DELTA FLOOD RISK MANAGEMENT ASSESSMENT DISTRICT FEASIBILITY STUDY AND DELTA LEVEE FINANCING OPTIONS

A Consultant Report

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Delta Protection Commission
State of California

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DRAFT – December 29, 2017

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ACRONYMS AND ABBREVIATIONS

AB Assembly Bill

AJE alternative justifiable expenditure

BBA benefits-based allocation

BDCP Bay-Delta Conservation Plan

BiOps Biological Opinions

Cal OES California Office of Emergency Services

Caltrans California Department of Transportation

CCED California Conservation Easement Database

CDFW California Department of Fish and Wildlife

CESA California Endangered Species Act

CFA Mello-Roos Community Facilities Act of 1982

CFD community facility district

CM conservation measure

Commission Delta Protection Commission

CSFMRA California Chapter of the American Society of Farm Managers and Rural Appraisers

CVFPB Central Valley Flood Protection Board

CVFPP Central Valley Flood Protection Plan

CVP Central Valley Project

CVPIA Central Valley Project Improvement Act

Delta Sacramento-San Joaquin River Delta

Delta Conservancy Sacramento-San Joaquin Delta Conservancy

Delta ER Program Delta Flood Emergency Preparedness, Response, and Recovery Program

DLIS Delta Stewardship Council's Delta Levee Investment Strategy

DRMS California Department of Water Resources' Delta Risk Management Study

DSC Delta Stewardship Council

DWR California Department of Water Resources

EBMUD East Bay Municipal Utility District

EIP Early Implementation Program

EPMC equal percentage marginal costs

ERP Ecosystem Restoration Program

FEMA Federal Emergency Management Agency

FESA Federal Endangered Species Act

FESSRO FloodSAFE Environmental Stewardship and Statewide Resources Office

FSRP Flood System Repair Project

GHAD Geologic Hazard Abatement District

GIS geographic information system

GRR General Re-Evaluation Report

HMP Hazard Mitigation Plan

I Interstate

LMA Local Maintaining Agency

MHHW mean higher high water

MW megawatts

NFIP National Flood Insurance Program

PG&E Pacific Gas and Electric Company

PL Public Law (Federal)

PUOF proportionate use of facilities

RD Reclamation District

SCFRRP Small Community Flood Risk Reduction Program

SCO State Controller's Office

SCRB separable-cost, remaining benefits

Special Projects Program Delta Special Flood Control Projects Program

SPFC State Plan of Flood Control

SSIA State System-wide Investment Approach

Subventions Program Delta Levees Maintenance Subventions Program

SWP State Water Project

SWRCB State Water Resources Control Board

UFRRP Urban Flood Risk Reduction Program

USACE United States Army Corps of Engineers

USBR United States Bureau of Reclamation

VSL Value of a Statistical Life

EXECUTIVE SUMMARY

The purpose of the Delta Flood Risk Management Assessment District Feasibility Study and Delta Levee Financing Options Study was to address the Delta Stewardship Council's Delta Plan Recommendation RR R2 in Chapter 7 which provides:

"The Legislature should create a Delta Flood Risk Management Assessment District with fee assessment authority (including over State infrastructure) to provide adequate flood control protection and emergency response for the regional benefit of all beneficiaries, including landowners, infrastructure owners, and other entities that benefit from the maintenance and improvement of Delta levees, such as water users who rely on the levees to protect water quality."

The team of Delta Protection Commission staff and consultant determined that such an assessment district is likely infeasible, and more importantly, inadequate for covering all beneficiaries from Delta levees.[1]

Given the broad range of Delta flood risk management beneficiaries, the analysis moved toward identifying the most feasible finance mechanisms that could be deployed to generate revenues to supplement the funding raised by assessments of the local maintaining agencies and the funding provided by the State through appropriation of general fund and general obligation bond revenues by the Legislature.[2] Feasibility is considered here by looking at the overall potential for a mechanism to collect revenue from beneficiaries who are not now directly contributing funding for Delta levees, and working within the current legal constraints.[3]

The desired objective is to provide an ongoing, reliable and sufficient amount of funding to pay for maintenance, repair, rehabilitation and improvements (levee projects) and emergency response for Delta levees. Implementing one or more new funding mechanisms could help to assure that levee beneficiaries pay for the share of flood protection costs that matches their received benefits. The "beneficiary-pays" principle is predicated on the concept that no Delta levee beneficiary will contribute more than the total benefit received. In other words, in-Delta parties should not be required to bear the financial burden of public and out-of-region interests who receive multi-benefits provided by Delta levees and drainage. And alternatively,

[1] For the purpose of this feasibility study, we do not distinguish between benefit of levee maintenance and levee improvements.

[2] This report does not look at whether State financing from the General Fund should come from continuing taxes or from bonds – those choices are about cash management, not financing, because they are both paid from state tax sources. It is mainly the timing of those payments and extra costs of long-term debt repayment of bonds that differs.

[3] This feasibility report is based on a "fatal flaw" analysis—after eliminating those potential mechanisms that are infeasible, we are left with those that might work best in various situations to capture net revenues from Delta levee beneficiaries. The authors recognize that given the complex political environment, there can be no simple "yes or no" answers to the question of whether any particular mechanism is feasible. Feasibility is considered here by looking at the overall potential for a mechanism to collect revenue from beneficiaries, and working within the current constitutional framework.

the public and out-of-region interests should bear only those costs justified by the benefits provided.

The Study considered several potential new revenue collection mechanisms. After evaluating and screening each mechanism based on criteria developed by the consultant team, the analysis examined new fees to collect from specific categories of beneficiaries who have likely not paid directly or proportionately to the benefits delivered from flood management measures in the Delta: Delta Flood Protection Fee on infrastructure facilities and a Delta Water User and Conveyance Fee on water diverted from, conveyed through, or discharged into Delta channels.

We emphasize that this analysis is not intended as a recommendation to replace the current funding programs or cost shares under the Delta Levees Subventions or Special Projects programs. It is also not a recommendation for implementation of any of the mechanisms. Rather, this study describes the results of a "beneficiary-pays"-based analysis that screened various revenue collection mechanisms for general feasibility. These mechanisms could be considered among the menu of existing and potential funding sources to balance levee financing in the Delta. This study concludes by describing one path forward to explore these options further.

The Study reviewed the current approach to paying for Delta levee projects that recovers associated costs from local landowners and the State. The existing approach relies primarily on:

- Reclamation districts that collect property assessment revenues from landowners within the district boundaries based on their proportionate share of providing drainage and levee operation, maintenance and improvement benefits; and
- State budget appropriation of General Fund and General Obligation Bond revenues to partially cover the State's interests and broad public benefits from operation, maintenance and improvement of levees.

Key Findings

1. This report contains an initial feasibility study that narrows the menu of feasible financing mechanisms. Still, the conceptual financing mechanisms analyzed in this Study each have technical and legal issues that affect the ability to collect revenues from beneficiaries as anticipated.
2. The new financing mechanisms analyzed in this Study are still conceptual and require stakeholder endorsement and support before considering implementation. Gaining stakeholder support would require further development in order to provide details regarding who will pay, fee amounts, overlap with other fees and assessments, and what flood protection activities would be funded.
3. The Delta is the hub for water supply, energy, and transportation infrastructure of statewide importance that is protected from flood damage and disruption by a network of Delta levees that operate as a system.

4. A full list of benefits and beneficiaries of flood protection and ancillary activities includes many entities and individuals who reside outside of the Delta. In some cases, the benefits of those outside of the Delta exceed the benefits to in-Delta parties.
5. Although the original purpose for levees was flood protection, that has since expanded to serve other purposes; this expansion of purpose does not absolve the new beneficiaries from contributing to the continuing maintenance and additional investment in existing levees.
6. Local assessment districts, such as reclamation districts, rely on property-based assessments, which cannot reach the beneficiaries that do not own property within the district. Such local assessments are subject to Proposition 218 and associated case law.
7. Although a Delta-wide assessment district as proposed in the Delta Plan (RR R2) and the 2017 CVFPP Update might improve governance issues, this Study documents that it will not advance the beneficiary-pays approach, nor generate additional revenue over that which is currently collected by the existing reclamation districts for the following reasons:
    - It cannot collect revenues from all beneficiaries of levee flood protection because many of them do not own assessable property in the Delta;
    - Reclamation districts are already assessing benefitted property for levee and drainage services and a Delta-wide district is unlikely to create truly additive value to the funding already flowing through those districts; and
    - Establishing a well-functioning governance structure across the multitude of special districts and general government agencies in the region and then allocating collected funds across the implementing agencies would be politically difficult.
8. Reclamation district assessments can continue to be the primary means of collecting revenues from local property owners for levee and drainage services.
9. Significant public benefits accrue from maintaining and improving Delta levees including “the protection of public highways and roads, utility lines and conduits, and other public facilities, and the protection of urbanized areas, water quality, recreation, navigation, and fish and wildlife habitats, and other public benefits. ” (Water Code §12311). Maintaining and enhancing the Delta as a place, sustaining the Delta and regional economy, and protecting and enhancing the unique cultural, recreational, natural resources, and agricultural values of the Delta are also significant statewide benefits.
10. State general fund and general obligation bond funds are the sources for paying the cost share associated with public benefits and State’s interests, and continued provision is consistent with the beneficiaries-pay principle so long as it is proportional to the public benefits accrued.
11. In those parts of the Delta where islands form the water conveyance corridor for the State Water Project (SWP) and Central Valley Project (CVP), prevent evaporation water loss, or provide a salinity barrier to protect export water supply, the water exporters derive significant benefits from the levees originally constructed for flood protection.

They derive significant benefits from levee stability due to drainage and protection of habitat. However, the SWP/CVP exporters do not currently pay directly to maintain those levees, and whether their indirect contributions through public funding are proportional to the benefits accrued cannot be readily determined at this time.

12. Linear infrastructure owners (e.g., pipelines, railroads, and electrical transmission lines) that benefit from levees are generally assessed on reclamation district rolls. However, those assessments do not cover the additional network benefits that accrue from maintaining the integrity of that infrastructure. Further, federal facilities are exempted under federal law from paying State or local assessments, fees, or taxes.
13. Recent suspension of the State Responsibility Area (SRA) fire prevention fee through 2030 by the Legislature raises additional concerns regarding the legal and political feasibility of proposing any new revenue collection mechanisms that are modeled after the SRA fee.
14. The CVFPB and DWR will be initiating a stakeholder engagement process to evaluate potential new financing mechanisms to provide additional funding for levee projects and other flood protection measures, including those identified in the 2017 update of the CVFPP.

A Potential Path Forward

Implementation is not recommended at this time. Instead, as part of the financing sources currently being considered by DWR and the Central Valley Flood Protection Board, these mechanisms could be considered for further evaluation in the stakeholder process established to develop levee financing mechanisms pursuant to recommendations in the 2017 update of the *Central Valley Flood Protection Plan*.[4] This study should be only used to frame future analyses and deliberations, and not for implementing any mechanisms deemed potentially feasible here. This report can provide documentation of further considerations for each mechanism and eliminating unnecessary work on infeasible proposals. Regardless, adopting any of the new mechanisms will require agreement among key stakeholders that the resulting portfolio of mechanisms will be preferred to the current system.

[4] CVFPB, "2017 Central Valley Flood Protection Plan Update: Public Draft," http://www.water.ca.gov/cvfmp/2017-cvfpp-docs-public-draft.cfm

CHAPTER 1 INTRODUCTION

Since the early 20th century, the Delta levee system has provided flood control protection that allows productive agricultural and urban uses of land, channels water for statewide municipal and agricultural use, protects critical infrastructure (energy, transportation, water), and creates a desirable setting for boating and water-based recreation. These interconnected levees operate as a single multi-function flood control system. A further-improved levee system will make a significant contribution to achieving the coequal goals adopted in the 2009 Delta Reform Act.[5]

Delta levees benefit a full range of users ("beneficiaries") other than Delta property owners.[6] In addition to protecting property from flooding, Delta levees form the backbone of the regional road system, ensure the continued existence of Delta towns and communities, and protect habitat for wildlife, including threatened and endangered species. They form a network of channels that entice boaters to explore the inner reaches of the Delta and support a long-standing tradition of hunting and fishing. And they carry fresh water to the pumps that supply water to the farmers of the San Joaquin Valley and to residents of the Bay Area and southern California. They also bear stress from these users, including damage from ship and boat wake, and increased flood flows from upstream communities, water level drawdown from export pumping, scour and sedimentation, and storm water runoff.

However, the maintenance of this network of levees has largely been paid for by local land owners and state funds. This funding arrangement does not align well with the benefits conferred by Delta levees because some significant beneficiaries do not contribute (other than to the extent that sales, property, personal or corporate income taxes support California's General Fund). Nor has funding been adequate or consistently available to enable long-term planning for levee maintenance and improvements. Not surprisingly, there has been a long-standing interest in adopting a "beneficiaries pay" basis for Delta levee maintenance and improvements. This Delta Flood Risk Management Assessment District Feasibility Study (DFRMADFS, or the Study) is a first step in evaluating how such a financial arrangement might work.

The State relies on reclamation districts to implement levee maintenance and improvement, but provides funding in recognition of its long-term interests and obligations, which started when the State applied for and accepted title to two million acres of marshland under the federal Swamp and Overflowed Land Act under the condition that the lands would be reclaimed for agricultural production and other economic development.

Origins of This Study

The study originated in the long-standing policy discussion about how to pay for Delta levees. The CALFED Record of Decision (August 2000) called for a benefits-based cost allocation for CALFED

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[5] DPC Economic Sustainability Study, Executive Summary, January 2012.

[6] "Delta" in this report means the Legal Delta, unless designated otherwise, as specified in Section 12220 of the Water Code.

programs, as reflected in the CALFED Bay-Delta Finance Plan (2005).[7] The Department of Water Resources (DWR) has expressed its interest in a beneficiary-pays system for Delta levee improvement and maintenance by funding this Study. In addition, the Delta Stewardship Council's Delta Plan (2013)[8] and Governor Brown's *California Water Action Plan* (2014),[9] call for a "…flood risk management assessment district … to provide adequate flood control protection and emergency response for the regional benefit of all beneficiaries, including landowners, infrastructure owners, and other entities that benefit from the maintenance and improvement of Delta levees, such as water users who rely on the levees to protect water quality." Regardless, although the principle of beneficiary-pays has long been discussed as a basis for paying for water infrastructure, the State has not adopted policies or principles for funding sources as alternatives to local finances and bond funding for Delta levees.

This "Delta Flood Risk Management Assessment District Feasibility Study" (the Study) took a broad look at all the beneficiaries of Delta levees. It then identified feasible financing mechanisms that could implement a beneficiary-pays approach to flood protection and emergency preparedness in the Sacramento-San Joaquin River Delta (Delta).

Levee improvements create intangible benefits that are not subject to assessment and which accrue to entities that lie outside the boundaries of the reclamation districts. These include the reliable conveyance of fresh water to state and federal water contractors. The State of California benefits from Delta levees by avoiding economic losses caused by floods and disruptions of the water supply. The State relies on Delta levees to support the continued existence of threatened and endangered species, to protect the scenic Delta landscape, and to benefit residents that recreate on Delta roads and waterways. The Legislature defined the discrete and identifiable public benefits protected by Delta levees in the statutes governing the Delta Special Project levee funding program: urbanized areas, water quality, recreation, navigation, fish and wildlife habitats, public highways and roads, utility lines and conduits, and other public facilities (Water Code §12311). These public benefits justify continued State expenditures to maintain and improve Delta levees. However, Delta levees create private benefits that accrue to individuals who do not now pay directly for levee maintenance and improvements.

When the study began, it quickly became evident that assessment districts, while an important mechanism in paying for levees, could not reach many of the significant Delta levee beneficiaries—both public and private—to achieve the goal of beneficiary-pays. Consequently,

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[7] California Bay-Delta Authority, "Draft Finance Options Report," Sacramento, California, May 2004.

[8] Delta Plan Chapter 7, Recommendation RR R2. See also Appendix N, "Funding and Financing Options," http://deltacouncil.ca.gov/sites/default/files/documents/files/AppN_Funding%20and%20Finance_2013.pdf.

[9] See CNRA, CalEPA and CDFA, "California Water Action Plan 2016 Update," Sacramento, CA, http://resources.ca.gov/california_water_action_plan/, 2016.

the study examined many other potential financing mechanisms, including special taxes, user fees, and regulatory fees.

