefit that is one of the five public benefit categories is eligible for public funding, regardless of who obtains it.
- Ecosystem benefits must be at least half of the total public benefits funded, so ecosystem benefits must be differentiated from other public benefits.
- Any public benefit that is directly caused by a physical ecosystem benefit (defined in the Act as “restoration of aquatic ecosystems and native fish and wildlife”) can be regarded as an ecosystem benefit. Below are two contrasting examples, one in which the public benefit can and one in which it cannot be assigned to the ecosystem benefit category.
 - Stored water is released for ecosystem improvement, and the resulting “restoration of aquatic ecosystems and native fish and wildlife” results in increased fish population. The increase in population causes sport fishing to improve. This economic benefit can be assigned to ecosystem improvement, not recreation.
 - Stored water released for ecosystem improvement incidentally improves Delta water quality for all users. The water quality benefit is not caused by “restoration of aquatic ecosystems and native fish and wildlife” so the benefit is water quality.
- The Act also requires that public benefits be differentiated from non-public benefits. The simple rule is to assign the benefit to the physical benefit category that changes relative to the without-project condition. For example,
 - Stored water is released for ecosystem improvement, and the released water incidentally increases urban water supply relative to the without-project condition. In this case, the urban water must be assigned to water supply benefit, not to ecosystem improvement.
 - Stored water is released for Delta water quality improvement, but additional Delta exports enabled by the water quality improvement leave Delta water quality at without-project levels. The additional exports are a water supply benefit and cannot be assigned as a water quality public benefit.
 - Refuge water supply provides an increase in wetland habitat relative to the without-project condition. The benefit should be assigned to ecosystem improvement, not to water supply.
 - Water provided for refuge water supply replaces water that is currently provided by a water transfer. There is no increase in wetland habitat, and therefore no “restoration of aquatic ecosystems and native fish and wildlife” relative to the without-project condition. However, the refuge water supply replaces a water supply that is now available for another use. If the other use is for urban or agricultural water supply, then the net effect of the change is a water supply benefit.

- Public benefits as defined could include benefits received by people outside of California. All public benefits should, to the extent possible, be divided into those accruing to Californians versus non-Californians. The Commission may use this information in its recommendations for allocation of Chapter 8 funds. All benefits should be counted for purposes of cost allocation.
- For recreation benefits, outdoor recreation activities associated with natural water bodies such as rivers, streams, lakes, wetlands, and the ocean are clearly eligible for funding. Benefits from outdoor recreation at man-made reservoirs could be considered if the reservoirs are directly affected by the proposed project and are open to the public. Recreation benefits from water supply provided for golf courses, swimming pools, or private, water-based theme parks do not qualify for Chapter 8 funding because these are water supply benefits.

II. Eligibility Requirements

A. Agencies or entities eligible to submit an application

§79714 of the Act defines the public agencies and other organizations eligible to apply for and receive funds:

Eligible applicants under this division are public agencies, nonprofit organizations, public utilities, and mutual water companies. To be eligible for funding under this division, a project proposed by a public utility that is regulated by the Public Utilities Commission or a mutual water company shall have a clear and definite public purpose and shall benefit the customers of the water system.

Under §79749 of the Act, certain joint powers authorities may apply for and receive funds:

(a) The funds allocated for the design, acquisition, and construction of surface storage projects identified in the CALFED Bay-Delta Record of Decision, dated August 28, 2000, pursuant to this chapter may be provided for those purposes to local joint powers authorities formed by irrigation districts and other local water districts and local governments within the applicable hydrologic region to design, acquire, and construct those projects.

(b) The joint powers authorities described in subdivision (a) may include in their membership governmental and nongovernmental partners that are not located within their respective hydrologic regions in financing the surface storage projects, including, as appropriate, cost share participation or equity participation. The department shall be an ex-officio member of each joint powers authority subject to this section, but the department shall not control the governance, management, or operation of the surface water storage projects.

(c) A joint powers authority subject to this section shall own, govern, manage, and operate a surface water storage project, subject to the requirement that the ownership, governance, management, and operation of the surface water storage project shall advance the purposes set forth in this chapter.

B. Types of projects eligible for grants or funding

1. Types of eligible water storage projects

From §79741, projects for which the public benefits are eligible for funding under this chapter consist of only the following:

- (a) Surface storage projects identified in the CALFED Bay-Delta Program Record of Decision, dated August 28, 2000, except for projects prohibited by Chapter 1.4 (commencing with Section 5093.50) of Division 5 of the Public Resources Code.*
- (b) Groundwater storage projects and groundwater contamination prevention or remediation projects that provide water storage benefits.*
- (c) Conjunctive use and reservoir reoperation projects.*
- (d) Local and regional surface storage projects that improve the operation of water systems in the state and provide public benefits.*

2. Other Eligibility Requirements

a) Subject to Section 11590

Any project constructed with funds provided by this chapter shall be subject to §11590 of California Water Code, which states:

“The department has no power to take or destroy the whole or any part of the line or plant of any common carrier railroad, other public utility, or state agency, or the appurtenances thereof, either in the construction of any dam, canal, or other works, or by including the same within the area of any reservoir, unless and until the department has provided and substituted for the facilities to be taken or destroyed new facilities of like character and at least equal in usefulness with suitable adjustment for any increase or decrease in the cost of operating and maintenance thereof, or unless and until the taking or destruction has been permitted by agreement executed between the department and the common carrier, public utility, or state agency.”

b) Ecosystem benefits minimum 50 percent of all public benefits

No project can be funded unless it provides ecosystem improvements that are at least 50 percent of total public benefits of the project funded under this chapter. This requires a showing that the dollar value of ecosystem improvements are at least half of the dollar value of all public benefits quantified in dollar terms. If some non-ecosystem public benefits cannot be monetized, then quantified ecosystem benefits must be more than 50 percent of monetized benefits. (§79746(a))

c) Must provide measureable improvements to Delta Ecosystem

A project will not be funded unless it is expected to provide measurable improvements to the Delta ecosystem or to the tributaries to the Delta. (§79742)

d) *Must be cost-effective*

A project must be cost-effective. This means that the package of public benefits provided by the project cannot be provided by some other means at less cost. (§79740(b))

e) *Must advance Delta objectives*

The project must restore ecological health and improve water management for beneficial uses of the Delta. (§79745(5) (B))

III. Available Funding and Funding Requirements

A. Overview of total authorized program funding

The grants program authorized by Chapter 8 uses bond funds from Proposition QQ, which authorized the legislature to appropriate \$3,000,000,000 for funding of public benefits of water storage projects.

B. Maximum grant amounts

[Placeholder if Commission wishes to place upper limit on single grant awards.]

C. Maximum public share

§79746(a) of the Act states:

The public benefit cost share of a project funded pursuant to this chapter, other than a project as described in subdivision (c) of Section 79741, may not exceed 50 percent of the total costs of any project funded under this chapter.

Projects described in subdivision (c) of §79741 are conjunctive use and reservoir reoperation) projects. For purposes of calculating this 50 percent limit, all costs are considered, including capital, operations, maintenance, and replacement costs, all discounted to the beginning of the period of analysis.

For most projects, applicants must obtain private or public funds from other sources because only 50 percent of the cost of a project can be paid with Chapter 8 funds. The competitive awards process will consider the certainty of other funding sources to evaluate the certainty of claimed public benefits.

IV. Selection Process

In consultation with DFG, the State Water Board, and DWR, the commission developed and adopted methods for quantification and management of public benefits by regulation, (CCR reference here). The regulations include the priorities and relative environmental value of

ecosystem benefits as provided by DFG and the priorities and relative environmental value of water quality benefits as provided by the State Water Board.

A. General Solicitation and Selection Process

The general process for soliciting proposals will include public announcement, application assistance, preparation and submission of applications, review by a proposal evaluation panel, review by the Commission, a ranking based on the expected return for public investment as measured by the magnitude of the public benefits provided, a recommendation for funding, a public hearing to receive comments on the draft findings and funding recommendation, and a presentation of final findings and recommended funding for public benefits to the legislature.

B. Application Assistance Public Workshops

A series of public workshops will be held to familiarize potential applicants with the application requirements and process.

C. Proposal Evaluation Panel

The Commission will appoint and maintain a proposal evaluation panel (panel) composed of technical experts from DWR, other state agencies, academic institutions, and/or private industry.

- 1) The panel will review the information provided by each applicant and advise the Commission on: the completeness of its application and the merits of each project's request for public funds (see §zz.3); the soundness of its analysis of public benefits (see §zz.5); the relationship of the public benefits to the priorities and relative environmental values provided by DFG and the State Water Board (see §zz.6); and the adequacy and merits of the proposed plan for operations, monitoring, verification, and management of public benefits (see §zz.7).
- 2) The panel may request additional information from an applicant within 60 days of its initial submission if the project appears potentially eligible but additional information is needed to evaluate the merits of the project.
- 3) Once an application package is complete (including additional information requested by the panel), the panel shall provide a written evaluation and recommendation to the Commission within XX day

For each application, the Commission will:

- 1) Review the information provided in the application and the recommendations and analysis provided by the panel.
- 2) Rank potential projects based on the expected return for public investment as measured by the magnitude of the public benefits provided.
- 3) Prepare draft findings and recommendation for funding.

- 4) Hold a public hearing to receive comments on the draft findings and funding recommendation.
- 5) Provide its final findings and recommended funding for public benefits to the legislature.

Based on when applications are received and at its discretion, the Commission may hold a hearing and submit recommendations for more than one application at a time.

D. Ranking Criteria for Public Benefits

Return on investment is defined as net public benefits for Californians in comparison to the public costs of obtaining the benefits. The project evaluation panel will review applications, modify benefits and costs estimates as appropriate, and provide a preliminary ranking to the commission. Net public benefits are monetized public benefits, less any unmitigated adverse effects on public benefits, less any non-project costs or benefits that are transfers from other Californians, plus a consideration for non-monetized benefits, as determined by the project evaluation panel's review.

V. Applicant-Provided Information and Evaluation of Benefits

A. General Information

Chapter 8 states

§79746. (a) The public benefit cost share of a project funded pursuant to this chapter, other than a project described in subdivision (c) of Section 79741, may not exceed 50 percent of the total costs of any project funded under this chapter.

and,

§79745.(a)(2) The department has entered into a contract with each party that will derive benefits, other than public benefits, as defined in Section 79743, from the project that ensures the party will pay its share of the total costs of the project. The benefits available to a party shall be consistent with that party's share of total project costs.

Together, these terms require that:

- a. All benefits, not just the public benefits, should be quantified, and they must be quantified in a way to support cost allocation;
- b. Project cost information must be provided;
- c. Project costs must be allocated to benefit categories;
- d. Costs allocated to non-public benefit categories (e.g., water supply) must be further apportioned to parties receiving the benefits, to the extent needed to demonstrate a commitment for paying the non-public share of costs.

B. Steps to Quantify Benefits and Allocate Costs

In general, the steps to follow for any public benefit claim are:

1. Define project assumptions
2. Quantify and document the physical benefit
3. Review the without-project condition and identify avoided costs
4. Identify feasible alternatives and estimate the alternative costs
5. Estimate unit willingness to pay values and apply to each public benefit
6. Identify the preferred measure of benefit (i.e., the avoided cost, alternative cost, or willingness to pay) for each public benefit
7. Discount and display quantified economic benefits
8. Provide project costs and a cost allocation and cost sharing analysis
9. Document economic benefits and other pertinent information.