Current Levee Funding

Delta levees depend on a mix of funding. For project levees (which are federal authorized projects within the State Plan of Flood Control (SPFC), for which the State is the local sponsor), some funding comes from the United States Army Corps of Engineers (USACE), with state cost-sharing requirements. However, the USACE recently found that structural flood risk management projects throughout much of the Delta were not economically justified.[10] This, combined with increasing federal restrictions in a post-Hurricane Katrina environment, creates uncertainty about future federal funding for levee improvements.[11] State funding for project and non-project levees comes primarily from general obligation bonds (currently Propositions 1 and 1E), but these have a limited life span. DWR estimates that sufficient funds exist for approximately seven years' worth of Subventions and Special Projects funding, though possibly at less than current levels.[12] Local maintaining agencies, such as reclamation districts (RDs), assess local property owners for the costs of maintaining and improving levees.

Under current levee funding programs, law and regulation set the share of levee project costs borne by state, federal, and local entities. These formulas implicitly value the public benefits—including protection of life and property, habitat, indirect economic impacts, and water supply—at between 50 and 100 percent of total costs for those projects where the state or federal governments participate. Consequently, general tax revenues pay for the state shares (and federal shares where applicable) on some levees. The local maintaining agencies (LMAs) typically pay for the remaining costs through assessments on property owners. Proposition 218 and associated case law require property assessments to be based on the special benefits derived from a project and to be proportional to the benefits received.

Concurrent Planning Efforts

This Study coincides with two other related planning efforts.

Delta Levee Investment Strategy (DLIS): Over the last two years, the Delta Stewardship Council has developed a planning tool to identify the priorities for state investments in Delta levees. Grouped in three tiers, the priority tracts and islands represent the Council's determination of those levees that pose the greatest risk to state interests – people, property, water supply, ecosystem protection, and the Delta-as-an-evolving place. In 2013, the Council adopted the Delta

[10] U.S. Army Corps of Engineers, *Delta Islands and Levees Feasibility Study*, April 2014.

[11] Note that recent changes in USACE policy, discussed below, now make it much more difficult for projects levees in the Delta to qualify for federal funding.

[12] Personal communication, David Mraz, DWR, September 8, 2016.

Plan which included RR R2 recommending the creation of a Delta flood risk management assessment district "with the authority to charge all beneficiaries."[13]

This Study as originally envisioned was intended to run concurrently with the DSC's DLIS study. To keep the two projects consistent, the DLIS study was to provide Delta levee data for this Study, and this Study would provide guidance on cost allocation and available means of financing the DLIS' proposed investments. The DLIS study encountered issues that delayed release of products critical to this Study, and ultimately altered the approach of the DLIS. For this reason, we did not receive project cost estimates and a complete set of benefits values. Instead this Study relied on older cost estimates from the DRMS study, with some specific supplements, and reasonable approximations of benefit values.

Central Valley Flood Protection Plan (CVFPP) Update 2017: The 2012 Central Valley Flood Protection Plan (CVFPP) proposed an investment approach for flood management in the areas protected by the State Plan of Flood Control (SFPC), which includes project levees in the Delta. The CVFPP called for identifying potential beneficiaries of flood risk management projects, and for equitably distributing project costs among beneficiaries, within the constraints of state and federal cost sharing rules.[14] The 2017 update focuses on identifying the fiscal resources needed to fund SPFC levee construction and maintenance projects and development of financing mechanisms to provide the additional funding evaluated in technical memoranda.[15] The plan includes a finance plan that outlines options for funding the estimated $14 to $17 billion of investments in system maintenance and improvements needed, including two new property assessment proposals (Sacramento-San Joaquin Drainage District and River Basin) and establishment of a State Flood Insurance Program.

[13] Available at http://deltacouncil.ca.gov/docs/delta-flood-management-investment-strategy-principles

[14] 2012 CVFPP, Public Draft, December 2011, page 4-37.

[15] 2017 CVFPP, http://www.water.ca.gov/cvfmp/2017-cvfpp-docs.cfm, August 2017.

CHAPTER 2 OVERVIEW OF ANALYTICAL APPROACH

This Study evaluated the feasibility of new financing mechanisms, including an assessment district, to pay for Delta levees based on the "beneficiary-pays" principle, which means that levee beneficiaries should pay for the share of flood protection costs that reflects their received benefits.

According to the beneficiary-pays principle, beneficiaries should bear responsibility for project costs in some proportionate manner to the benefit they receive from the project. This Study defines beneficiaries as people or organizations who own, use, or control assets for specific purposes (i.e., activities) that benefit from flood control measures in the Delta. For example, growers on Delta islands benefit from the levees that protect farming activities from flooding. Some purposes consist of individual or private transactions from which economic value can be readily estimated (e.g., sale of agricultural products from protected lands); others create broad public benefits for which a price is not easily determined (e.g., protection of ecosystems or the existence of the Delta as a unique place).

Consequently, the study took the following approach to evaluating revenue collection mechanisms:

1. Identify the broad range of Delta levees beneficiaries;
2. Estimate the value of benefits received from Delta levees and assign those values to various categories of beneficiaries;
3. Assess methods for allocating beneficiaries' share of levee improvement costs; and
4. Identify financial mechanisms that could generate revenues from each category of beneficiaries.

The results include broad conclusions about the feasibility of several financial mechanisms.

This Chapter provides an overview of the methods used in this Study. More detailed descriptions may be found in the appendices to this report.[16]

Delta Levee Beneficiaries

By casting a wide net for beneficiaries, this Study maximized the number of potential beneficiary/financial mechanism combinations, which were then screened for legal, political, economic, and institutional feasibility.

The categories of beneficiaries used in this Study are as follows:

- Community Beneficiaries;

[16] Many of the appendices were presented in earlier drafts as Project Memoranda to a small group of stakeholders that advised the team by providing feedback on work products and the results of the feasibility analysis. Summaries were presented in a series of four workshops covering the building blocks and then findings of the Study. Additional appendices include technical discussions and analyses that were the supporting background and basis for those Project Memoranda.

- Agricultural Land Owners, Producers, and Water Users;
- Municipal Water Providers and End Users;
- Infrastructure Owners and End Users;
- Upstream Dischargers;
- Instream Water Diverters;
- General Public Beneficiaries (including recreation);
- State and Local Governments and Special Districts;
- State Economy; and
- Other Indirect Beneficiaries.

Allocating Costs

Flood protection, like national defense, creates benefits that cannot be easily divided among beneficiaries. Levees that protect one resident or parcel from floods also protect neighboring residents and parcels. Some levees form a fresh water conveyance corridor, or control salinity levels in Delta waters. Such broad benefits accrue to most of the beneficiaries listed above, but are difficult to apportion to beneficiaries because they are not explicitly valued, as there are no transactions to set market prices. As a result, a different mechanism must be used to allocate the total costs of flood protection to the various beneficiaries (both local and remote).

This Study evaluated several methods available for allocating costs consistent with the beneficiary-pays principle.[17] Some methods use *alternative costs* or *physical measures of use* to allocate *costs* of levee improvements, while others use measures of the *benefits* derived therefrom for allocation, and a third uses a combination of these. Selecting a cost allocation method requires considering equity, feasibility of implementation, and the legal constraints that apply to the associated finance mechanism (fees, assessments, taxes, etc.).

Where legal constraints create inconsistencies in cost allocation methods, structured stakeholder negotiation may be needed to determine how to resolve the inconsistencies, possibly through legislation. Applying a beneficiary-pays-based approach raises the important policy question of whether the State should adjust its cost share formulas to be consistent with the cost allocation and financial mechanisms that can be used at the local level. A more detailed analysis will need to be conducted and the outcome examined by stakeholders and decision makers to determine which cost allocation methods best meet these guidelines.

Screening Finance Mechanisms

The project team used a screening process to identify the most promising financial mechanisms. This entailed selecting candidate financing mechanisms that covered the range of beneficiaries and evaluating each mechanism for institutional, legal, economic, and political viability: [18]

[17] Cost allocation methods and issues are described in detail in Appendix B.

[18] The screening process is described in greater detail in Chapter 7.

Institutional Considerations: This screen identified the candidate organizations that could implement the financing mechanism, including development, legislative approval, regulatory activities, assessment, collection, and reporting.

Legal Requirements: This screen considered whether the financing mechanism could be applied under current law, and what legal restrictions or requirements must be met (such as a nexus study or voter approval requirements). If the mechanism would require new legislation, we identified the authority (State legislature, Congress, or local district) and vote requirement needed. In some cases, the legal screen eliminated a mechanism from further consideration due to conflicts with constitutional or federal requirements that would be difficult to overcome.

Economic Issues: This screening evaluated the cost responsibility and revenue limits of the most promising mechanisms that had passed the institutional and legal screening. Several candidate mechanisms, such as a recreational fee, were dropped because the amount of potential revenues would not justify the effort to implement the measure.

Stakeholder and Political Support: We considered the basic political feasibility of those mechanisms that survived the first three screens, as well as the rationale for initial support or resistance to various mechanisms. We acknowledge that stakeholders may have different perspectives on the feasibility of the mechanisms; this will need to be addressed in any future implementation efforts through a stakeholder process and in the legislative arena.

CHAPTER 3 CATEGORIES OF AVAILABLE FINANCING MECHANISMS

This Study considered all general categories of beneficiary-pays financing mechanisms as candidates. This chapter describes the available options for Delta levee financing, outlining constraints on existing state and local revenue collection mechanisms.

Propositions 13, 218, 26, and associated case law have imposed significant limitations and procedural requirements on government's ability to raise revenue. This section summarizes the state and local revenue generation mechanisms most commonly used in California to finance infrastructure and describes how these mechanisms may be employed to finance levee maintenance and/or improvements (this Study uses the term "levee work" to include both maintenance and improvements). The mechanisms are organized into the following broad categories:

- Assessments
- General and special taxes
- Impact fees
- Property-related fees and charges
- Regulatory charges
- User fees

Different constraints apply to each of these categories, depending on whether they are employed by state, regional, or local government agencies. Consequently, each type of funding varies in how it may be applied to levee maintenance and improvements.[19]

Financing Mechanisms Defined

The following definitions generally describe state and local government revenue options. Voter-enacted initiatives—Propositions 13, 218, and 26—have used these terms or phrases inconsistently, thus blurring the guidelines for how and for what purpose a particular revenue measure should be categorized. The initiatives, associated case law, and statutes sometimes provide more particular or varied definitions.[20]

"Assessments" refer to any levies or charges imposed on real property by an agency. They include, but are not limited to, special assessments, benefit assessments, maintenance assessments, and special assessment taxes.[21] Assessments are levied based on the benefits to assessed real property created by a government service or public improvement.[22]

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[19] A summary of specific legal issues and constraints is provided in Appendix C. The key considerations for each category are shown in a table format in the appendix.

[20] The impact of Propositions 13, 218, and 26, along with associated statutes and case law, is a complex area of law and legal practice, which is greatly simplified for the purposes of this chapter.

[21] California Constitution, Art. XIII D, Sec. 2.

[22] Note that there is not a requirement that benefits exceed costs; however, "ability to pay" studies, such as those usually conducted as part of levee project planning and financing, typically incorporate such a requirement.

"Impact Fees" are charges imposed as a condition of land development (e.g., building permit, rezoning or conditional use permit or subdivision approval), intended to fund public facilities and services necessary to serve the new development. Common examples include city park and road impact fees. Impact fees are not for general revenue purposes, and they must be based on a reasonable relationship between the development project and the facility or service to be provided. This reasonable relationship is commonly referred to as the "nexus." [23]

"Property-Related Fees and Charges" lack a precise definition, but as result of Proposition 218 are broadly considered to be any fees or charges *other than* an ad valorem tax,[24] special tax, or assessment that an agency imposes upon a parcel or person as an incidence of (i.e., connected directly to) property ownership. An example of such a fee would be a groundwater augmentation charge collected from overlying property owners.[25]

"Regulatory Charges" are charges imposed by a public agency in conjunction with implementing a regulatory effort such as required monitoring of air and water quality, or a charge imposed on an entire industry to fund a mitigation program, such as a fee to pay for lead paint removal.

"Taxes" (general and special) are charges on real property that historically are not tied to any particular service or benefit provided by the public agency. As a result of voter-approved initiatives, a "general tax" is any tax imposed for general governmental purposes. A "special tax" is any tax imposed for specific purposes, including taxes placed into the general fund for particular purposes. Taxes by special districts are now considered to be "special taxes."

"User Fees" are fees collected in response to the use of a governmental service or facility, such as application processing charges or rental of public property such as a sports facility. These services must be separable from direct use of the property itself. Utilities, such as water, sewer and electricity, fall into this category because use varies without direct relationship to the property's characteristics.

Applications and Limits of Financing Mechanisms

Assessments

Assessments are used by cities, counties, and special districts to fund a variety of government activities. Funded activities include parks and recreational improvements, landscaping, and street lighting. Assessments can be utilized to fund ongoing and recurring expenses, as well as the repayment of bonds sold to finance long-term capital expenditures.

Assessments have historically served reclamation districts (RDs) as the primary tool for local funding of levee improvements and maintenance. RDs are local public agencies, formed to

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[23] "Local Agency" ordinarily includes cities, counties, special districts, and any other local or regional governmental entity. (California Constitution, Art. XIIIC, sec. 1.)

[24] "Ad valorem" refers to a tax determined as a proportion of property value.

[25] Pajaro Valley Water Management Agency v. Amrhein (2007) 150 Cal.App. 4th 1364.

protect distinct geographic areas, and are administered by an independent governing body of elected landowners. RDs are some of the oldest forms of government recognized under California law and are formed under general statutory authority or by special legislative acts.[26] Typical district functions include operation, maintenance and improvement of levee and drainage systems.

Assessments are based on and levied in accordance with the benefits provided to affected properties by a governmental service or activity. Proposition 218 (1996) requirements apply to "local agencies," which includes cities, counties, special districts, and regional governmental agencies. Proposition 218 constrained local agencies' use of assessments by imposing both procedural and substantive requirements for new assessments by amending the California Constitution.[27] First, Proposition 218 requires majority vote approval prior to imposition or increase of general taxes, assessments, and certain user fees and provides landowners the ability to also repeal or reduce charges by voter initiative. Fees or assessment may not exceed the cost of providing the services and fees or charges based on potential or future use of a service are not permitted.[28] These include a requirement that only special benefits (and not general benefits) may be assessed, and that assessments must be based on a detailed engineer's report. This report must quantify the proportional special benefit derived by each parcel.[29] Special benefits are identified as separable from those conferred generally to the surrounding community or beneficiaries outside of the assessment district.

Revenues derived from the assessment may not be used for any purpose other than that for which the assessment was imposed and approved by landowner vote. In addition, Proposition 218 requires all state and local government agencies owning land subject to a benefit assessment to pay their proportional share for benefits received, unless is can "demonstrate by clear and convincing evidence that those publicly owned parcels in fact receive no special benefit."[30]

Procedural steps added by Proposition 218 require the agency proposing the assessment to conduct a hearing with notice to the property owner and to conduct a vote by landowner ballot. If the ballots opposing the measure exceed those in support, the assessment may not be imposed. Ballots are weighted in accordance with the proportional financial obligation of each parcel. Thus, property owners have a direct role in determining whether or not a locally imposed assessment is approved.

The State has limited assessment authority for levee improvements that it has rarely exercised. DWR's ability to form maintenance areas and collect assessments from landowners, and the

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[26] Water Code sections 51320-51349.

[27] Prop. 218 added Articles XIII C and XIII D to the California Constitution.

[28] Legislative Analyst's Office, "Understanding Proposition 218," http://www.lao.ca.gov/1996/120196_prop_218/understanding_prop218_1296.html, December 1996.

[29] For a recent example of an engineer's report that calculates the special and general benefits, see Chapter 5 of the Sacramento Area Flood Control Agency's "Engineers Report, SAFCA Consolidated Capital Assessment District No. 2, June 13, 2016." Available at http://www.safca.org/assessments.html .

[30] California Constitution, Article XIII D, Section 4(a).

CVFPB's existing statutory authority (currently dormant) to collect assessments via the Sacramento-San Joaquin Drainage District, is discussed in the 2017 update of the CVFPP. Were the State to create a new regional agency for purposes of imposing assessments to fund levee improvements, it would be challenging to determine the special benefit for each parcel in the region, and to establish the nexus between the cost and the amount to be assessed.

General and Special Taxes

The law pertaining to general and special taxes has evolved over the last four decades, starting with the enactment of Proposition 13 in 1978, followed by Propositions 218 in 1996 and 26 in 2010. Combined, these initiatives created the following framework for the imposition of taxes, both general and special.

Proposition 13 added Article XIIIA to the California Constitution, capping, and in many situations lowering, the property tax revenues collected by cities, counties, and school and special districts. This measure established a maximum cumulative ad valorem tax rate of one percent based on assessed value of the property, with annual reassessment escalation limited to no more than two percent until a property is sold or ownership is significantly modified.

Proposition 13 also required local voter approval for special taxes and restricted the California Legislature's ability to enact new taxes by imposing a requirement of a two-thirds vote in both legislative houses. Proposition 13 authorized cities, counties, and special districts to enact "special taxes" following a two-thirds vote of the qualified electors, although the measure did not define "special" taxes.

Proposition 218 supplemented Proposition 13. Under Proposition 218, a majority of voters must approve new general taxes, and two-thirds of the qualified voters must approve local special taxes. The voter approval requirement limited the ability of local agencies to rely on new tax measures to generate new revenue to pay for services or infrastructure. The measure also clarified the use of the initiative process to repeal locally imposed taxes, assessments, fees, and charges, adding a level of uncertainty regarding the long-term reliability of new revenue measures.[31]

Proposition 26 took a sweeping approach to taxes, defining "taxes" to include any local levy, charge, or exaction, effectively expanding the voter approval requirement to more local government actions. Proposition 26 exempted some fees and charges—those potentially relevant to levee funding are:

- Charges imposed for a specific benefit conferred to the payor that is not provided to those not charged, or for services provided, subject to a limitation that the charge not exceed the reasonable cost to the government of providing the benefit or service.[32] Levee

[31] Repealing such charges related to repaying bond indebtedness is restricted.

[32] Traditionally, special benefits of levees have been viewed as accruing entirely to the parcels directly protected by those levees. The expansion of the list of beneficiaries of flood control is a recent innovation, and has not yet been addressed by the courts.

maintenance could fall within the scope of "benefits" conferred or "services" provided and would not be curtailed by Proposition 26, although the scope of the proposition has not been fully litigated.

- A charge imposed as a condition of property development, as is the case with impact fees (discussed below).
- Assessments and property-related fees imposed in compliance with the provisions of Proposition 218 discussed above (i.e., engineer's report, protest, and/or voter requirements).[33]

Thus, Proposition 26 leaves in place local options for levee financing through assessments (discussed above) or impact fees (discussed below) but constrains the use of new taxes through its two-thirds voter approval requirement.

Proposition 26 also affected the State's ability to raise revenue by compelling a two-thirds vote in both houses of the Legislature for new taxes.[34] The proposition contains broad language expansively defining State taxes, similar to the language used for local government taxes, and contains similar exemptions from the definition of "taxes." State-imposed charges for levee maintenance (again based on the reasonable cost to the State) may similarly qualify as a benefit or service to the payor that would not be treated as a tax (and thus would not trigger the supermajority vote in both houses). The supermajority requirement could be a significant hurdle to employing a State-imposed charge for levee improvements, depending on how the courts interpret Proposition 26.

Special taxes are a feature of community facility districts (CFDs), which are taxing districts administered by government agencies but not independent special districts. Special taxes are frequently used in conjunction with new development to finance infrastructure and maintenance, authorized by the Mello-Roos Community Facilities Act of 1982 (CFA).[35] The reason for the more frequent use of special taxes in new development is that the initial property developer controls the voting power in the district before residents move in and can readily satisfy any required voting/protest provisions. A significant distinction between CFA special taxes and other revenue tools is that CFA taxes are not limited by the rigors of the benefit analysis (assessments), nexus (impact fees), or reasonableness (user charges). Special taxes (except those used to retire bonded debt) can be repealed by the voters in future years as a result of Proposition 218. As these special taxes are closely linked to new land development, the utility of CFD special taxes in the Delta Primary Zone is very limited, although they may apply to urban development in the Secondary Zone.

General taxes can be used to repay debt from general obligation bonds issued for flood protection improvements, such as those described in Chapter 2.

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[33] California Constitution Article XIIID, sec. 1.

[34] California Constitution Article XIIIA, sec. 3.

[35] Government Code section 53311 et seq.

Impact Fees

In 1986, the California Legislature enacted the Mitigation Fee Act, Assembly Bill (AB) 1600, which created a uniform process governing the adoption, collection, and accounting for "impact fees."[36] These fees are defined as those imposed either on the basis of broadly based legislative enactments that establish a uniform fee applicable to a type of development activity (for example, a city's impact fees for major roadways) or on an ad hoc basis, as determined by the specifics of a particular development project. These fees are used to finance the construction or rehabilitation of public capital facilities. When adopting or imposing a fee obligation as a condition of approval, a local agency must make certain findings as to the purpose of the funds, the use of the funds, and the reasonableness of the fee considering the relationship between the project and the public facility. AB 1600 codified the constitutional doctrine that impact fees must be reasonably related, or have a "nexus" between the project or activity upon which the fee is imposed and the facility to be financed. As a general proposition, impact fees collected from new development cannot be used to remedy existing facility deficiencies. For example, impact fees probably cannot be used to address levee maintenance shortfalls, but such fees could be used to upgrade or replace a levee, or build a new levee. Once fees are collected, a local agency must periodically affirm the purpose of the fee and reasonable relationship between the fee and facility to be constructed.

The Mitigation Fee Act applies to locally imposed impact fees assessed against new land development activities in which fee revenues are used for levee construction or rehabilitation. Cities and counties have the inherent constitutional authority to adopt and impose impact fees, but special districts may only do so if they are granted specific legislative authorization by the California Legislature.

As impact fees are tied to new land development activities, restrictions on development within the Delta's Primary Zone reduce the potential for impact fees to serve as a significant revenue source, although they may apply in the Secondary Zone.

Property-Related Fees and Charges

The controlling legal authority pertaining to property-related fees and charges was added by Proposition 218.[37][43] This proposition established, among other provisions, new procedural and substantive rules applicable to local agencies when imposing charges based on property ownership. Generally, the following limitations apply to property-related charges for services:

- Certain property-related charges must be preceded by mailed notice to the property owners coupled with a right of protest. This step allows the property owners to veto the proposed charge by majority protest. This voting is weighted, based on the relative potential assessment that would be applied to each property owner. Thus, a property

[36] Gov. Code section 66000 et seq.

[37] California Constitution Article XIII D, Section 6.

owner potentially subject to a greater property-related charge has more voting power as compared to another property owner facing a lower charge.

- Revenues cannot exceed the proportional costs required to provide the property-related service.
- Fees cannot be charged for general government services (e.g., police, fire) that are otherwise available to the public.
- Services for which fees are charged must be readily available to the property.
- New property-related fees and charges[38]would be subject to approval by either a majority of the property owners or two-thirds of the registered voters.

Note that in contrast to assessments, in which costs are allocated in proportion to the *benefits* accruing to the property from the service or activity, property-related fees and charges are allocated based on the *costs* of providing those services or activities to each particular property.

As a funding option for new levee improvements, the requirement that the service "be readily available to a property" may function as a constraint on the use of locally imposed property-related charges for levee-related work, as the connection between the service and the parcel is less tangible and apparent as compared to other services such as water delivery. Future improvements by definition may not be "readily available now," whereas ongoing levee maintenance would be a current activity with current benefits. The court cases have dealt with active services like turning on a spigot for water; the "service" of reduced flood risk is less tangible and immediate.

Regulatory Charges

These charges typically occur in conjunction with a regulatory endeavor and would not include revenue collected for general purposes. Proposition 26, passed by California voters in 2010, comprehensively defined as a tax "any levy, charge or exaction,"[39] triggering voter approval at the local government level (or passage by a two-thirds vote in the legislature for state-imposed charges) unless the tax was specifically exempted from the scope of the proposition. These exemptions include charges for regulatory programs subject to the limitation that the charge cannot exceed the reasonable cost of the benefit, service, or activity provided,[40] and the revenues cannot be used for general fund purposes. The State Legislature can delegate the authority to raise such fees to state and subordinate regional agencies.

[38] Other than charges for sewer, water, and refuse collection.

[39] California Constitution Article XIII C, sec. 1 (local agencies) and Article XIIIA, sec. 3 (state).

[40] California Constitution, Articles XIIIC Section 1(e) and XIIIA sec. 3.

As an example, the State Water Resources Control Board uses several regulatory fees for a variety of programs,[41] as do the Regional Water Quality Control Boards. Such fees typically pay for administrative costs, but have been used for specific projects.

User Fees

As a general proposition, user fees cannot exceed the reasonable cost of providing the benefit, service, or regulation, and thus cannot be relied on for general revenue purposes.[42] Typically, user fees are limited to utility, permitting, or access fees that involve one-on-one transactions between a client and the government agency. User fees are also covered by the limitations of Proposition 26, as discussed above under General and Special Taxes. User fees and charges for services delivered to a property may be subject to Propositions 218 and 26 as property-related charges. User fees would have a narrowly defined role as a financing tool in the Delta; they are typically associated with the use of public facilities such as boating facilities.

[41] See http://www.waterboards.ca.gov/resources/fees/.

[42] Proposition 26 does not include a "reasonable cost" limitation on use of property.

CHAPTER 4 BENEFICIARIES OF DELTA LEVEES

Identifying and evaluating the beneficiaries to which benefits accrue required describing how beneficiaries are linked to purposes and how benefits are estimated by analyzing the economics associated with those purposes.

Types of Beneficiaries and Benefits

Linking benefits, and therefore beneficiaries, to flood protection activities involves tracing economic relationships that may not be immediately obvious. As described in the DWR's *Handbook for Assessing Value of State Flood Management Investments*[43] categories of benefits of flood risk management include inundation-reduction benefits, intensification benefits, and location benefits. Typically, a benefit analysis for a flood risk management program focuses on evaluating the inundation-reduction benefits, which include the benefits associated with reducing damages (property, natural resources, or human health) associated with existing or future land uses. Reduced damages are most often reported in annualized terms (expected annual damages). Intensification benefits measure the potential value associated with improving the suitability of a particular land use for development (without changing the land use), whereas locational benefits can occur if flood protection measures result in the potential changing (presumably increasing the value) of a particular land use. Each of these benefits may then induce other economic benefits.

Flood protection benefits to beneficiaries can be differentiated and categorized in many ways, depending on program purpose or the types of actions subject to a benefits analysis. We used the following categories as a means to capture all of the potential beneficiaries of investments in Delta levees and their relationships as follows:[44]

- ***Primary and secondary benefits –*** As an economic concept, *primary benefits* are the increased value of goods and services to beneficiaries immediately affected by a flood control project or program. Benefit categories include flood risk management, water supply, water quality, and recreation. *Secondary benefits* of constructing flood control facilities are the values of goods and services that subsequently accrue to other parties (beneficiaries) that interact with the primary beneficiaries. Secondary benefits can include changes in economic activity (e.g., regional or state-level jobs and income) and fiscal effects, such as taxes or other revenues, that are important to local stakeholders.[45]

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[43] California Department of Water Resources. *Handbook for Assessing Value of State Flood Management Investments*. 2014.

[44] These categories are based on DWR's approach to characterizing categories of levee benefits, California Department of Water Resources. Economic Analysis Guidebook, January 2008. Appendix D describes how these categories are applied to the beneficiaries used in this Study.

[45] This typology follows regional economic input-output analysis. In that framework, *direct* effects (akin to primary) arise from immediate economic activity. The secondary benefits are broken down further into *indirect* effects derive from transactions with directly-affected parties, and *induced* effects are more broad, general economy-wide impacts from changes in direct and indirect activity.

- Benefits can be separated geographically into ***direct, extended, and peripheral***.[46] *Direct* benefits are primary benefits realized in the immediate locality that is being protected against flooding, e.g., agricultural land next to a levee. *Extended* benefits are benefits affecting neighboring beneficiaries connected in some networked fashion but directly impacted by a flood event. Highways and pipelines are examples where the impacts are felt elsewhere directly. *Peripheral* benefits can be primary (e.g., water exports) or secondary (e.g., state economy) but outside of the Delta.
- ***Private and public goods realized as benefits*** – "Goods" are commodities or services that can be used to satisfy human wants and that have exchange value. Characteristics of *public goods* are non-excludability (i.e., it is not possible to exclude non-payers from consuming the good) and non-rivalry in consumption (i.e., consumption of a good by one consumer does not diminish the benefit to other consumers). If a "good" does not have both of these characteristics, it is considered a *private good*. Goods can fall across the spectrum of these definitions; for example, fishing in the Delta can diminish the availability of the fish to others, but it can be difficult to restrict access to the fishery. This myriad of goods confers benefits on beneficiaries who use them.
- ***Tangible and intangible benefits*** – *Tangible benefits* can be quantified in monetary or other quantifiable units (such as loss of Delta smelt habitat), whereas *intangible benefits* cannot be directly expressed in quantifiable terms or metrics (for example, trauma or reduced peace of mind resulting from a flood event).

A Note on Public Beneficiaries

Generally, the project team strived to use categories of beneficiaries, terms, and definitions consistent with the principles and approaches used in recent flood protection studies conducted for the DWR.[47] However, this Study uses the term "public" to convey that the benefits (or costs) cannot be easily assigned to specific individuals or entities. In this context, "public" does *not* refer to publicly-owned enterprises such as municipal water agencies or utility districts—those are considered "private" entities because the benefits can be assigned to specific individuals who privately enjoy them; that is why those enterprise agencies are able to charge utility rates.

Summary of Potential Beneficiaries

Beneficiaries are entities that generally own, use, or control assets used for specific purposes (i.e., activities) that benefit from Delta flood control measures. For example, farmers (beneficiaries)

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[46] We emphasize that two of these terms which were included in the requested scope of work for this Study, "extended" and "peripheral" benefits, do not have applicable definitions in the flood protection or economic impacts literature that we have reviewed. Consequently, we have defined these terms specifically for use in this Study.

[47] We use the DLIS Technical Memorandum 2.1 as the starting point for constructing categories of beneficiaries, as directed in our scope of work. Then, to better meet the economic valuation needs of our study, we have expanded the categories identified in the DLIS Technical Memorandum 2.1. In the original contractual scope, estimates of expected annual damages in the Delta from flooding events were to be developed in the DLIS. However, these estimates were not available in sufficient time to use in this Study.

avoid flood damages (benefit) to their fields where they grow crops (purpose or activity) through the protection of Delta levees. Some of these purposes are part of individual or private transactions or activities for which economic value can be readily estimated (such as land values or the buying and selling of agricultural products); other purposes create more broad public benefits for which a price is not easily determined (such as the value of public enjoyment of habitat, as well as the various concurrent benefits from enjoying species existence and recreation). The benefits that beneficiaries derive from flood control and levees are described in detail in Appendix D. The list is not exhaustive but captures the most significant benefits and beneficiaries who might contribute to funding levee work.