These steps are detailed below.

[NOTE TO READER: the guidelines may include templates or example tables to illustrate desired ways to organize and display information described below.]

Step 1. Define project assumptions

The analysis should use the following assumptions;

- The main accounting perspective should be California, including all residents, businesses operating in the State, property located in the State, and all local and State government agencies. If federal cost-sharing is expected, an analysis from the national accounting perspective is also suggested.
- The period of analysis should be equal to the period of construction plus the expected useful life of the project.
- The without-project condition should describe the future economic development and demographic conditions of areas affected by the project and the amount and qualities of affected resources, if the project is not built and operated.
- All benefits should be displayed annually over the period of analysis. Economic benefits must be displayed in real dollars, using a 20XX base year. Real economic benefit per unit of physical benefit may be escalated only with strong, documented justification. If benefits for any given year in the period of analysis are estimated using a probability distribution of outcomes, such as using a hydrologic sequence, the annual average benefit should reflect the development condition for that year. Documentation for the probability distribution must be provided.
- The real discount rate for the California analysis must be 6 percent, or a different rate, if approved by the Commission.

The analysis should take steps to ensure that standard economic accounting conventions are followed; in particular:

- There must be no double-counting of benefits
- Without-project conditions should reflect the most likely condition, and not be chosen to enable a larger benefit to be claimed.
- All public and private costs required over the period of analysis to obtain a benefit must be counted. For example, for recreation, private costs of providing recreation and participating in recreation activities should be included, unless those private costs are considered in the benefit quantification. Also, if a benefit provided by the proposed project imposes costs on some other group of Californians, these costs must be estimated, or at minimum described, for purposes of determining the net public benefit.
-

Step 2. Quantify and document the physical benefits

Physical quantification is required for economic quantification. Physical benefits are the expected measurable accomplishments of projects. Physical benefits should be based on forecast measures of project accomplishments over the period of analysis relative to the without-project condition. Examples of physical benefits can include:

- For ecosystem, the types and amounts of environmental amenities provided, such as the types of species and their numbers benefited, habitat units restored or protected, acreage or stream miles of habitat or floodplain improved, restored or protected, or amount of water or flow provided.
- For water quality, types (constituents) and amounts of water quality improvement provided, and the amount of water treated or improved; for example, mg/l of salinity per acre-foot (AF), for 1,000 AF per year treated.
- If an ecosystem or water quality feature of a project will save or enable water supply, the amount of water supply saved per year on average, and for different hydrologic conditions.
- For flood control, the amount of land and types of land uses, the population, numbers and types of structures and equipment protected from flooding, provided for different flood events, each with associated probabilities, and the probability of levee or facilities failure, with and without project. Flood maps should be provided showing area flooded without project for the different flood events.
- For emergency response, the type of emergency targeted, and the types and amount of costs that would be avoided.
- For recreation, water features such as surface area or flow that provide the benefit, and a complete description of associated recreation facilities, including capacity information.

The documentation of physical benefits should include these items:

- 1) Provide a list of project objectives including the public and private benefit categories that the project provides and showing a breakdown of benefit subtypes and possible measures for each subtype within each category.

- 2) Provide a detailed description of the storage project that includes location, storage volume, sources and maximum rate of storing water, expected losses from storage, facilities and maximum rates for withdrawing water, a description of how the project will be operated to provide public and private benefits, and other information needed to quantify physical benefits as described below.
- 3) Provide a summary of with- and without-project conditions over the planning horizon, including related facilities and programs expected to be in place, other water supplies, and other conditions related to the public benefits categories from item 1).
- 4) Identify the physical benefit measures selected as well as the methods and models used to obtain the measures.
- 5) If the public benefit will be provided by water supply, flow, or reservoir surface area, provide a water balance and storage yield analysis including the following:
 - a. A description of methods, including the hydrologic period, development condition, hydrologic time step, and planning horizon,
 - b. A water balance analysis comparing without-project to with-project conditions, showing all flows and water supplies relevant to the public benefits analysis, and the quantities for each named measure for each public benefit subtype, and
 - c. A summary of the water balance analysis describing how the proposed use or operation of the storage facility will provide each quantity of public benefit.
- 6) Where physical benefits are not estimated for any public benefit, describe and, if possible, quantify other physical changes resulting from the project that directly lead to the benefit. For example, if fish population cannot be estimated, estimate changes in habitat conditions or the volume of flow provided for fish habitat. Explain any lack of physical benefit measures for a given benefit subtype.
- 7) Provide a summary of the physical benefits analysis, showing the expected annual average amount to be provided in each year of the planning horizon.

Step 3. Review the without-project condition and identify avoided costs

For each public benefit category claimed, provide a calculation of any annual average cost saving (without-project minus with-project), if any, that is caused by the provision of public benefits, indicating the year(s) that the saving occurs during the period of analysis.

Avoided costs may include, for example, other water supply costs, water treatment costs, salinity damage costs, flood damage costs, energy, labor or management costs, or cost savings because other actions or projects are delayed, cancelled, or reduced in size. When avoided costs are claimed, it is important to document that the avoided cost would occur in the without-project condition future using existing, published plans, if possible.

If the subject project will cause another project to be delayed, the costs of the delayed project are benefits in the year they were originally planned. However, the costs of the delayed project are still costs in the later years, when they would be paid with the project.

If the subject project will cause another project to be reduced in size, the cost savings relative to costs in the without-project condition are a benefit. In general, all avoided project costs such as construction, operations, repairs, maintenance and replacement costs should be valued using market prices for materials, energy, and labor.

Wholesale or retail water prices will generally be accepted as appropriate unit benefits for water supply savings as long as these prices reflect cost of service. Economic benefits must be net of total costs, not just private costs, of providing the water supply.