This Study considered ten broad categories of beneficiaries:

- Community Beneficiaries
- Agricultural Land Owners, Producers, and Water Users
- Municipal Water Providers and End Users
- Infrastructure Owners and End Users
- Upstream Dischargers
- Instream Water Diverters
- General Public Beneficiaries (including recreation)
- State and Local Governments and Special Districts
- State Economy
- Other Indirect Beneficiaries

Table 4-1 lists the complete set of beneficiaries used in this Study, including subcategories of beneficiaries and the types of flood protection benefits received from Delta levees. The Table also indicates the geographic location of beneficiaries as follows:

- In-Delta, as defined by the legal boundaries of the Delta (ID)
- Other areas within the Bay-Delta region but outside of the Legal Delta (OBD)
- Upstream of the (legal) Delta (UD)
- Downstream of the Delta (DD)

Table 4-1 Beneficiaries of Flood Protection in the Sacramento/San Joaquin River Delta

Category of Beneficiary/Entity	Type of Benefit(s)	Primary Regions*
Community Beneficiaries		
Delta Residents	Avoid/reduce potential for loss of life.	ID
Delta Commercial and Residential Property Owners	Avoid/reduce potential for property damage.	ID
Delta Public Facilities	Avoid/reduce potential for property damage.	ID
Delta Schools	Avoid/reduce potential for property damage.	ID

Table 4-1 Beneficiaries of Flood Protection in the Sacramento/San Joaquin River Delta

Category of Beneficiary/Entity	Type of Benefit(s)	Primary Regions*
Local economy	Avoid/reduce disruptions on local economic activity. These are secondary beneficiaries.	ID
Agricultural Land Owners, Producers, and Water Users		
In-Delta Agricultural Operators	Avoid/reduce potential loss of revenue; avoid/reduce potential loss of property value.	ID
South of Delta and North Bay Agricultural Water Users	Avoid/reduce potential for water supply disruption.	OBD, DD
Municipal Water Providers and End Users		
In-Delta Municipal Water Users	Avoid/reduce potential for water supply disruption.	ID
South of Delta Municipal Water Users	Avoid/reduce potential for water supply disruption.	DD
Infrastructure Owners and End		
EBMUD	Avoid/reduce potential for damage to Mokelumne Aqueduct; avoid/reduce potential for water supply disruption.	ID, OBD
Oil and Gas Companies	Avoid/reduce potential for damage to in-Delta property; avoid/reduce potential for supply interruptions to Bay Area and Northern California.	ID, OBD
Power Plant Owners	Avoid/reduce potential damage to in-Delta property; avoid/reduce potential for supply interruptions to the electricity market.	ID
Electricity Infrastructure Owners	Avoid/reduce potential for damage to in-Delta property; avoid/reduce potential for supply interruptions to the electricity market.	ID, OBD
Telecommunications Companies	Avoid/reduce potential for damage to in-Delta property; avoid/reduce potential for service interruptions to local users.	ID, OBD
Railroad companies	Avoid/reduce potential for damage to in-Delta property; avoid/reduce potential for freight interruptions to agricultural markets and Ports of Stockton and West Sacramento; avoid/reduce potential for service interruptions in passenger rail lines.	ID, OBD

Table 4-1 Beneficiaries of Flood Protection in the Sacramento/San Joaquin River Delta

Category of Beneficiary/Entity	Type of Benefit(s)	Primary Regions*
Caltrans and State Highway Users	Avoid/reduce potential for damage to in-Delta property; avoid/reduce potential for disruptions to truck freight operations.	ID, OBD
Ports of Stockton and West Sacramento	Avoid/reduce potential for disruptions to port operations and businesses that utilize port services.	ID
Upstream Dischargers		
Wastewater dischargers	Avoid/reduce potential for costs of alternative storage, treatment, and discharge methods.	ID, UD
Storm water dischargers	Avoid/reduce potential for incurring costs of alternative storage, treatment, and discharge methods.	ID, UD
Other Indirect Beneficiaries		
Hydropower owners and operators	Avoid or reduce potential reductions in hydropower production on water bodies that would be affected by flood protection and water supply operations, through requirements for greater flood control storage requirements.	UD, OBD
General Public Beneficiaries		
Public concerned for the protection/restoration of Delta ecosystem resources (as indicated by their willingness to pay)	Avoid/reduce negative impacts on aquatic and terrestrial resources that provide a wide array of goods and services supported by functioning ecosystem resources.	ID, OBD, UD, DD
Commercial and recreational fishing	Avoid/reduce potential harm to aquatic and aquatic-related terrestrial habitat that support fisheries.	ID, OBD, UD
Recreational participants (water contact and non-contact water-based activities), including Delta residents and out-of-area visitors	Maintain high quality recreation conditions by protecting the quantity and quality of water resources and other resources that support recreation opportunities and activities.	ID, OBD, UD

Table 4-1 Beneficiaries of Flood Protection in the Sacramento/San Joaquin River Delta

Category of Beneficiary/Entity	Type of Benefit(s)	Primary Regions*
Delta as Place beneficiaries (visitors and residents)	Maintain Delta-as-Place values by protecting the Delta's geography of low-lying islands and tracts, rural heritage, agricultural economy, coexistence of unique native ecosystem with expanding cities in a region characterized by maritime ports, commercial agriculture associated with maintaining rural life- style, opportunities for recreation and tourism, and a multicultural tradition, legacy communities and family farms.	ID, OBD
State and Local Government and Special Districts		
State government	Avoid/reduce secondary impacts from disruptions to services and revenues through the Delta; reduce long-term system maintenance costs.	ID, OBD, UD, DD
Local government	Avoid/reduce secondary impacts on local government entities from disruptions to services and revenues in the Delta region; reduce long-term system maintenance costs.	ID, OBD, UD
Special districts (e.g., reclamation and flood protection)	Avoid/reduce potential cost impacts from unexpected disruptions to services and revenue losses; reduce long-term system maintenance costs.	ID, OBD, UD
State Economy		
Ripple effects	Avoid or reduce disruptions to statewide economic activity, as measured by industrial output, jobs, and personal income. These are secondary beneficiaries.	ID, OBD, UD, DD

Key:
Caltrans = California Department of Transportation
EBMUD = East Bay Municipal Utility District

Geographic Context and Risk Considerations

The value of benefits of flood protection from Delta levee investments depends on the geographic location of the beneficiary. For example, the indirect benefits received from Delta levees by upstream beneficiaries such as the Sacramento Regional County Sanitation District or Sacramento

Area Flood Control Agency depend on these agencies' ability to discharge treated wastewater or stormwater into Delta waters. If these entities could not move the floodwaters downstream they would be inundated; if the Delta levees are not high enough to accommodate those flows, those agencies would have to pay damages to the Delta landowners for diverting floodwaters onto Delta islands. The value of a fully functioning Delta levee system to these beneficiaries depends on the costs of alternative disposal options and methods of reducing river discharges. These indirect benefits to upstream beneficiaries fundamentally differ from the more direct flood protection benefits received by agricultural operations and landowners in the Delta.

Geographic location helped to determine appropriate monetary (and non-monetary) values for Delta levee beneficiaries. Location was also critical in assessing the feasibility of different funding mechanisms for different types of beneficiaries. Although Delta levees provide flood protection benefits to state and national beneficiaries, this Study did not attempt to include the value to potential beneficiaries outside of the State.

These geographic distinctions correlate to some degree with the primary/secondary and direct/extended/peripheral distinctions of benefits and beneficiaries. Beneficiaries in the Delta are more likely to receive direct and primary benefits, while those outside of the Delta are more likely to be peripheral and secondary.

CHAPTER 5 LINKING FINANCING MECHANISMS AND COST ALLOCATION

This feasibility study has adopted the following guidelines for selecting a beneficiary-pays cost allocation method:

- Follow a benefits-based approach as applicable under current law or consistent with economic principles where federal or state law does not set specific guidelines;
- Promote cost allocations that encourage participation; and
- Promote cost allocations that avoid or minimize unintended subsidies.

Other criteria for selecting a cost allocation method would need to be considered in implementing a beneficiary-pays approach. These could include:

- Achieving equitable allocations that reflect the circumstances of beneficiaries and other parties;
- Ease of application and administration; and
- Reliability of revenue collection over time.

Determining whether allocations are equitable is fairly subjective and may not be resolved until a more detailed analysis can be conducted and the outcome examined by stakeholders and decision makers. Ease of application and administration will depend on data and resources available when a mechanism is implemented (ease of understanding by decision makers and affected parties falls into this category). Reliability of revenue collection will depend on the underlying economics of the asset or activity being charged—for example, does agricultural land value remain steady? How much do water deliveries vary?

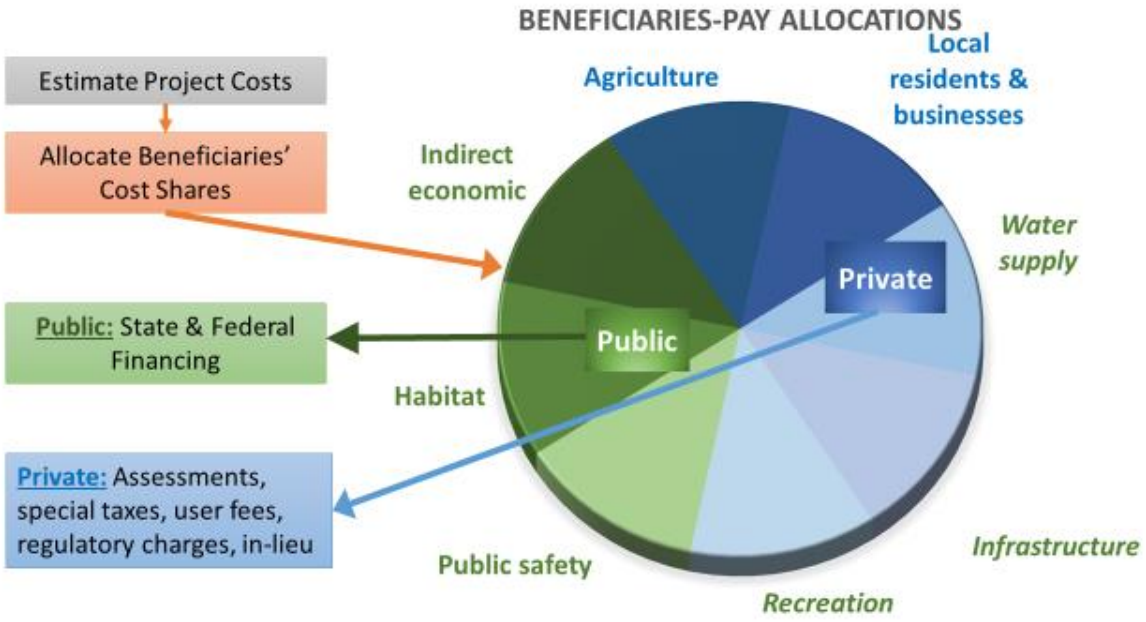
Using "Beneficiary-Pays" Principle for Cost Allocation

Figure 5-1 illustrates the potential outcome of a shift to a beneficiary-pays approach.[48] Rather than starting with the allocations among government agencies embedded in law and practice, the beneficiary-pays approach identifies the benefits accruing to various beneficiaries and matches financing mechanisms with those beneficiaries. Public benefits and indirect benefits to the state economy (shown as green wedges in Figure 5-1 below) accrue to large groups of beneficiaries, against whom it is difficult to apply a specific levy or charge. Such beneficiaries currently pay some of their share of levee costs through public funds, such as the State General Fund or bonds. Private benefits, such as flood protection to land and structures, accrue to beneficiaries that can be identified and could be directly charged a tax or user fee. Major categories of private beneficiaries who now pay indirectly through state and federal contributions include water suppliers and users,

[48] The size of the pie slices do not represent economic value or cost responsibility—this figure simply represents how cost shares might be covered by the different financial mechanisms.

cross-Delta infrastructure, and recreationists (indicated as blue wedges with green labels in the pie chart in Figure 5-1).

Figure 5-1 Beneficiary-Pays Flood Protection Cost Allocation Process



A key focus of this Study is to be more explicit in delineating the "general" and "public" benefits, as well as the federal and state cost shares implied by those types of benefits. Currently, those benefits are often not rigorously identified and quantified.

Additional Issues in Implementing Beneficiary-Pays Cost Allocations

In addition to the challenges of identifying the complete range of beneficiaries and selecting an allocation method, other issues will arise in developing a beneficiary-pays approach to paying for Delta levees. These issues are outside the scope of this feasibility study and will need to be addressed in a more detailed implementation analysis:

- **Establish agreement on baseline value and incremental benefit from additional flood protection projects.** Where beneficiaries and/or stakeholders do not agree on how to characterize the benefit of a project, and no objective test is available to resolve the disagreement, the analytic team should develop a range of cost allocation examples that incorporates differing views. Such scenarios can inform policymakers about the range of potential benefits and associated costs to beneficiaries.

  For example, beneficiaries often hold different views on acceptable flood risk and the need for improved flood protection, as well as the baseline (point in time) by which to measure the benefits of a project. A farmer may view current flood protection as sufficient, while a developer of a new housing project may want a higher level. There may be no objective test to resolve this disagreement; various projects and cost allocations should be considered to illustrate the financial impacts of the different views.

- **Include only beneficiaries above a specified threshold.** If a beneficiary group receives very small benefits from a flood protection program or levee project, it can be removed from the cost allocation for that program or project. Any implementation studies should document the determination of incidental beneficiaries, however. For example, hydropower users could be expected to receive some benefit from improved downstream flood protection because it relieves them of some flood control storage obligation. However, the expected benefits to this group are very small relative to total program benefits, and highly uncertain. They could therefore be classified an incidental beneficiary and not allocated any costs for a specific project.

Financing Mechanisms and Corresponding Cost Allocation Methods

Determining cost responsibility among beneficiaries and taxpayers occurs primarily within a local jurisdiction, e.g., a reclamation district or a county. However, some beneficiaries such as water contractors benefit from the channels created by the levees, but they do not own property or assets within the jurisdiction of the reclamation districts that maintain those levees. This Study explores the mechanisms that may be appropriate for collecting revenues from each category of beneficiaries.

Chapter 3 described the various local and State government financing mechanisms available in California. In applying a beneficiary-pays approach, the law governing the type of financing mechanism would determine the cost allocation method. For example, assessments are based on relative *benefits,* while property-related fees are based on relative *costs of service*.

Available local and State government financing mechanisms and their implications for cost allocation are as follows:

Assessments are based on and levied in accordance with benefits to the affected property by the governmental service or activity funded by the assessment. Most relevant to cost allocation, *Proposition 218 requires that only special benefits (and not general benefits) may be subject to assessment*. The required engineer's report quantifies the proportional special benefit derived by each parcel. Special benefits are identified as separable from those conferred generally to the surrounding community. For example, a set of parcels may derive a lower risk from flood protection or may be more susceptible to a flood hazard than surrounding parcels. The assessment cannot exceed the reasonable cost of the special benefit conferred upon the parcel.

"Taxes" (General and Special) are charges on real property that historically are not tied to any particular service or benefit provided by the public agency and require a two- thirds vote of the electorate. In this case, *costs are allocated on the basis of the average tax burden incurred rather than in relation to either benefits or costs for flood protection*. Proposition 26 exempted some fees and charges from the definition of "taxes" (and thus the two-thirds vote approval requirement). Exemptions that may pertain to levee funding include charges imposed for a specific benefit conferred to the payor that is not provided to those not charged, or charges imposed for services provided, subject to a limitation that the charge not exceed the reasonable cost to the government of providing the benefit or service. Levee maintenance could fall within the scope of

"benefits" conferred or "services" provided and would not be curtailed by Proposition 26, although the scope of the Proposition has not been fully litigated.

Property-Related Fees and Charges are considered to be any fees or charges *other than* an ad valorem tax,[49] special tax, or assessment, which are imposed by an agency upon a parcel or person as an incidence of (i.e., connected directly to) property ownership. An example is a groundwater augmentation fee collected from overlying property owners. Again, the controlling legal authority pertaining to property-related fees and charges was added by Proposition 218. In contrast to assessments, *these fees and charges are allocated based on the costs of providing those services or activities to each particular property*.

For **User Fees**, these services must be separable from direct use of the property itself. Utilities, such as water, sewer and electricity, fall into this category because use varies without direct relationship to the property's characteristics. An example of a user fee in this situation would be a charge per acre-foot diverted or a kilowatt-hour transmitted using facilities that are benefited by a levee. As a general proposition under Proposition 26, user fees cannot exceed the reasonable cost of providing the benefit, service, or regulation, and thus cannot be relied upon for general revenue purposes.

[49] "Ad valorem" refers to a tax determined as a proportion of property value.

CHAPTER 6 Evaluating Financial Mechanisms

This chapter describes how the Study selected candidate financial mechanisms and evaluated their feasibility.

Candidate Financial Mechanisms

The study worked from a comprehensive set of possible financial mechanisms, grouping the mechanisms according to whether they were property-based, part of public financing, user fees, or regulatory charges linked to utilities or infrastructure. Table 6-1 displays the initial 50 candidate mechanisms, by beneficiary group and type of mechanism. Each of these mechanisms was considered in the context of legal requirements and restrictions (as described below under "Financial Mechanism Screening Process"). Candidate agencies for implementation were identified based on past practices or legal authority; these are only feasible choices and are not recommendations or preferences. The table denotes matches between mechanism and beneficiary with an "X." Due to the wide reach of general taxes, all beneficiaries are shown as paying some portion with grey shading. General public beneficiaries paying general taxes are shown in green shading.

Table 6-1 Candidate Revenue Collection Measures by Beneficiary

MECHANISMS	Property-related	Assessment district	Delta-wide assessment district	State assessment district	Geological hazard district	Incremental tax district (e.g., Mello-Roos)	Delta Flood Prevention Fee	User Fees	Delta water user fee / AF	Agricultural discharge fee / AF	Groundwater pumping fee / AF	Delta gas severance fee	Delta boat registration tag	Fishing/licenses	Motorboat use fee	SWP/CVP Water Conveyance Fee	Water conveyance "capacity" pricing	Cross Delta infrastructure flood protection fee	Earmark illegal diversion fines	Highway-related fees and tolls	Truck fees	Electronic tolls	Pollution fee (e.g. oil, braking particles)	Vehicle licensing fees	Regulatory charges	Delta Rail line use fee	CPUC fee on PG&E	Franchise fees	Oil and Gas severance fee	Commodity /Made in Delta fee
BENEFICIARIES																														
Community Beneficiaries																														
Delta Resident Personal Safety							X																							
Commercial & Residential Property Owners		X	X	X	X	X	X																							
Delta Public Facilities							X																							
Delta Schools																														
Local Economy																														
Agricultural Water Users																														
In-Delta Ag Operators		X	X	X	X	X	X			X									X											
South of Delta Ag Water Users							X		X							X	X		X											
Municipal Water Users																														
In-Delta Muni. Water Users							X		X								X		X											
South of Delta Muni. Water Users							X		X							X	X													
Infrastructure Owners & Users																														
EBMUD							X		X							X	X	X												
Oil and Gas Companies		X	X	X	X	X	X					X																	X	
Power plant Owners		X	X	X	X	X	X																							
Electricity Infrastructure Owners		X	X	X	X	X	X											X									X	X		
Telecommunications Companies		X	X	X	X	X	X											X										X		
Railroad Companies		X	X	X	X	X	X											X								X				
State Highway Users							X											X			X	X	X	X						
Ports							X		X																					
Upstream Dischargers																														
Wastewater Dischargers																														
Stormwater Dischargers																														
Hydropower owners and operators																														
General Public																														
Public concerned for ecosystem																														
Commercial /recreational fishers									X				X	X																
Recreation participants									X				X	X																
Delta as Place beneficiaries																														
State and Local Government																														
State Government																														
Local Government																														
Special Districts																														
State Economy																														
Ripple Effect																														

Table 6-1 Candidate Revenue Collection Measures by Beneficiary

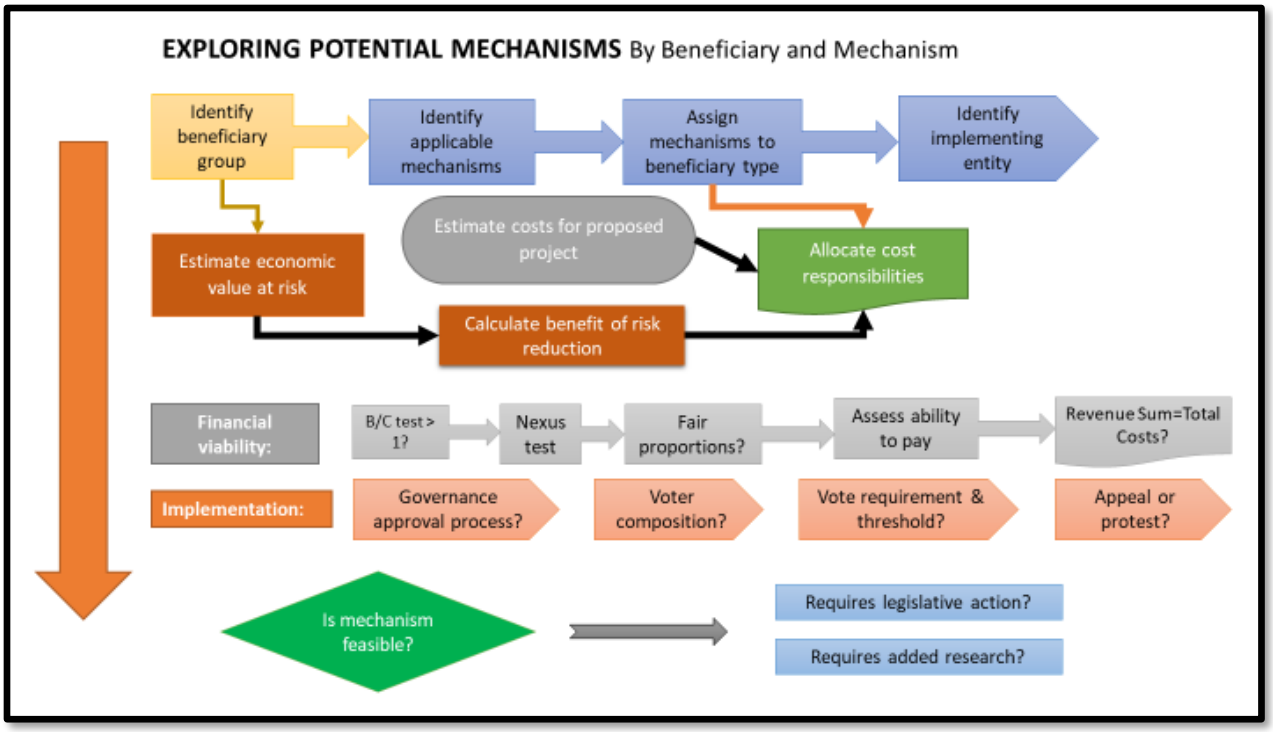
MECHANISMS	Impact fees	Groundwater pumping assessment	Groundwater pumping parcel tax	Development impact fees	Habitat conservation plan	Flood control plan akin to HCP	Habitat mitigation for SWP/CVP	Land trust support	Property covenants/set asides in exchange for investment	Delta periphery levees upgrade fee	Carbon sequestration/ capture	CATP Allowance Funds	Public benefits financing tools	General Fund	General/revenue bonds	Subventions	Regional financing agency	Sales Tax	Certificate of Participation	Tax dedicated zones, with revenues redirected to Delta (e.g. sales; tobacco)	Agricultural property tax redirection	Federal financing	Federal/UN heritage site
BENEFICIARIES																							
Community Beneficiaries																							
Delta Resident Personal Safety																							
Commercial & Residential Property Owners				X	X	X	X			X													
Delta Public Facilities						X				X													
Delta Schools																							
Local Economy																							
Agricultural Water Users																							
In-Delta Ag Operators						X				X													
South of Delta Ag Water Users		X	X		X	X	X																
Municipal Water Users																							
In-Delta Muni. Water Users		X	X		X	X																	
South of Delta Muni. Water Users		X	X		X	X	X			X	X	X											
Infrastructure Owners & Users																							
EBMUD		X	X		X	X	X																
Oil and Gas Companies		X	X	X	X	X					X	X											
Power plant Owners		X	X			X	X			X	X	X											
Electricity Infrastructure Owners		X	X		X	X	X			X	X	X											
Telecommunications Companies		X	X	X			X																
Railroad Companies		X	X		X	X	X			X	X	X											
State Highway Users		X	X		X	X	X			X	X	X											
Ports		X	X			X				X	X	X											
Upstream Dischargers																							
Wastewater Dischargers																							
Stormwater Dischargers																							
Hydropower owners and operators																							
General Public																							
Public concerned for ecosystem						X																	
Commercial /recreational fishers					X	X																	
Recreation participants					X	X																	
Delta as Place beneficiaries				X		X																	
State and Local Government																							
State Government																							
Local Government																							
Special Districts																							
State Economy																							
Ripple Effect																							

Financial Mechanism Screening Process

The screening process selected the most promising financial mechanisms. Figure 6-1 displays the screening process, and Appendix E describes it in detail. In brief, the screening process follows the following steps:

1) Identify beneficiary groups;
2) Identify applicable mechanisms;
3) Assign mechanisms to beneficiary type;
4) Identify the implementing entities;
5) Estimate economic value at risk and the benefits of reducing that risk;
6) Estimate costs of proposed project;
7) Allocate cost responsibility;
8) Check financial viability; and
9) Set out the implementation steps.

Figure 6-1 Financing Mechanism Screening Process



This screening reduced the pool of 50 candidate financial mechanisms to eight. The surviving eight were then evaluated to determine their feasibility.

Evaluation of Candidate Financing Mechanisms

We evaluated the candidate financial mechanisms for feasibility based on four criteria: institutional, legal, cost responsibility, and political/stakeholder support. These criteria elicited the opportunities, challenges, and barriers associated with each candidate mechanism. This section describes how the surviving mechanisms[50] fared in this evaluation.

This feasibility evaluation is a "fatal flaw" analysis—after eliminating those potential mechanisms that are infeasible, we are left with those that might work best in various situations to capture Delta levee beneficiaries. This section highlights some key considerations for the mechanisms that passed the feasibility screen, and recommends more refined analysis to determine whether and how they could be implemented. Feasibility is considered here by looking at the overall potential for a mechanism to collect revenue from beneficiaries, including the technical and political difficulties of designing and implementing the mechanism, identifying and collecting revenues from specific beneficiaries (collectively known at "transaction costs"), and whether there are any conflicts with current constitutional and statutory framework.

We emphasize that this analysis is not intended as a recommendation to replace the current funding programs or cost shares under the Delta levees subventions or special projects programs. It is also not a recommendation to proceed immediately to implementation of the identified mechanisms. This report can be used to set the stage for future deliberations among stakeholders.

Tables 6-2A and 6-2B depict how the criteria from the multi-step process were used to screen candidate mechanisms for feasibility based on the criteria specified in this report. The tables are organized in the same manner as Table 6-1, with mechanisms broadly grouped by legal categories. Tables 6-2A and 6-2B show the mechanisms deemed sufficiently feasible to advance for further research and discussion among stakeholders.[51] Table 6-2A shows the first half of the evaluation process and lists likely responsible agencies or entities that could potentially implement the mechanism, and the legal requirements that must be satisfied to adopt and implement it. Table 6-2B shows the second half, which includes the determination of cost responsibility and relative revenue potential, and political considerations that are likely to arise before adopting the mechanism.

Appendix F includes all 50 of the mechanisms evaluated, and indicates at least one reason (highlighted in red) why a mechanism was eliminated from further consideration. Mechanisms that would require a change to the State Constitution were eliminated; other reasons for elimination included low potential for additional revenues, and high transaction costs relative to revenues.

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[50] The eight mechanisms deemed sufficiently feasible in this analysis are described in more detail in Chapter 7. These mechanisms will require further research and discussion among stakeholders.

[51] Certain mechanisms list references to other mechanisms; notations are provided to facilitate cross references. These are alternatives to each other that target similar populations of beneficiaries, but may have different characteristics.

Table 6-2A - Revenue Collection Mechanisms: Opportunities, Barriers, and Challenges

	Funding Mechanism/Groupings	Institutional	Legal					
		Implementing entities with legal authority / potential capacity	Governing statutes and/or key restrictions / requirements	Governance approval	Voter composition	Vote requirement	Appeal or protest	Benefit-cost test
	Property-related							
1	Local assessment district *[e.g. existing reclamation districts]*	Local	Proposition 218	City/County/ district	Local board	Majority	Weighted by financial obligation	Only special benefits can be assessed. Costs must be reasonably related to special benefits
2	Delta Flood Protection Fee	State or delegated regional agency	Requires state legislation	California Legislature	Legislature	Majority or two-thirds, depending on outcome of ongoing litigation	Yes, depending on legislation	No
	User Fees							
3	Delta water user fee / acre-feet	State or delegated regional agency	Federal/State water contracts; Prop. 26	California Legislature; possible contract modification	Legislature	Majority	No	Charge must be reasonably related to cost
4	State Water Project (SWP)/Central Valley Project (CVP) water conveyance fee;	California Department of Water Resources (CDWR); or SWRCB	Federal/State water contracts; Prop. 26	Legislature; possible contract modification	Legislature	Majority	No	Property use rates tied to fair market value
5	State Water Project (SWP)/Central Valley Project (CVP) water conveyance lease; i.e., transmission capacity pricing	State Lands Commission	Federal/State water contracts; Prop. 26 does not apply to use of government property	Legislature; possible contract modification	Legislature	Majority	No	Property use rates tied to fair market value
	Public benefits financing tools							
6	General Fund	State; Local	Requires legislation	California Legislature	Legislature	Majority	No	No
7	General/revenue bonds	State	Requires legislation; public vote	California Legislature / Electorate	Legislature / state voters	Majority	No	No
8	Federal financing	U.S. Army Corps of Engineers	Requires legislation	U.S. Congress	Legislature	Majority	No	Per USACE guidance

Table 6-2B - Revenue Collection Mechanisms: Opportunities, Barriers, and Challenges

Funding Mechanism/Groupings	Cost Responsibility & Limits			Stakeholder / Political Support
	Cost allocation method	*Revenue capacity*	*Revenue-generating potential, including timing; risks*	*Potential Feasibility/Prospects for Successful Implementation*
Property-related				
Local assessment district *[e.g. existing reclamation districts]*	Benefits-based/Alternative justifiable expenditures	High	Low, unlikely to generate significant new revenues	Current practice under status quo; problematic if state subvention significantly reduced and/or need for substantially greater revenue levels
Delta Flood Protection Fee	Could be assessed on a per structure basis per the FPF. Must be net of existing contributions.	Medium	Medium, based on Assembly Bill 29X1, fire prevention fee. More likely to pay for operations and maintenance than capital expenses	Requires similar motivation as Rural Fire Prevention Fee. FPF presents precedential model passed by the Legislature; however it was rescinded in the 2017 session, reducing its viability.
User fees				
Delta water user fee / acre-feet	Proportionate use of facilities /Alternative justifiable expenditures	High	Bay-Delta Finance Plan (2004) proposed that SWP/CVP fund 15% of levee costs.	Similar to Bay-Delta Financing Plan user fee proposed in 2005, which identified levee financing as one component.
State Water Project (SWP)/Central Valley Project (CVP) water conveyance fee;	Proportionate use of facilities /Alternative justifiable expenditures	HIgh	Bay-Delta Finance Plan (2004) proposed that SWP/CVP fund 15% of levee costs.	Similar to Bay-Delta Financing Plan user fee proposed in 2005, which identified levee financing as one component.
State Water Project (SWP)/Central Valley Project (CVP) water conveyance lease; i.e., transmission capacity pricing	To be determined, e.g., could use FERC-based pricing model	HIgh	Channel basin lease akin to gas pipeline pricing. Could be priced at WaterFix cost net of "leakage."	Legal basis similar to Tideland Oil & Gas Lease. Structured as contractual relationship rather than intergovernmental.
Public benefits financing tools				
General Fund	Separable costs / remaining benefits	High	High	Recent funding has been displaced by bonds.
General/revenue bonds	Separable costs / remaining benefits	High	High	Episodic issuances, usually tied to a broad range of issues.
Federal financing	Separable costs / remaining benefits	High	High	Funding reductions in recent years; USACE ruled many levees ineligible indefinitely in 2012

Evaluation Steps

We highlight some key considerations here for the mechanisms that passed the feasibility screen. Those mechanisms will require a more detailed analysis to determine whether and how they could be implemented.

Institutional Feasibility. Table 6-2A begins by listing the candidate mechanism and the type of entity that would use the mechanism. If the entity already exists, this eases implementation. If a new entity must be assigned or created, this adds a barrier. If no previous institutional and governance model exists for this new entity, then we deemed the mechanism infeasible. For four of the mechanisms, if they were to be implemented, existing agencies would likely be assigned new revenue collection responsibilities, but each already collects fees or similar types of revenue.

Legal Feasibility. Columns 2 through 6 of Table 6-2A describe the key statutes, constitutional provisions, and voting requirements applicable to each mechanism. In most cases, these mechanisms are subject to either Proposition 218 or 26, but the water conveyance lease fee falls outside of specific constitutional limits on cost allocation and governance, which eases institutional barriers. The waterway lease has several precedents, including leases to marinas in the Delta for using space in the channels. The State Lands Commission has already asserted its ownership of the channel bottoms.[52] None of the other mechanisms are prohibited by legal provisions.

The next three columns list the mechanism approval requirements, to highlight the relative ease of or obstacles to such approval. An initial consideration is whether it goes through a governing entity or to the electorate—the eight surviving mechanisms all rely on approval of a board or the Legislature. None of these appear to face insurmountable barriers to approval.

The next consideration is whether adoption of a mechanism can be challenged.

Finally, the question of whether benefits must exceed assigned cost responsibility is addressed. Benefit-cost and cost responsibility analysis requirements can be an obstacle to feasibility, insofar as they require significant additional analysis and associated expense. In the case of assessments, only special benefits beyond general benefits can be assessed and cost responsibility must be assigned in proportion to those special benefits. However, this requirement already exists, so should not be a significant additional barrier. The fees require that responsibility be assigned in proportion to costs incurred, but without the additional benefit test. Public funds face none of these tests in statute, but may in practice as agencies often perform benefit-cost analyses as part of decision making.

[52] Public Resources Code Section 6501.