The avoided cost may be an action that has a public benefit and the proposed project causes this action, its cost, and its public benefit to be avoided. The analysis can later assign an additional benefit, but only to the net amount of public benefit that remains. For example, suppose a proposed project will produce 100 units of a public good, and the cost of another project producing 30 units of the public good is avoided. The avoided cost is a public benefit, but only 70 units of physical benefit remain to be valued using some other technique. This is the remaining amount of public benefit. To avoid double-counting, the amount of additional economic benefit that can be claimed by the methods of alternative cost or unit value as described below must be based on the remaining amount of public benefit.

Step 4. Identify feasible alternatives and alternative costs

Step 4a. For each public benefit category claimed, if there is a remaining amount from Step 3, provide a discussion of the feasibility of stand-alone alternatives (i.e., projects, programs, and/or actions), and estimate the cost of the least-cost stand-alone alternative means of providing the remaining amount.

This step provides the information needed to see if alternative cost can be used as a measure of benefit in Step 6. Alternative cost should be used as a measure of benefit if (1) a viable alternative to the project can provide about the same level of physical public benefit, and (2) the alternative's cost is less than the willingness to pay for the physical benefits (from Step 5 below).

This step requires a consideration of each alternative's feasibility. The alternative's feasibility should be considered under the same criteria as the project (i.e., the same baseline assumptions and general cost estimation procedures). However, the level of effort required for the alternative feasibility investigation can be less than that required for the project itself.

Step 4b. Provide a discussion of the feasibility of alternatives and estimate the cost of the least-cost alternative for providing the same package (types and amounts) of the total amount of all public benefits.

Step 4b is intended to fulfill the cost-effectiveness mandate of SBX7-2 Chapter 8. The alternative package is a single project or multiple projects that, taken together, provide the same total amount of all public benefits. The package may include the stand-alone alternatives from Step 4a, but sized for the total amount of water and other physical benefits claimed in physical benefits items 5) and 6) above, respectively.

If an alternative package exists, report its cost. The total public benefit of the project cannot exceed this amount. If no feasible alternatives for providing all the public benefits exist, describe the analysis and criteria used to make that determination.

Step 5. Estimate unit values for each public benefit and apply to the remaining benefit

Develop and show, if possible, the following unit values for each public benefit type for each amount of remaining benefit from Step 3. If not possible, explain why.

- a. **Ecosystem Improvement.** For water quality and recreation benefits caused by the ecosystem improvement, see 5b. and 5c. below. (Note: these can be classified as “ecosystem improvement” even though water quality and recreation methods are used to quantify them.) For ecosystem products sold in competitive markets, use market price as the basis for willingness to pay, and subtract additional private and public costs required to produce and market the product. For other products that enhance property values, estimate the increase in property values associated with the product using land price or hedonic pricing and convert to an annual value. For non-use values, survey-based methods should be designed around the project’s physical benefits. Benefit transfer can be used if necessary. Report any non-use values separately.
- b. **Water Quality.** For urban water salinity in the south coast and South Bay areas, existing models based on avoided damage cost are preferred. For agricultural salinity, models that estimate the value of crop yields and cost of water application for leaching are preferred. For other subtypes, use hedonic pricing (or land value as the second-best method) to obtain the share of benefit obtained by adjacent properties, revealed preference or survey methods for improved household water quality, or benefit transfer if necessary. For water quality, unit values may be available from sources such as the Beneficial Use Values Database (BUVD), maintained at the University of California Davis, which provides many studies that might be used for benefit transfer.
- c. **Recreation.** A use-estimating model is required. Either the revealed preference method or benefit transfer based on use at similar regional facilities is preferred. Market prices or hedonic pricing may provide partial benefits. Survey methods and the USACE unit-day value method are the second-best approaches for valuing use. Use may be limited by capacity in high-demand periods. The Benefit Transfer and Use Estimating Model Toolkit (Toolkit), available through the Agricultural and Resource Economics Department, Colorado State University, provides a database of potentially useful studies.
- d. **Flood Damage Reduction.** The preferred method is to use established models to estimate avoided damage and avoided costs. For large projects (i.e., more than \$10 million capital cost), use HEC-FDA or HAZUS-MH level 2. For smaller projects, use DWR’s F-RAM or follow a similar Expected Annual Damage (EAD) algorithm.
- e. **Emergency Response.** The willingness to pay value for reduced cost of a Delta seismic event should be based on the avoided costs of export reductions and increased salt exports. For other events, use the avoided cost of emergency services and other avoided costs as appropriate.

Step 6. Identify the preferred measure of benefit for each public benefit type

Provide the following for each public benefit type:

- a. If the alternative cost was quantified under step 4a above, compare these values to the total based on unit values from step 5. The benefit for the individual public benefit type is the smallest of these two values, plus any avoided cost from step 3. The argument for use of alternative cost as the measure of benefit is improved if (1) the proposed project and the alternative would both fulfill or further a mandate, or (2) it can be shown that, in the absence of the proposed project, the alternative would likely be implemented.
- b. If no economic quantification could be calculated, either through alternative cost, avoided cost, or unit values, or if such economic quantification only captures a portion of the benefits, provide a careful description of how the physical benefits described above will provide value and “expected return for public investment as measured by the magnitude of the public benefits provided.”
- c. If the sum of resulting public benefits for all individual public benefit types is more than the alternative cost from step 4b above, then the total public benefit is limited to the alternative cost from step 4b.

Step 7. Discount and display quantified economic benefits

Provide a planning horizon analysis that sums and discounts annual public benefits over the period of analysis using the real discount rate from Step 1.

Step 8. Provide project costs and a cost allocation and cost sharing analysis

Step 8a. Develop and display project and associated costs. Detailed project cost estimates should be provided for each year of the period of analysis. Project costs should include construction, interest during construction, operating, maintenance, and replacement costs. In addition, non-project costs that will need to be paid by each participant to obtain any benefits claimed should be reported.