Cost Responsibility and Limits. Table 6-2B addresses criteria related to fiscal and political viability. The table begins with the cost responsibility allocation method dictated in statute. The legally-directed method leads to the estimates of revenue capacity and potential for new revenues.

Table 6-2B then includes a qualitative ranking of the capacity to generate a significant share of total revenues. In screening the 50 proposed mechanisms, if any had low revenue capacity, then it could not have any other significant barriers, such as high collection costs, to be viable. All of the surviving mechanisms are considered to provide medium or high revenue capacities.

The subsequent step is a qualitative appraisal of the potential additional revenues from the mechanism. We note that assessments are an existing mechanism; consequently, they are unlikely to add more revenue. However, they will continue to be a cornerstone of a full portfolio of financial mechanisms. Several of the new mechanisms could increase revenues because they bring in new beneficiaries to the pool.

Stakeholder and Political Support: The final criterion is the potential feasibility and prospects for successful implementation given stakeholder and political support. Table 6-2B lists aspects of implementing each measure such as whether it is the current practice, if other models exist, and notes certain unique features.

CHAPTER 7 OBSERVATIONS AND FINDINGS

This Study demonstrated that the existing approach to paying for Delta levee work can effectively recover associated costs from most—but not all— beneficiaries in rough proportion to the benefits and/or costs of providing flood risk reduction and protecting California's interests (such as supporting the State's economy and ecosystem restoration). The existing levee financing mechanisms rely primarily on:

- Reclamation districts that collect property assessment revenues from landowners within the district boundaries based on their proportionate share of providing drainage and levee operation, maintenance and improvement benefits; and
- State budget appropriation of General Fund and General Obligation Bond revenues to partially cover the State's interests and broad public benefits from operation, maintenance and improvement of levees. However, General Obligation Bonds have been authorized episodically and may not be entirely reliable for future financing.

Existing mechanisms still fall short. They do not generate revenues from beneficiaries that receive significant private benefits and that are located primarily outside of the Delta— namely, water exporters and linear infrastructure owners and users. Moving forward with the beneficiary-pays principle would require collecting specifically-allocated revenues from these two groups of beneficiaries for the first time. Pursuing this policy choice would necessitate implementing *new* financing mechanisms, which could be challenging. In addition, the current approach to funding levees lacks revenue stability and reliability, which should motivate further exploration of potential financing strategies to increase the level of certainty of levee funding.

General Observations and Findings

We arrived at a series of observations and findings over the course of this Study that appear to be broadly applicable across all mechanisms reviewed.

1. The Delta is the hub for water supply, energy, and transportation infrastructure of statewide importance that is protected from flood damage and disruption by a network of Delta levees that operate as a system.
2. This report contains an initial feasibility study that narrows the menu of feasible financing mechanisms based on the beneficiary-pays principle. Still, the conceptual financing mechanisms analyzed in this Study each have technical and legal issues that affect the ability to collect revenues from beneficiaries as anticipated. And importantly, no single financial mechanism can meet the requirements of a beneficiary-pays approach to address the full range of beneficiaries and financing needs. Consequently, a portfolio of mechanisms will be needed. Regardless, no existing agency has the full governance capacity or authority to guide and administer the full range of finance mechanisms that may be needed.
3. The new financing mechanisms analyzed in this Study are still conceptual and require stakeholder endorsement and support before considering implementation. Gaining stakeholder support would require further development in order to provide details regarding

who will pay, fee amounts, overlap with other fees and assessments, and what flood protection activities would be funded.

4. A full list of benefits and beneficiaries of flood protection and ancillary activities includes many entities and individuals who reside outside of the Delta. In some cases, the benefits of those outside of the Delta exceed the benefits to in-Delta parties.
5. Although the original purpose for levees was flood protection, that has since expanded to serve other purposes; this expansion of purpose does not absolve the new beneficiaries from contributing to the continuing maintenance and additional investment in existing levees.
6. Local assessment districts, such as reclamation districts, rely on property-based assessments, which cannot reach the beneficiaries that do not own property within the district. Such local assessments are subject to Proposition 218 and associated case law.
7. Although a Delta-wide assessment district as proposed in the Delta Plan (RR R2) and the 2017 CVFPP Update might improve governance issues, this Study documents that it will not advance the beneficiary-pays approach, nor generate additional revenue over that which is currently collected by the existing reclamation districts for the following reasons:
    a. It cannot collect revenues from all beneficiaries of levee flood protection because many of them do not own assessable property in the Delta;
    b. Reclamation districts are already assessing benefitted property for levee and drainage services and a Delta-wide district is unlikely to create truly additive value to the funding already flowing through those districts; and
    c. Establishing a well-functioning governance structure across the multitude of special districts and general government agencies in the region and then allocating collected funds across the implementing agencies would be politically difficult.
8. Reclamation district assessments can continue to be the primary means of collecting revenues from local property owners for levee and drainage services.
9. Significant public benefits accrue from maintaining and improving Delta levees including “the protection of public highways and roads, utility lines and conduits, and other public facilities, and the protection of urbanized areas, water quality, recreation, navigation, and fish and wildlife habitats, and other public benefits.” (Water Code §12311). Maintaining and enhancing the Delta as a place, sustaining the Delta and regional economy, and protecting and enhancing the unique cultural, recreational, natural resources, and agricultural values of the Delta are also significant statewide benefits.
10. State general fund and general obligation bond funds are the sources for paying the cost share associated with public benefits and State’s interests, and continued provision is consistent with the beneficiaries-pay principle so long as it is proportional to the public benefits accrued.
11. In those parts of the Delta where islands form the water conveyance corridor for the State Water Project (SWP) and Central Valley Project (CVP), prevent evaporation water loss, or provide a salinity barrier to protect export water supply, the water exporters derive significant benefits from the levees originally constructed for flood protection. They derive significant benefits from levee stability due to drainage and protection of habitat. However, the SWP/CVP exporters do not currently pay directly to maintain those levees, and whether their indirect contributions through public funding are proportional to the benefits accrued cannot be readily determined at this time.

12. Linear infrastructure owners (e.g., pipelines, railroads, and electrical transmission lines) that benefit from levees are generally assessed on reclamation district rolls. However, those assessments do not cover the additional network benefits that accrue from maintaining the integrity of that infrastructure. Further, federal facilities are exempted under federal law from paying State or local assessments, fees, or taxes.
13. Recent suspension of the State Responsibility Area (SRA) fire prevention fee through 2030 by the Legislature raises additional concerns regarding the legal and political feasibility of proposing any new revenue collection mechanisms that are modeled after the SRA fee.
14. The CVFPB and DWR will be initiating a stakeholder engagement process to evaluate potential new financing mechanisms to provide additional funding for levee projects and other flood protection measures, including those identified in the 2017 update of the CVFPP.

Financial Mechanisms Analyzed

This Study concluded with detailed analysis of the mechanisms discussed in this section. This analysis evaluated their viability based on the strengths and weaknesses of each mechanisms in terms of the legal, technical, economic, and political opportunities and challenges.

No single mechanism such as the assessment district proposed in the Delta Plan (RR R1) can reach all beneficiaries of Delta levees in a manner that reflects the proportion of benefits received. For this reason, the candidate financing mechanisms are organized so as to cover the entire range of beneficiaries with multiple mechanisms. Again, we emphasize that these candidate mechanisms lack sufficient technical detail to determine feasibility; therefore, this study is not recommending implementation of these measures.

Delta Property Owners

Beneficiaries that are assessed under existing law within reclamation districts include owners of lands within the district boundaries. These landowners benefit from reduced flood damage risk to their property which is fixed on the specific island or tract and are already contributing funding for Delta levee projects. Public agencies that own lands within reclamation districts—including federal agencies, school districts, roads and highways, and State agencies—are included in this group of beneficiaries, although for various reasons some do not pay assessments as discussed previously.

Local reclamation districts can continue to be the primary entities responsible for collecting revenues from local landowners who benefit from district activities and purposes.

Local assessment district—Assessments are imposed and collected by a local agency, such as a city, county or special district (including reclamation districts), under a process governed by statute, Proposition 218, and associated case law. The assessed landowners must approve the assessment methodology defined in the Engineer's Report and changes in the base rate for parcels by a majority vote which is weighted by their proportional assessment amount. Assessments on

owners of property and linear infrastructure within the district are already in effect and the opportunity to generate significant new revenues is uncertain.[53]

Proposition 218's cost allocation requirements limit the amount of revenue that can be collected to cover only the amount proportional to the benefits provided by the assessment district. Only special benefits can be included in the assessment. Costs must be reasonably related to special benefits conferred. The cost allocation method used must be described in an Engineer's Report; the exact method is not specified.

This local assessment district mechanism does not reach beneficiaries that are not landowners within the district boundaries. Consequently, only local property owners pay for the local share of state-sponsored projects (such as DWR's Subventions and Special Projects programs), as well as the entirety of any other levee work costs. Because public roads and school districts are statutorily exempt from assessment, other mechanisms are needed to collect contributions from these agencies under a beneficiary-pays approach. Continued dependence on local assessments could become problematic if state funds are significantly reduced and/or if the need arises for substantially greater revenues.

General Public Beneficiaries

Broadly speaking, public benefits are defined as those that cannot be assigned explicitly to individuals or entities. Beneficiaries cannot be easily excluded from enjoying those benefits, nor can they be charged a price or an entry fee to enjoy them. The classic example of a public benefit is the neighborhood park enjoyed by any visitor or waterways that all boaters can recreate on. The Legislature has defined discrete and identifiable public benefits to be protected by levee projects funded by the Delta Special Projects program (Water Code Section 12311(a)) as: urbanized areas, water quality, recreation, navigation, fish and wildlife habitats, highways and roads, utility lines and conduits, and other public facilities.

Delta levees provide significant statewide public benefits by maintaining and protecting habitat, by ensuring the continued existence of the Delta as a place, and by protecting the ripple effects of regional economic activity on the state economy.[54] The economic ripple effects arise from preventing disruptions to the State's economic activity, and from the Delta's role as a hub for water, energy, and transportation infrastructure networks. Financial contributions reflecting these benefits, which generally accrue to all residents of the State, are best collected through general taxes, and by use of the General Fund and general obligation bonds (and ideally federal appropriations as well) to pay for benefits.

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[53] However, linear infrastructure owners may not be paying in proportion to the benefits accrued due to the nature of its interconnection with other islands and with the State's economy.

[54] The DLIS Peer Review panel describes the broader economic impacts outside of the Delta in James Mitchell, et al, "Methodology and Scientific Basis to Support the Delta Levee Investment Strategy," Report of the Independent Science Panel Review to the Delta Science Program, July 2, 2015.

The financial mechanisms that target the general public beneficiaries derive revenues from general taxes and general obligation bonds. Consequently, *all* beneficiaries will contribute to these mechanisms. However, the general public would pay the largest share, even if the revenues collected may not be proportionate to cost responsibility for individuals.

Existing Modes of Passing through Public Benefits Funding to Levees Financing

As a conduit for State funding raised through general taxes for public benefits provided by Delta levees, the Legislature established the Delta Special Projects program (Water Code §12310-12318) which provides up to 100 percent state cost share, depending on the level of public benefits.[55] The program is authorized to fund work on all non-project levees in the Delta, but is limited to only funding work on SPFC project levees located in the Primary Zone. Project levees in the urbanized Secondary Zone are provided State cost share through the Urban Flood Risk Reduction (UFRR) program. The types of projects authorized to be funded in the program is the improvement, rehabilitation, or modification of existing levees.

The program statute requires DWR to "seek a sharing of costs with the beneficiaries or owners or operators of the public facilities benefited by the flood protection projects."[56] The Legislature appropriates General Fund or bond funding to the Special Projects program through the annual State Budget process, which is then distributed to local RDs to implement construction of levee projects.

In addition to the protection of the discrete and identifiable public benefits identified above, the Special Projects program also directs DWR to implement flood control projects on the eight western islands (Bethel, Bradford, Holland, Hotchkiss, Jersey, Sherman, Twitchell, and Webb) and for the towns of Thornton and Walnut Grove.

For some beneficiary groups, such as recreationists or telecommunications infrastructure, the imposition of new fees may be so technically complex and politically tenuous that it is not worthwhile to pursue new mechanisms to collect from these beneficiaries. This applies to upstream beneficiaries such as stormwater and flood control agencies, hydropower operators, and groundwater users in regions receiving water exports. Transaction costs (i.e., design, implementation, collection) would be too high to justify adopting specific mechanisms to recover costs from these beneficiaries. When allocating cost responsibility, it would make sense to consolidate these beneficiaries into the general public beneficiaries' category as a "next best" solution.

The State's cost share for these public benefits would therefore be provided through annual budget appropriations of either General Fund or general obligation bonds to various levee

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[55] The criteria for determining the level of state cost share based on public benefits of each levee project is defined in the Guidelines for the Delta Special Projects program which were updated by DWR in 2014. (See http://www.water.ca.gov/floodsafe/fessro/deltalevees/special_projects/.)

[56] Water Code §12312, added by the Legislature in 1996, Chapter 601.

programs established in the California Water Code (UFRRP, SCFRRP, FSRP, Delta Subventions and Special Projects).

General Fund

California receives income from several sources, including taxes, revenue from the sale of bonds, and from the federal government. The General Fund is essentially the State's checking account and is the source of funding for most State agencies and their programs. The annual State Budget process is the financing mechanism by which the Legislature appropriates taxpayer revenues from the General Fund or approved bonds. The three largest sources of revenue to the General Fund are personal income taxes, sales and use taxes, and corporate income taxes.[57] The State manages the cash needs of the General Fund through a combination of external and internal borrowing,[58]

The amount of revenues collected is determined through statutes and ballot measures approved by statewide voters. The fiscal year 2017-18 budget signed into law by the Governor anticipates collecting $125 billion in tax revenues.[59] According to the State Controller, the corporate income and sales and use tax revenues have been fairly steady since 2004, but personal income taxes have been more variable.[60]

Cost allocation between the State and local districts most likely would rely on the method currently used for state contributions, the separable costs / remaining benefits approach. Revenue capacity and generation potential are high given that the funds come from the entire state economy, but is unreliable in terms of receiving consistent amounts due to changes in political priorities as new legislators and Governors are elected.

General or revenue bonds

Bond financing is a type of long-term financing that the State and local governments use to raise money, primarily for long-lived infrastructure assets and major capital outlay projects, such as levees. This is done mainly because these facilities are difficult to pay for all at once and provide services over many years, thus benefitting multiple generations of taxpayers over the life of the infrastructure. In contrast, funds to operate facilities or deliver services to the public are typically paid out of current revenues (General Fund).[61]

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[57] State Controller, "State Finances 101," http://www.sco.ca.gov/state_finances_101_state_taxes.html, describes state taxes and General Fund.

[58] State Controller, "Cash Management and General Fund Borrowing," http://www.sco.ca.gov/Files-ARD/Cash_Management_June_2012.pdf June 2012.

[59] Department of Finance, "FY 2017-18 Budget Overview," http://www.ebudget.ca.gov/budget/2017-18EN/#/Home.

[60] Ibid.

[61] California Legislative Analyst's Office, "Frequently Asked Questions About Bond Financing," http://www.lao.ca.gov/2007/bond_financing/bond_financing_020507.pdf, February 2007.

The State Treasurer is the State's banker, investor, and lead asset manager, responsible for selling State bonds, including voter-approved bonds, and administers the State's bond program.[62]

The State has traditionally sold two types of bonds: General Fund-supported bonds and traditional revenue bonds. Both are used to finance infrastructure projects, but the difference between the two is that the former are paid off by the General Fund, while the latter are paid off by a designated revenue stream, usually generated by the projects they finance, such as bridge tolls, parking garage fees, or water contract payments.[63] State-issued revenue bonds for the State Water Project to be repaid from water contract payments.

There are two types of General Fund-supported bonds: general obligation (GO) and lease-revenue bonds, which are both applicable to funding levee projects. GO bonds must be approved by a majority vote of statewide voters and repayment is guaranteed by the State's general taxing powers and directly paid for by the General Fund. In other words, the Legislature must make room in the annual budget to pay the added debt service of GO bonds; therefore, each new dollar of bond debt payment comes at the expense of State funding that would otherwise be allocated to another program area such as education, health, social services, transportation, fish and wildlife, prisons, and other statewide interests. Lease-revenue bonds are approved by the Legislature and paid off by lease payments. They do not require voter approval and are not guaranteed by the State Budget (General Fund), so require higher interest rates to be paid to investors buying these bonds. Historically, lease-revenue bonds have been used to finance higher education facilities, prisons, and state office buildings.[64]

Funding infrastructure projects through bonds is costlier than approving a large General Fund appropriation due to the additional costs of paying interest to bond investors, but these additional costs vary depending on interest rate and period over which bonds must be repaid. Paying the extra cost of using bond financing is often the most fiscally prudent option because the greater expense is outweighed by the benefits of having projects in place sooner.[65] This is particularly true in the case of Delta levees which protect lives, property, statewide interests such as export water supply, utility production and distribution, transportation (vehicles and vessels), recreation, and other public benefits.