Step 8b. Develop a cost allocation and cost-sharing plan. The public cost share should be determined by a cost allocation technique that apportions total project costs among benefit categories (also called project purposes). The benefit categories are:

- Public benefits eligible for funding (the five categories defined in the Act).
- Non-public benefit categories. These will be project-specific, but could include water supply, hydropower production, and transportation. They could also include benefits that do not meet all of the criteria for public funding, such as water quality improvements that do not provide significant public trust resources.

The cost allocation must include all relevant benefit categories provided by the proposed project, but at least one public benefit (ecosystem improvement) and one non-public benefit (e.g., water supply or hydropower) must be included. A feasible cost allocation has the following characteristics:

1. Total project costs, including annual operations and maintenance, are allocated.

2. Each benefit category's allocated cost is no larger than its estimated benefit.
3. Costs that could be avoided if a benefit category were removed from the project are allocated to that benefit category. In other words, costs that are not necessary to provide a particular benefit are not allocated to that benefit.
4. Costs that are not specific to one particular benefit category (called joint costs) can be allocated among the appropriate benefit categories in more than one way, as long as conditions 1-3 are met and each beneficiary's share of total project cost is consistent with its benefit.

The separable costs-remaining benefits (SCRB) method of cost allocation is a widely used approach that satisfies these characteristics. It is the standard approach used for federal water projects and for the allocation of State Water Project costs. It is expected that any project that has followed federal or state guidelines for cost allocation as part of its feasibility study can use that information directly for the purposes of this step.

For projects that have not already prepared a cost allocation that follows federal or state guidelines, the following steps summarize the SCRБ cost allocation:

1. Identify separable costs for each benefit category

The separable cost for a benefit category is the total project cost minus the cost of a project without that benefit category included (but that provides the same level of benefits to other categories).

2. Calculate joint costs

The joint cost is the total cost less all separable costs.

3. Calculate remaining benefits for each benefit category

Remaining benefit for each benefit category is its quantified benefit minus the separable cost allocated to it.

4. Allocate joint costs to each benefit category

The joint cost is allocated among benefit categories according to their share of total remaining benefits.

5. Calculate total allocated cost for each benefit category

Each benefit category is allocated its separable cost plus its share of the joint cost

6. For non-public benefits, calculate cost shares for each party receiving benefits

Once costs are allocated to the nonpublic benefit categories, individual cost shares must be identified for the parties receiving the nonpublic benefits. For example, costs allocated to a

water supply category would be further divided into cost shares for each agency or other party receiving water supply benefits. The cost shares could be determined using SCRB or other cost allocation procedure. In some cases, cost shares may be dictated by existing contracts or agreements among agencies. However the parties' cost shares are determined, the applicant must provide "*commitments for not less than 75 percent of the nonpublic benefit cost share of the project*" (§79747(3)).

7. Summarize project costs and cost allocation and display the request for funding of costs allocated for public benefits.

Show proposed cost and benefits shares and demonstrate that the project and the request for funding of public benefits complies with the following conditions:

- The public benefit cost share is no greater than 50 percent of the total project cost, unless the project is a conjunctive use or reservoir reoperation project (§79746 of the Act).
- Ecosystem improvement benefits are at least 50 percent of total public benefits of the project.

Step 9. Document economic benefits and other pertinent information

In addition to the numerical and tabular results presented, provide a complete discussion and documentation of claimed public benefits showing linkages to physical benefits, methods, data sources, and assumptions required to develop benefits. The discussion should include

- Recent and historical conditions that provides background for benefits to be claimed; for example, recent water shortages, loss of habitat or ecosystem function, and water quality problems.
- A clear discussion of without-project future conditions should be provided highlighting related actions and costs that are expected (and therefore might be avoided).
- The applicant should document how economic benefits were calculated to allow the reviewers to assess the accuracy and reasonableness of the analysis.
- The application should also include a discussion of any uncertainty about the future that might affect the level of benefits received.

VI. Other Required Documents

Before a project can be considered for funding, the following documents will be required

A. Draft feasibility study

A draft feasibility study must be provided, including a public and non-public benefits study, cost estimates, and a proposed cost allocation for the expected life of the project.

B. Draft EIS/R

A draft EIS/R must be provided.

C. Draft financial feasibility study

The draft financial feasibility study must document sources for the non-public benefits cost share of construction, sources for payment of ongoing operations, maintenance, repair and replacement costs, planned repayment over time of money borrowed to finance non-public benefits, and commitments for not less than 75 percent of the non-public cost share.

D. Operations and management plan

The operations and management plan should show how public benefits will be provided and responsibilities for implementation and monitoring

E. Other proof of compliance

Other proof of compliance will include:

- A showing of cost-effectiveness based on Section VI.
- A showing that the project will provide net improvement to water quality and ecosystem conditions in the Delta.
- A showing that the project will provide measurable improvements to the Delta ecosystem or to the tributaries to the Delta.

VII. Grant administration details, including contract, or agreement procedures**VIII. Appropriate appendices, including****A. Full DFG and Board documents regarding priorities and relative environmental values****B. A listing of useful websites to provide potential applicants with reference materials and guidance**

Initial Statement of Reasons for Proposed Rulemaking: Quantification and Management of Public Benefits (WORKING DRAFT)

**Prepared for
California Water Commission**

**by
Department of Water Resources
in consultation with
Department of Fish and Game
and
State Water Resources Control Board**

July, 2012

Introduction

Chapter 8 of the Safe, Clean, and Reliable Drinking Water Supply Act of 2012 provides a portion of the proceeds from the sale of General Obligation bonds to fund costs associated with public benefits of eligible water storage projects. Under the authority included under California Water Code §79744, the California Water Commission (Commission), in consultation with the Department of Water Resources (DWR), the Department of Fish and Game (DFG), and the State Water Resources Control Board (State Water Board) is required to

develop and adopt, by regulation, methods for quantification and management of public benefits described in Section 79743 by December 15, 2012. The regulations shall include the priorities and relative environmental value of ecosystem benefits as provided by the Department of Fish and Game and the priorities and relative environmental value of water quality benefits as provided by the State Water Resources Control Board.

§79741 of the California Water Code defines projects for which public benefits are eligible for funding:

(a) Surface storage projects identified in the CALFED Bay-Delta Program Record of Decision, dated August 28, 2000, except for projects prohibited by Chapter 1.4 (commencing with Section 5093.50) of Division 5 of the Public Resources Code.

(b) Groundwater storage projects and groundwater contamination prevention or remediation projects that provide water storage benefits.

(c) Conjunctive use and reservoir reoperation projects.

(d) Local and regional surface storage projects that improve the operation of water systems in the state and provide public benefits.

The exception under part (a) above is for streams listed under the California Wild and Scenic Rivers Act.

For further reference, §79743 of the California Water Code defines the public benefits for which public funds may be expended:

- 1. Ecosystem improvements, including changing the timing of water diversions, improvement in flow conditions, temperature, or other benefits that contribute to restoration of aquatic ecosystems and native fish and wildlife, including those ecosystems and fish and wildlife in the Delta.*

2. *Water quality improvements in the Delta, or in other river systems, that provide significant public trust resources, or that clean up and restore groundwater resources.*
3. *Flood control benefits, including, but not limited to, increases in flood reservation space in existing reservoirs by exchange for existing or increased water storage capacity in response to the effects of changing hydrology and decreasing snow pack on California's water and flood management system.*
4. *Emergency response, including, but not limited to, securing emergency water supplies and flows for dilution and salinity repulsion following a natural disaster or act of terrorism.*
5. *Recreational purposes, including, but not limited to, those recreational pursuits generally associated with the outdoors.*

The proposed regulation (regulation) implements this legislative direction. This Initial Statement of Reasons (ISOR) describes the components of the regulation, summarizes other approaches considered, and explains why the regulation's proposed language is considered to be the best way to implement the legislative direction. The proposed regulation is part of a package of information that works together to direct and advise applicants for public funding. The other components in the package are:

- Guidelines, which provide more background information on general procedures for quantification of public benefits, including optional quantification methods that applicants can use. The Guidelines are intended to form part of the solicitation package for grant applications.
- "Description and Screening of Potential Tools and Methods to Quantify Public Benefits of Water Storage Projects" is a longer description of the principles underlying the economic quantification of public benefits. It provides additional information on specific studies, methods, and data that could be used to quantify benefits.

Summary of Proposed Regulation

The regulation provides the following information for applicants that request public funds to pay for public benefits of eligible water storage projects, as authorized in Chapter 8 of the Act:

- Information that must be submitted with the application
- The process that the Commission and consulting agencies will use to review and evaluate applications
- The composition and role of the Project Evaluation Panel

- The Commission's process for making findings and funding recommendations to the legislature
- Protocols and information required for applicants to quantify public benefits
- Ecosystem priorities as provided by DFG
- Water quality priorities as provided by the State Water Board
- Criteria that DFG and the State Water Board will use to determine relative environmental value of benefits provided
- Plans for providing information that the State will use to monitor, verify, and manage the public benefits of a funded project.

General Approach to the Regulation

Information Requirements

This section defines the information that applicants for funding will be required to submit for consideration by the Commission. It includes a list of the items and analyses that must be submitted in order to satisfy the requirements of the Act. Some items are explicitly required by the Act and others are considered necessary by Commission staff to provide sufficient information to support the requirements of the Act.

The section also directs the Commission to publish a proposal solicitation package prior to the submission of applications. The regulation does not, and as a practical matter, cannot include all details of such a solicitation package, such as submission deadlines, review and award schedules, and formatting.

The list of information to be submitted is as follows, with an explanation of why it is included:

1. Description and quantification of public benefits. This is one of the fundamental requirements of §79744 and is detailed elsewhere in the regulation.
2. Draft environmental documentation. This is required by §79747(a)(1). Note that the environmental documentation must be complete prior to the final findings and disbursement of funds, per §79745(a)(5)(C), except that applicants may request funds for completion of environmental documentation (§79745(c)).
3. Feasibility study. This is required by §79747(a)(1). Note that the Act does not define a feasibility study nor specify what must be included. The regulation lists elements that Commission staff believes must be included in the feasibility study so that it provides the information required to demonstrate the merits of the project and qualify for public funding. These included elements are explained further in the next sub-section of this ISOR.

4. A list of required studies, permits, approvals, and agreements (including contract modifications). §79745(a)(5)(C) requires that “all other federal, state, and local approvals, certifications, and agreements required to be completed have been obtained” prior to final allocation of funds. Providing a list of these as part of the application will allow the Commission to assess whether the proposed project is addressing all legal and regulatory requirements. Also, some applicants may request funds for completion of permits under §79745(c).
5. Commitments for not less than 75% of the nonpublic benefits’ cost share. This is required by §79747(a)(3). The regulation states that “commitments” must be in the form of votes by the governing Boards of parties to receive non-public benefits and letters of commitment submitted verifying such a vote. Resolutions approved by governing Boards are likely to vary in content, in part due to by-laws, precedents, or other rules governing such resolutions at the local level. Staff considered more specific language that must be included in commitment letters, but chose to leave the specific language up to the parties so that it not conflict with the local rules. The Commission can weigh the content and degree of commitment contained in the letters when it makes its recommendations on funding.
6. Description of how the public benefits address the priorities and relative environmental values. The Act directs DFG and the State Water Board to provide priorities and relative environmental values of ecosystem and water quality benefits, and directs that these must be incorporated into the regulation (§79744). Commission staff concludes that there would no reason to include such a directive except for purposes of assessing how a proposed project’s public benefits would address the priorities and relative environmental values. Therefore, applicants for funding would prepare and submit the description.
7. Draft operations, monitoring, verification, and management plan. This information is not explicitly required in the Act’s language, but is considered necessary by Commission staff to support the methods for management of public benefits directed by §79744.