A down-side is that bond funding as a source of financing for the State's cost share is not always reliable because it is intermittent and dependent on approval by a majority of statewide voters, which may be difficult if voters are reluctant to incur more State debt. There is additional fiscal uncertainty due to the fact that flood protection bonds must compete for voter approval with other State interests such as schools, parks, prisons, water quality, and wildlife habitat.

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[62] *California Roster*, "Constitutional Officers"http://admin.cdn.sos.ca.gov/ca-roster/2015/pdf/01b-constitutional-officers.pdf, 2015.

[63] Ibid.

[64] Ibid.

[65] Ibid.

Recent bond acts have been issued with little predictive regularity, and with the exception of Proposition 1E approved in 2006,[66] have been directed at a broad range of water, habitat, and other natural resource issues, of which flood control is one small element.[67] As a consequence, funding for flood protection has been contingent on either impending disaster or public support for other issues such as water supply, water quality, and open space preservation.

Unless qualified under the initiative process, placing a bond act on the statewide ballot requires a majority vote of the California Legislature. All general obligation bonds must also be approved by a majority of statewide California voters.

Over the last 15 years or so, general obligation bonds have replaced the General Fund as a source of the State's cost share for levee projects; however, the bonds are paid off through annual appropriations from the General Fund.[68] During this time, multiple water bonds with funding included for flood protection have been approved by voters. The most recent is the passage of Proposition 1, a $7.5 billion water bond with $395 million dedicated to Statewide Flood Management, of which $295 million is specifically allocated for Delta levees. Motivated by levee failures in Louisiana after Hurricane Katrina, in 2006 California voters approved the largest amount for flood protection in two bond measures, $4 billion in Proposition 1E and another $800,000 in Proposition 84. Currently, there is still Proposition 1E bond funding available for Delta levees for another two to three years, with the $395 million in Prop. 1 available after that.

Revenue capacity and generation potential are high given that the funds come from the entire state economy, but are not reliable because placement on the ballot requires action by the Legislature or collection of initiative signatures, and obtaining approval of statewide voters.

Federal financing

This financing mechanism is similar to the State's funding contribution because it requires an annual appropriation by Congress to the U.S Army Corps of Engineers (USACE) through the federal budget process. Funding for Civil Works levee construction program come from the annual Energy and Water Development Appropriation, not the Defense budget, and requires a cost-share from a non-federal sponsor which is the CVFPB in the case of Delta project levees. The process for developing and receiving Congressional approval for levee construction projects is a two-step process that requires three separate votes of Congress and begins when citizens see a need for flood protection, navigation, or other water-related infrastructure and ask the USACE for help. To receive USACE Civil Works funding requires Congress to first vote to authorize and appropriate funding for a feasibility study to examine alternatives and select the levee project that best meets

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[66] CDWR, "Infrastructure Bonds of 2006 (Prop 1E / Prop 84)," http://www.water.ca.gov/sbe/about/ibonds.cfm, retrieved December 1, 2016.

[67] For flood protection allocations, see CNRA, "Proposition 1E Overview," http://bondaccountability.resources.ca.gov/p1e.aspx, retrieved December 1, 2016.

[68] Legislative Analyst, "Frequently Asked Questions About Bond Financing," http://www.lao.ca.gov/2007/bond_financing/bond_financing_020507.pdf, February 2007.

local and national flood protection needs. Once a levee project meets the USACE criteria in a feasibility study that includes a benefit-cost test,[69] then Congress must authorize the project by approval of Water Resources Development Act (WRDA) legislation and then gain subsequent approval for appropriation to fund the federal cost-share for construction in the annual budget process. Federal funding for levee projects would reflect the broad national public interest, including public safety, navigation, the national economy, the ecosystem, and recreation.[70] Once the levee improvement project is completed, the USACE turns over responsibility for maintenance, operation, and liability to the non-federal sponsor (CVFPB).

For the repair of levees damaged in flood events, Congress also approves funding in the annual budget process through an appropriation for Flood Control and Coastal Emergencies.[71] In contrast to the multi-step Congressional authorization of civil works construction projects, non-federal sponsors simply need to apply for emergency repair funding when project levees are damaged in a storm event.

Federal funding for SPFC levee improvement projects or repairs after a flood event has waned in recent years as the USACE has not found that flood protection benefits exceed costs for most project levee improvement.

Revenue capacity and generation potential are high given that federal funds come from the entire national economy, but can be inconsistent due to changing political priorities during the federal budget process.

Water Users and Exporters

Water deliveries through SWP and CVP infrastructure in the Delta rely on the Delta levee system to convey water through Delta channels, to protect the projects' pumping infrastructure, and to act as a barrier against seawater intrusion into the Delta, which protects water quality. There are approximately 1,800 individual diversion intakes in the Delta and approximately 1,100 miles of navigable waterways in the Delta, some of which are used to convey water to the SWP and CVP water export pumps in the South Delta. According to USGS, the Sacramento River Basin typically generates approximately 22 million acre-feet (MAF) annually, with about 11.6 MAF historically used in basin and 6 MAF exported through the SWP and CVP project;[72] however this export volume has been reduced since the implementation of federal biological opinions beginning in 2005. In those parts of the Delta where leveed channels are part of the fresh water conveyance corridor or islands provide a salinity barrier, agricultural and municipal water exporters receive significant

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[69] U.S. Army Corps of Engineers, "Principles and Guidelines," Retrieved June 9, 2016, http://planning.usace.army.mil/toolbox/guidance.cfm?Id=269&Option=Principles%20and%20Guidelines, 2016.

[70] USACE, "Fiscal Year 2017: Civil Works Budget of the U.S. Army Corps of Engineers," http://cdm16021.contentdm.oclc.org/utils/getfile/collection/p16021coll6/id/1571/filename/1572.pdf, February 2016, pp. 58-59.

[71] USACE, "USACE Disaster Operations Public Law 84-99: Flood Control and Coastal Emergency Act (PL 84-99)," http://www.iwr.usace.army.mil/Portals/70/docs/frmp/PL84-99factsheet.pdf, retrieved December 6, 2017.

[72] DPC, Economic Sustainability Plan, Section 4.5 Conclusions.

benefits from levees. Both in-Delta and out-of-Delta water users benefit from Delta levees, although according to the DLIS study, most of the consumptive water use occurs outside of the Delta.

A conveyance channel is a Delta waterway in which a significant amount of water from upstream reservoirs flows through to the SWP and CVP project water export pumps. The State owns all rights to lands comprising natural waterways and channels. The State Lands Commission leases use of those lands for various purposes including for marinas in the Delta.[73] Natural watercourses in the Delta would flow in the natural direction; conveyance from the reservoirs to the export pumps has changed the direction of the flow, changing the natural water course.

Flood protection benefits to water users located outside of the Delta take the form of avoided economic damages. Depending on the duration of disruption and the availability of alternative water supplies, levee breeches can disrupt water exports, which can have impacts outside of the Delta (damaged crops, reduced municipal supplies, and overdrafting of groundwater supplies). Both hydrologic modeling and real-world events such as the Jones Tract levee failure in 2004 indicate that the benefits of avoiding expected economic losses outside the Delta are large relative to the benefits to Delta island residents.

Flooding of Delta islands has the potential to increase evaporative losses of fresh water and increase salinity to levels unsuitable for agricultural and municipal use, which could disrupt water deliveries through the Delta. Therefore, agricultural and municipal water exporters receive significant benefits from levees and drainage.

Water exporters do not currently pay directly to maintain Delta levees; however, the Delta Special Projects program specifically requires DWR to seek cost-share funding from public facility owners or operators,[74] such as the SWP and CVP. Because water exporters generally do not own property within reclamation districts,[75] they do not make direct payments to reclamation districts. Their customers (who are the actual beneficiaries, not the agencies conveying the water because they do not have an independent economic stake) make the same contributions as the rest of the general public through state and federal funding. Financing mechanisms other than assessment districts would be needed in order to collect the requisite revenues from water exporters and their customers. The magnitude of the potential benefits should be further evaluated with specific analysis of the different ways that levees affect water quality and exports before determining the amount of any user fee or impact charge.

In-Delta water users and dischargers also benefit because they use the water moving through the channels to either irrigate crops or consume for municipal purposes, or to receive excess seepage, floodwaters or wastewater discharges, but they are already contributing funding for levee projects

[73] Public Resources Code Section 6501.

[74] Water Code Section 12312.

[75] And even when they do, the assessed value likely is substantially less than the benefits to water exports from the levees.

and drainage through property assessments paid to RDs. Nevertheless, one step in the implementation phase will be disentangling the flood and water-use benefits, and determining if it is feasible and/or desirable to charge these beneficiaries separately from existing assessments.

Upstream dischargers and flood management agencies also benefit from the use of Delta levees, which receive their flood flows and stormwater discharges. As discussed previously, measuring their benefits through impacts on Delta levees may be too technically difficult to justify imposing a water-use fee.

Delta water user fee: This fee would reflect benefits received by *in-Delta water users, water exporters, and upstream dischargers*.[76] To capture these benefits, all significant users of Delta water could be charged a fee based on the amount of water diverted from or discharged into Delta waters. The user fee would be for general use of Delta waters. Notably, in-Delta water users already pay for drainage and levee operation, maintenance, and improvements; and also return water into the system from drainage pumping, so any such fee would have account for those payments. This would be consistent with SWRCB practice to charge diverters in specified situations.[77] Revenue could be distributed to DWR for disbursal, similar to the Special Projects and Subventions programs, or could be distributed directly to the appropriate RDs.

The State Legislature would establish the fee through a majority vote. Imposing the fee may require amendments to the Federal and State water project contracts.

Recognizing the exclusion of in-Delta water users, determining the amount of this fee would require an in-depth understanding of exporting agencies' water contracts and collection of information from the SWRCB regarding the number and size of water supply intakes and discharge pipes in the Delta as well as information regarding their annual diversion or discharge amount.

A Delta Water User Fee would be subject to the requirements of Proposition 26 which requires the charge to be reasonably related to the underlying costs of providing the service.

State Water Project (SWP)/Central Valley Project (CVP) Water Conveyance Fee or Charge

The conveyance fee is for moving water through the Delta from the Sacramento River watershed to the Clifton Court Forebay and Barker Slough. A conveyance fee would be for providing the passage of water from project reservoirs to the California Aqueduct, Delta-Mendota Canal and North Bay Aqueduct, just as a natural gas pipeline charges for conveying gas from wells to a city-gate. The fee or charge would be imposed only for certain channels deemed important to conveyance; it would not be Delta-wide. The channels important to conveyance would be identified through empirical analysis. The fees or charges likely would vary among channels.

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[76] To the extent benefits can be evaluated and measured.

[77] SWRCB, "Fiscal Year 2016-17 Fee Schedule Summary," Water Lease Annual Fee and Water Least Application, http://www.waterboards.ca.gov/waterrights/water_issues/programs/fees/docs/fy1617_finalfeeschedulesummary.pdf, retrieved December 1, 2016.

This water conveyance fee or charge can take one of two forms, a user fee or a lease payment, which differ in their legal basis and institutional treatment. Creation of either the user fee or the lease payment would require a majority vote of the State Legislature. The Federal and State Water Project contracts would also likely need to be amended. The revenue capacity and generating potential could be large, given the economic value associated with water exports.

Export Conveyance Fee

A user fee is simply a state-imposed charge for the use of a resource without specific linkage to how resources relate to each other. The State may not be explicitly claiming a property right to the resource and the State is not establishing a contractual relationship with the user of the resource.

As a user fee, it would be subject to Proposition 26. Cost allocation would be based on the cost of service, per Proposition 26, rather than on relative benefits.

Export Conveyance Lease Payment

A lease payment is a rental payment specified in a contractual agreement—a lease—for use of a resource. In this case, the resource is the Delta channels and the supporting levees on both sides of the path SWP and CVP water travels to the export pumps in the South Delta. Both the SWP and CVP have reservoirs upstream and the California Aqueduct/Delta Mendota Canal downstream, for which they have paid, but they have not directly invested in the infrastructure in the middle, namely the Delta channel levees.[78]

The State owns the natural channels in the Delta, including the channel bottoms. The levees are owned by the RDs in general, although there is a mix of ownership, including private landowners and the CVFPB. Since the State Lands Commission manages state lands under the Public Trust Doctrine, it could potentially administer a Delta channel lease payment for the maintenance of levees on both sides of channels SWP and CVP water travels to the export pumps in the South Delta.[79] The legal basis for this lease would be the same as that for the existing Tideland Oil & Gas Lease administered by the State Lands Commission.[80] Similar examples include Delta marinas, which currently pay leasing fees to the Commission for use of their docks and berths, and Diablo Canyon Power Plant, which pays for a tidelands lease for its cooling structure. As with leases to Delta marinas, power plant cooling systems and oil producing tidelands, the lease would be for use of the channel bottoms up to the State's property line, as defined in statute. A lease payment for

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[78] The current situation is analogous to a natural gas utility buying gas from various wells in Texas or Alberta and delivering that gas through its distribution system in California, but not paying the pipeline owners, which are separate corporations that ship the gas to California.

[79] "The lands under the Commission's jurisdiction are primarily sovereign (the beds of tidal and navigable waters acquired at statehood in 1850) and school lands (lands granted by the United States to California in 1853 to support the public school system)." See SLC, "Frequently Asked Questions," http://www.slc.ca.gov/About/FAQs.html, retrieved September 8, 2016. See also SLC, "Land Classifications," http://www.slc.ca.gov/Info/Land_Class.html, retrieved September 8, 2016.

[80] See for example, SLC, "Leases and Permits," http://www.slc.ca.gov/Leases-Permits/Leases-Permits.html.

use of the Delta channels would be structured as contractual relationship rather than an intergovernmental transfer.

As a lease payment for the use of government property, the Proposition 26 restrictions on fees would not apply. Instead, property-use rates would be tied to fair market value. Lease price could be determined using several methods, with some examples listed in the cost allocation section of the report, or using natural gas utility pricing models such as the one in common use at the Federal Energy Regulatory Commission (FERC).[81] State Lands also has its pricing models for leases. Pricing models would be part and parcel of the next phase of negotiating and choosing which mechanisms are part of the financing portfolio.

Infrastructure Owners and Users

The Delta's contribution to the state's energy network is comparable to its importance to the statewide water delivery systems.[82] Owners of essential infrastructure (e.g., pipelines, railroads and highways) are beneficiaries from levees on certain interconnected islands in the Delta as well as the levee system as a whole. Many contribute funding to Delta RDs, but some do not.

The Delta and Suisun Marsh levees and lands support vehicle and train traffic through a network of crisscrossing inter- and intra-state and state highways, more than 500 miles of major electrical transmission lines, 60 substations, and more than 400 miles of major natural gas pipelines that provide energy throughout Northern California.[83] The Stockton and Sacramento shipping ports are also important to the international delivery of commercial products and agricultural commodities produced in California. The Delta produces 20 percent of California's natural gas-powered electricity and contains the largest natural gas field in the state, as well as the largest natural gas storage facility below McDonald Island. Major electricity transmission lines in the Delta interconnect California and the Pacific Northwest and carry about 10 percent of the peak summer load. Gasoline and aviation fuel pipelines crossing the Delta supply large portions of Northern California and Nevada.[84] These infrastructure facilities are vulnerable to floods, earthquakes, and sea level rise, and require the continued maintenance and improvement of Delta levees.[85]

Owners and end users of these physical infrastructure assets benefit from Delta flood protection in the form of service reliability and avoided infrastructure downtime. The loss of product or service revenues is potentially of greater financial consequence to infrastructure owners than the direct loss of the physical infrastructure; only the latter is recognized in land-based assessments.

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[81] This cost allocation method is not described directly in Appendix B because it is such a narrow application, but it is considered a cost-based method by FERC. See FERC, "Cost-of-Service Rates Manual," Washington, D.C., https://www.ferc.gov/industries/gas/gen-info/cost-of-service-manual.doc, June 1999.

[82] DPC, *Economic Sustainability Plan for the Sacramento-San Joaquin Delta*,, Executive Summary, http://delta.ca.gov/regional_economy/economic_sustainability, January 2012.

[83] DSC, *The Delta Plan*, Chapter 1 Introduction, "Delta by the Numbers,", http://deltacouncil.ca.gov/delta-plan-0, 2013.

[84] Ibid.

[85] DPC (2012), op. cit.

Because these facilities typically span several islands and tracts, the full benefits may not be fully reflected in the benefits-based assessments administered by local reclamation districts.

On the other hand, ownership and regulation of these facilities varies, so that each type of infrastructure would require a different user fee. Additional challenges to imposing comparable fees across different forms of linear infrastructure (e.g., electricity transmission lines, natural gas pipelines, roads, and railroads) include creating commensurate metrics (e.g., is a mile of railroad equal to a mile of transmission?) and coordinating fees across multiple reclamation district jurisdictions. The California Public Utilities Commission (CPUC) regulates privately owned electric, natural gas, communications, water, railroad, rail transit, and passenger transportation providers. Their revenue collection mechanisms could be used as models; however, pursuing such a complex portfolio of mechanisms when the prospect for additional revenue generation potential is relatively small given that most of these entities already pay assessments to the RDs would require further analysis of the relative net benefits if this mechanism was explored.

For publicly-owned facilities such as highways, the added challenge of collecting fees from millions of individual users suggests that these beneficiaries may need to be covered by additional State funding. For transmission lines and pipelines, further research is needed to examine the additional revenue potential from a user fee compared to the revenues collected from assessments, as well as to evaluate the transaction costs of developing and administering such a fee.

Delta Flood Protection Fee

One potential solution to collecting revenues from linear infrastructure beneficiaries could be to impose a Delta Flood Protection Fee. This prospective mechanism would be a State-administered property-based charge that would apply to a broader set of beneficiaries including all users of Delta water, and infrastructure owners that are not currently paying reclamation district assessments. The basis for the fee could depend on the beneficiary type and be implemented in a manner akin to the State Responsibility Area Fire Protection Fee.[86] Most importantly, an equitable approach would suggest that property owners' payments of assessments or other water user fees would be deducted from the Delta Flood Protection Fee, as is done with the Fire Prevention Fee.[87] Consequently, landowners within reclamation district boundaries would be exempt. The agency that could administer such a fee has not been determined, but the disbursement of levee project funding would probably be similar to the role CalFire has in addressing fire risk reduction projects.

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[86] The State Responsibility Area (SRA) Fire Prevention Fee was enacted by Assembly Bill X1 29 in July 2011 after several destructive wildfires. The law approved the new annual Fire Prevention Fee, which applies to all habitable structures within the SRA. The fee is charged to property owners in the rural foothills that are considered to be particularly vulnerable to wildfires, but often do not have sufficient local resources to fight these fires effectively. The fee was a $152.33 per habitable structure before being rescinded in the state's Fiscal Year 2017-18 budget. See "About the Fire Prevention Fee," http://www.firepreventionfee.org/

[87] The exemption is implemented in the Fire Prevention Fee as a fixed amount per structure. The Delta Flood Protection Fee could use a more precise method that differentiates between individual contributions.

As with the SRA Fire Prevention Fee, this revenue collection mechanism would require the approval of new state legislation adopted by either a majority or two-thirds vote.[89] A Flood Protection Fee could be subject to a protest by property owners, as provided by Proposition 218, depending on how the fee was adopted by the Legislature.

The Delta Flood Protection Fee could be assessed on a structure or parcel basis. Cost allocation most likely would follow the cost-based method mandated by Proposition 26. The Flood Protection Fee would generate moderate additional revenue, based on the experience to date with the Fire Prevention Fee.

If mechanism is designed to be similar to the SRA fee, then there is significant exposure to legal challenge from property owners and the Howard Jarvis Taxpayer Association (HJTA) which filed a lawsuit against implementation of the SRA fee.[88] In addition, local fire districts have expressed concern that the statewide fire prevention tax has harmed their efforts to raise property assessments for local fire protection services if landowners vote no on Proposition 218 ballot measures due to their false perception that the SRA fee revenues are distributed to local fire districts.[89] However, recent enactment of the Fire Prevention Fee and the adoption of the San Francisco Bay Restoration Authority parcel tax in June 2016 demonstrate the political feasibility of these types of parcel taxes.

Summary of Potential Mechanisms and Associated Beneficiaries

Table 7-1 summarizes the set of feasible financing mechanisms that resulted from the screening process conducted in this Study. The table indicates which beneficiaries would be paying the levy or charge under each mechanism.

- An "X" highlighted in pink indicates that a mechanism is directly applicable to that beneficiary group and could feasibly collect funds in a proportionate manner to cost responsibility.
- An "AB" highlighted in aqua indicates that a feasible mechanism is directly applicable to that beneficiary group, but that it may be too administratively burdensome to collect fees from that specific group; due to the transaction costs of implementing the mechanisms and collecting the revenues likely being too high to justify adopting such a mechanism for these beneficiaries.[90] Instead, cost responsibility for these groups would be allocated to the general public funds.
- The grey-highlighted squares indicate that under the public benefits financing mechanisms, all beneficiaries would pay some amount due to the broad revenue base of

[88] The basis of the HJTA lawsuit is revenues paid by landowners is used to fund fire prevention activities on other properties and is therefore a tax, not a fee. A tax requires approval by 2/3 of the Legislature, but the SRA fee was only approved by a simple majority. This issue has not been resolved because the state rescinded the SRA fee in the 2017-18 budget.

[89] FireTaxProtest.org.

[90] The rationale for the rejection of these mechanisms is discussed further in Appendix F.

those mechanisms, but that amount is not proportionate to the beneficiary-pays principle; and

- The green-highlighted cells with a "%" indicate the beneficiaries targeted with general tax mechanisms that would pay a large share relative to their realized benefits, but that the revenues collected may not be proportionate to cost responsibility for specific individuals due to the issues surrounding public goods discussed earlier in this report.

Table 7-1 Identified Feasible Financing Mechanisms Matched to Beneficiaries

MECHANISMS	Property-related	Assessment district	Delta Flood Prevention Fee	User Fees	Delta water user fee / AF	SWP/CVP Water Conveyance Fee	Water conveyance "capacity" pricing	Public benefits financing tools	General Fund	General/revenue bonds	Federal financing
BENEFICIARIES											
Community Beneficiaries											
Delta Resident Personal			AB						%	%	%
Delta Commercial & Residential Property Owners		X	X								
Delta Public Facilities		X	X								
Delta Schools											
Local Economy									%	%	%
Agricultural Water Users											
In-Delta Ag Operators		X	X		X						
Out of Delta Ag Water			X		X	X	X				
Municipal Water Users											
In-Delta Muni. Water		X	X		X						
Out of Delta Muni.			X		X	X	X				
Infrastructure Owners & Users											
EBMUD		X	X								
Oil and Gas Companies		X	X								
Power plant Owners		X	X								
Electricity Infrastructure Owners		X	X								
Telecommunications Companies		X	X								
Railroad Companies		X	X								
State Highway Users			X								
Ports			X								
Upstream Dischargers											
Wastewater Dischargers					AB						
Stormwater Dischargers					AB						
Hydropower owners									AB	AB	AB
General Public											
Public concerned for									%	%	%
Commercial									AB	AB	AB
Recreation participants									AB	AB	AB
Delta as Place									%	%	%
State and Local Government											
State Government									%	%	%
Local Government									%	%	%
Special Districts									%	%	%

State Economy								
Ripple Effect						%	%	%

Conclusion

Other efforts[91] have documented the major issues and challenges to implementing a long-term funding strategy for flood risk reduction, not only in the Delta, but throughout the State. Recent studies—DWR's *Water Plan*, the *Central Valley Flood Protection Plan*, and DWR's *California's Flood Future Report*—identified the statewide need for more than $50 billion to complete flood management improvements and projects. The 2017 update of the Central Valley Flood Protection Plan includes new revenue collection mechanisms to fund maintenance of SPFC project levees in the Sacramento Valley and Delta, although it does not estimate the expected revenues from those mechanisms.

Currently, only local landowners pay directly for levee improvements and maintenance by assessments or taxes paid on their property. Other beneficiaries of Delta levees are not explicitly recognized, and only pay indirectly for levee benefits to the extent that their taxes contribute to the General Fund. To move to a beneficiary-pays approach, the State would need to estimate the different public and private benefits and collect fees or taxes from the beneficiaries where administratively feasible. As a result, some beneficiaries that currently receive private benefits but do not directly pay for levees could be required to pay. These include water suppliers and users, as well as owners and users of cross-Delta infrastructure.

This Study demonstrates that no single financing mechanism is likely to generate sufficient revenues to pay for the Delta's flood risk management needs consistent with the beneficiary-pays principle. In addition, none is consistent with the recommendation in the Delta Plan to establish a Delta Flood Risk Management Assessment District. It also illustrates the complex challenges of developing revenue-raising approaches within California's existing web of legal and regulatory constraints on fees, taxes, and assessments.

These challenges include identifying the beneficiaries, determining the economic values of their benefits, and finding the best set of financial mechanisms that can collect revenues. The new mechanisms identified in this Study were evaluated at a high level, sufficient to draw broad conclusions about feasibility, but lacking sufficient details to be considered more than conceptual at this point. Additional challenges lie ahead if the State moves forward with further development and evaluation—these include determining the levee improvements needed and associated costs, the benefits derived from such improvements, the time frame of the investments and revenue stream needed to pay for those investments, how to disburse revenues in a manner that ensures those that paid receive benefits commensurate with their level of contribution, and the appropriate government agencies to implement the various financial mechanisms.

Although the principle of "beneficiary-pays" has long been discussed as a basis for paying for water infrastructure (and is the motivation for this Study), the State has not adopted policies or principles for an alternative to bond funding for Delta levees. This Study describes the concept of a beneficiary-pays funding system, with a focus on legal constraints and cost allocation issues, and identifies feasible financial mechanisms for further study.

Figure 7-1 below shows the current financing approach with the existing mechanisms as they apply to the main categories of beneficiaries. Figure 7-2 shows how a beneficiary-pays system would add one or more fees to the current financing approach. Further quantitative analysis and deliberation among stakeholders will be needed to determine the most appropriate portfolio of mechanisms and how they should be implemented.

Figure 7-1

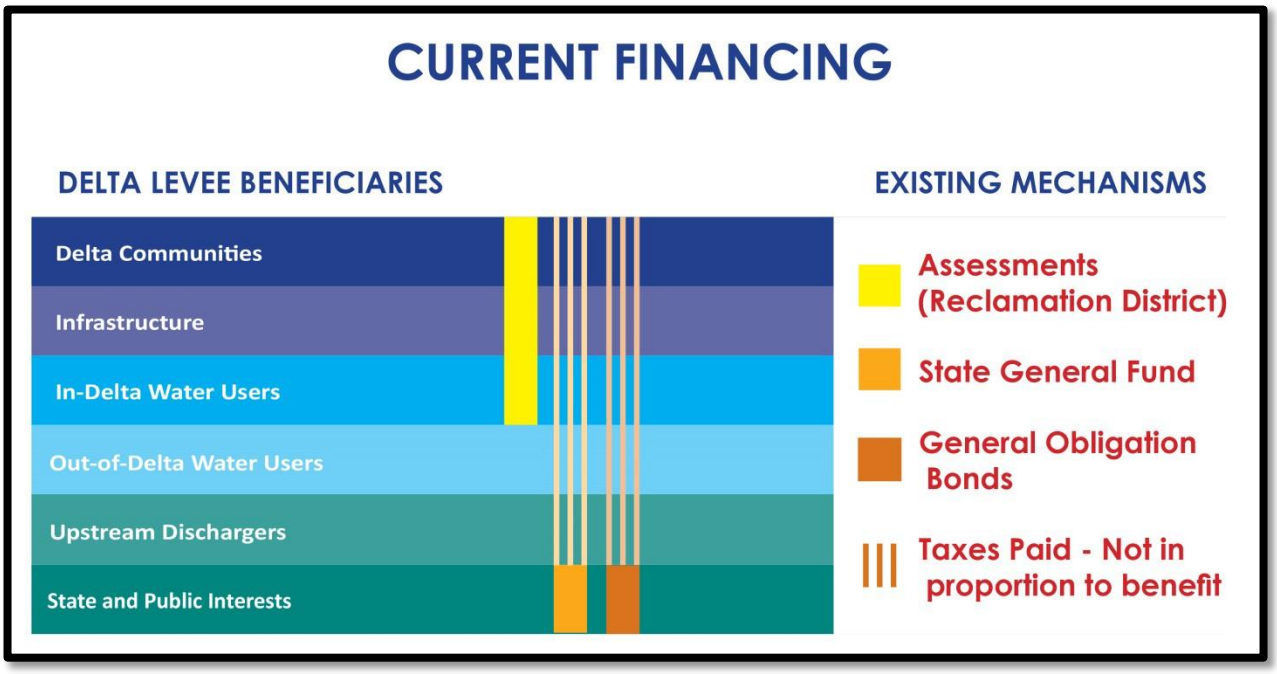
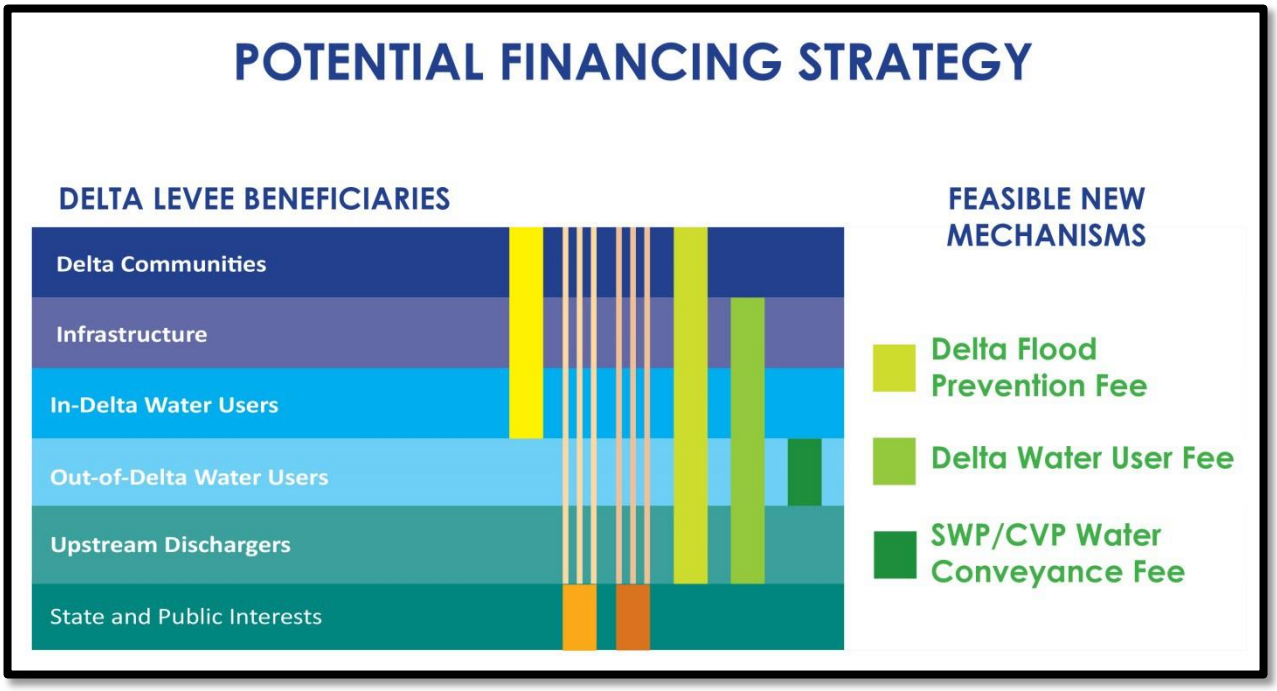


Figure 7-2



This Study does not recommend implementation of any of the preferred mechanisms. Rather, based on the assessment of mechanisms determined to be most feasible to implement a beneficiary-pays-based approach to funding levee work, it identifies the issues which would need further analysis to move forward with implementation. As part of the financing sources currently being evaluated by DWR and the CVFPB, these mechanisms should be considered for further evaluation in the stakeholder process established to develop levee financing mechanisms pursuant to recommendations in the 2017 update of the *Central Valley Flood Protection Plan*. Regardless, adopting any of the new mechanisms will require agreement among key stakeholders that the resulting portfolio of mechanisms will be preferred to the current system.