Feasibility Study Elements

§79747(a)(1) requires completed feasibility studies for the proposed water storage project. DWR is the state agency responsible for the planning and operations of state water storage and conveyance facilities. DWR has not adopted regulations or guidelines that define in detail what must be included in feasibility studies of water storage projects. Nevertheless, its standards for what should be included in feasibility studies can be observed from existing documents. For example, it prepared the Draft Summary Report, In-Delta Storage Program Feasibility Study, DWR, 2004. Within its regulation for Loan Programs Under the Water Conservation and Water Quality Bond Law of 1986 (§450.3) DWR has defined feasibility studies as “studies conducted and reports prepared to determine the engineering, hydrogeologic, environmental, economic and financial feasibility of a proposed water conservation, ground water recharge, water supply

project, dam or reservoir”. DWR has also developed guidance for analysis by its staff economists (DWR, 2008) which states:

Because of its considerable water management partnerships with the federal government, [DWR] has a policy that all economic analysis conducted for its internal use on programs and projects be fundamentally consistent with the federal Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies.

DWR appears to follow a planning process similar to federal standards for evaluating the feasibility of water storage projects. The Bureau of Reclamation and the U.S. Army Corps of Engineers (COE) have established detailed criteria on methods and content of feasibility studies. For example, according to the Directive and Standard on Feasibility Studies, (Reclamation, CMP 05-02, 2000):

Feasibility studies include ... data collection and analyses to develop and consider a full and reasonable range of alternatives. Feasibility studies will be conducted consistent with the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&G).

The feasibility study process will include such items as: identification of present and future conditions, identification of problems and needs, evaluation of resource capabilities, formulation of alternative plans, analysis and comparison of alternatives, and plan selection.

Reclamation is currently developing an update to this Directive and Standard that provides greater detail on the content of feasibility studies (Draft Reclamation Manual Directive and Standard, Water and Related Resources Feasibility Studies, CMP 09-02, September 16, 2011). The P&G provide further direction on required elements of a feasibility study, describing them in the context of the general planning process:

(1) Specification of the water and related land resources problems and opportunities (relevant to the planning setting) associated with the Federal objective and specific State and local concerns.

(2) Inventory, forecast, and analysis of water and related land resource conditions within the planning area relevant to the identified problems and opportunities.

(3) Formulation of alternative plans. [Each alternative plan is to be formulated in consideration of four criteria: completeness, effectiveness, efficiency, and acceptability.]

(4) Evaluation of the effects of the alternative plans.

(5) Comparison of alternative plans.

(6) Selection of a recommended plan based upon the comparison of alternative plans.

Federal regulations, guidelines, and standards are only included here to illustrate the range and complexity of information and analyses that could be included in a feasibility study.

Commission staff has drawn from the federal guidelines on feasibility studies for water-related projects to develop a set of informational components needed for feasibility studies directed by §79747(a)(1). Staff has limited the components itemized in §zz.3.a.3 to those it views as necessary for the applicant to quantify and justify benefits and for the Commission to understand the project, its benefits, and the relationship of benefits to cost shares.

The Bureau of Reclamation (Reclamation) is currently conducting feasibility investigations on projects that may request funding under Chapter 8 of the Act. Commission staff expects and intends that feasibility studies prepared according to federal standards used by Reclamation or the COE will satisfy the informational requirements in the regulation, with minor adjustments as needed to calculate and display benefits and costs from the state's perspective rather than the federal perspective.

Process for Reviewing and Evaluating Applications

The complexity, range of approaches, and project-specific nature of benefits quantification argues against a prescription of quantification methods. Rather, the regulation provides a set of minimum standards and protocols (see Quantification Methods below) that all applicants must follow, and refers applicants to associated guidelines for advice on potential quantification methods. As a result, the Commission will require expert assistance in evaluating benefits quantification methods used and results claimed by applicants.

A review panel consisting of agency, academic, and private experts is described. Its role is similar to that used in many other grant and loan solicitation and review processes. Examples include the Technical Advisory Panel established for review of local groundwater assistance grants (Water Code §10795); the Project Evaluation Team established in CCR §497.3 for the Flood Protection Corridor Program; and the review process that DWR uses to evaluate applications for Integrated Regional Water Management grant applications (DWR, 2010)

The review panel disclosure requirements are modeled after those established for the Technical Advisory Panel for local groundwater grants in Water Code §10795.16. Membership expertise within the panel is not specified except to state that DFG and the State Board must be represented and that the panel shall include expertise needed to evaluate the information and analysis of particular benefits claimed.

Funding will likely be needed to reimburse panel members for their time and expenses. §79705-06 of the Act allows for administrative costs of an application review process, so no direction is needed in the regulation.

The actions by the Commission are summarized to show the overall decision steps and to link those steps to direction in the Act. Ranking of proposed projects based on expected return for public investment is from §79740(c). A number of findings or determinations by the Commission are required by the Act (e.g., §79745 and §79747(2)). The steps in §zz.4(b) direct the Commission to provide its draft recommendations and findings for public review and to hold a public hearing before finalizing and submitting to the legislature.

Quantification Methods

Quantification of public benefits is a complex task, requiring technical expertise and judgment. The range of potential projects, conditions, and available information means that the best way to quantify benefits can rarely be identified in advance. A range of quantification methods could be used for each one of the five public benefit categories.

Several sections of the Act are most logically interpreted to require monetary quantification. For example, §79746(b) of the Act requires that the magnitude of quantified benefits be compared on a percentage basis across benefit categories. A common unit of comparison is required for this, and conversion to monetary value is the standard way to do it in feasibility studies, benefit-cost analyses, and cost allocations. The Panel and the Commission may also use other methods to make direct comparisons. If monetary valuation is not possible, a justification is required.

Commission staff believes that the best way to embody a complex task like this within regulatory requirements is to: 1) define a set of standards and protocols that applicants must follow to quantify benefits; 2) develop separate documents that provide guidance and options for quantification; and 3) establish an expert panel that will review the applications and provide recommendations to the Commission.

The eight items in section §zz.5 are the required standards and protocols that applicants must follow to quantify benefits. Commission staff has drawn from the federal guidelines on feasibility studies for water-related projects, but has limited the items to those it views as necessary for the applicant to quantify and justify the benefits and for the Commission to understand the project, its benefits, and the relationship of benefits to cost shares. The following list corresponds to the eight items in section §zz.5, and provides rationale for their inclusion.

1. Project life defines the relevant period over which project benefits must be quantified, and the without-project condition is the baseline against which benefits are measured.
2. Applicants must quantify the physical benefits provided by the project. Staff believes this is fundamental to meet the requirements of the Act and therefore to justify the allocation of public funds. Benefits that occur sooner and endure longer are considered to have greater environmental value (see the relative environmental values in section §zz.6.c).

The time pattern of benefits is also required to discount monetary benefits and costs to a common point in time to make a comparison between benefit shares and cost shares.

3. One of the most straightforward and defensible ways to establish benefits of an action is to identify costs that are avoided because of the action. . Staff believes that this step should always be attempted, although there may not be identifiable avoided costs in many cases.
4. This step directs applicants to describe and estimate costs of alternative methods for obtaining the same package of public benefits claimed. The benefits of a proposed project may be large or small, but the benefits claimed should not exceed the cost of achieving the same benefits in some other way. Note that feasible alternatives may not exist for the package of benefits claimed – this step directs that applicants identify any that do exist.
5. Applicants must provide a monetary value of each benefit, if possible. This step summarizes the general approaches for estimating monetary benefits, but recognizes that other approaches may be used.
6. Discounting is a universally accepted method within feasibility studies and all other economic and financial analyses to convert and compare benefits that occur at different points in time.
7. All public benefits, nonpublic benefits, and costs must be discounted consistently in order to compare monetary values and to demonstrate that the Act’s required ratios and cost share conditions are satisfied.
8. Numbers provided out of context are not sufficient for the Panel and the Commission to evaluate benefits. Documentation that is sufficient to justify the numbers must be provided.

The Commission staff considered two other approaches to address the quantification methods in the regulation:

- Specify one standard, required quantification method for each benefit category, and include detailed calculations and data requirements for the required methods. This approach was considered to be overly prescriptive. The best quantification method will depend on project and circumstance, so prescription is unlikely to provide the best assessment of return on state investment. Further, a single prescribed method is unlikely to be consistent with benefits quantification in a proposed project’s feasibility study and benefit-cost analysis conducted under federal standards. Federal standards, which are described in the P&G (U.S. Water Resources Council, 1983) allow for a range of methods.
- Include a range of acceptable quantification methods for each of the benefit categories. Incorporate detailed explanations, calculations, and data requirements for all of the acceptable methods. This approach could be confusing and unclear to applicants. It would

require incorporating lengthy and technical information into the regulation, but more important, the regulation could not provide direction on the best method to use without information about the proposed project.

For these reasons, the two other approaches were rejected in favor of the proposed approach.

Priorities and Environmental Value

Both DFG and the State Water Board provided draft documents describing their priorities. Both agencies weighed the desire to provide clear and specific information about priorities to applicants and the Commission against the uncertainty of not knowing what might be most important for a currently unknown project, location, and future condition. In other words, both agencies concluded that priorities and relative environmental value cannot be fully specified in advance and with no knowledge of the proposed project.

Each agency provided a list of general priorities that are both consistent with its broad responsibilities and could potentially be addressed by a water storage project eligible for funding under the Act. During the review of a proposed project, each agency would provide an assessment of the specific priorities addressed by the proposal. Each agency also agreed on a set of general principles that it will use to assess the relative environmental value of a proposed project once it knows the specifics of such project. The lists of general priorities and the principles to be used to assess the relative environmental value of specific proposed projects are incorporated in §zz.6 of the regulation. The assessment of a proposal's contribution to the agency's priorities and its relative environmental value would be made by the agencies during the review of proposals and would be provided to the Commission for its consideration.

Methods for Management of Public Benefits

Management of public benefits is a broad term and requires some additional definition in order to develop and describe appropriate methods to incorporate into the regulation. Commission staff considered the following aspects of management:

- Management activities. What are the actual management tasks that must be accomplished and on what schedule?
- Responsibility for management. Who is responsible for developing information, assessing information and outcomes, and taking actions to manage the public benefits?
- Information and reporting to support management. What information must the applicant commit to provide to support monitoring of conditions and verification that benefits are being provided? What information would State agencies be responsible for providing?

Existing management of public resources involves a complex set of tasks, with responsibility spread across many public and private entities. Management of public benefits provided by a new storage project would need to be integrated into that existing framework. As a result, a regulation that would prescriptively and comprehensively define management activities and responsibilities would risk inconsistency with existing federal, state, and local authority.

Commission staff does not believe that management activities and responsibilities narrowly related to the public benefits provided by a proposed project could be isolated from the general management of the affected resources. However, information gathering and reporting is a critical management activity that could be targeted to the benefits provided by a proposed project and that could be integrated into the existing authorities and permitting processes. Therefore, the regulation defines the plans for operations, monitoring, and reporting that must be submitted as part of the application.

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