

Delta Flood Risk Management Assessment District Feasibility Study: Draft Observations and Findings

September 22, 2016

This briefing memorandum presents findings from the Delta Flood Risk Management Assessment District Feasibility Study (DFRMADFS or the Study). It identifies and describes the most feasible finance mechanisms that could be deployed to generate revenues to pay for levee maintenance, repair, rehabilitation and improvements (or more generically, levee “work”) or other means of reducing flood risk. The preferred mechanisms are based on the “beneficiary-pays” principle; levee beneficiaries should pay for the share of flood protection costs that matches with their received benefits. These findings resulted from the analytical approach described in several previously published project memoranda.¹

Our analysis 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 approach relies primarily on:

- Reclamation districts, which cumulatively cover most of the Delta, that assess Delta property owners based on their proportionate share of flood risk reduction benefits; and
- State and federal funding that reflects the general practically all of flood risk reduction, as authorized by various California and federal statutes. Because California relies mainly on General Obligation bonds, funding for levee work has been episodic, varying with the provisions in each bond act.

¹ All project memoranda may be found at http://www.delta.ca.gov/Flood_Risk_Assessment.htm

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However, existing mechanisms 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. The beneficiary-pays principle indicates a need to collect revenues from these two groups, which would necessitate

implementing *new* financing mechanisms. In addition, the current approach lacks revenue stability and reliability which leads to a need to explore further means of providing that steadiness.

General Observations

1. The universe of benefits and beneficiaries from Delta levees *includes many entities and individuals that are located outside the Delta*. In some settings, the sum of the benefits to those outside the Delta exceed benefits to in-Delta entities. This implies that no single “stand alone” mechanism will be applicable in all situations, which was the initial premise for looking at a Delta-wide assessment district.
2. Assessment districts, such as reclamation districts, use property-based assessments to pay for levee work. California law constrains the use of property-based assessments, and limits their application to only those beneficiaries that own property within the district. The most important constraints are embedded in the State constitution, making significant changes highly unlikely for a single issue such as levee financing. Therefore, by definition *they cannot and will not reach the full array of Delta levee beneficiaries*.
3. *A Delta-wide assessment district is likely infeasible* for two reasons:
 - a. It cannot capture revenues from all flood protection beneficiaries in the Delta because many of them do not control significant taxable property to be assessed in the Delta,² and

² Publicly-owned property (by local, state, or federal agencies) is tax exempt and does not pay assessments unless agencies explicitly agree to pay fees in lieu of assessments, when funding is available.

- b. It would face significant legal and political hurdles to cross-jurisdictional boundaries, such as counties and special districts, in order to apply to all Delta property owners. Moreover, benefits vary significantly across geography and beneficiaries, making assignment of cost responsibility so complex as to be unachievable under State law. The San Francisco Bay Restoration Authority rejected a regional assessment district approach for this reason.
4. 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. However, *no existing agency* has the full governance capacity or authority to guide and administer *the comprehensive range of finance mechanisms that may be needed*.
5. In most settings represented by the archetypes employed in this Study, *the majority of benefits accrue and as a result costs should be allocated either to public beneficiaries for ecosystem purposes or statewide economic benefits, and/or to infrastructure owners and water exporters outside the Delta*. The exceptions are urban developments in the Secondary Zone, where high property values generate substantial benefits from flood risk reduction investments relative to the benefits that accrue to external interests.
6. State funding for levee work over the last four decades has shifted from the General Fund to voter-approved bonds which are episodic or erratic; the current funding amount will be exhausted within the next decade. Further, California has not developed a transparent and consistent policy for allocating funding for levee work equitably among beneficiaries.³
7. State and federal law and accompanying guidelines yield mutually exclusive, and in some cases, contradictory cost allocation protocols.⁴ This is particularly apparent in settings where there are large State interests (such as extensive publicly-owned habitat within a reclamation district) and this embedded contradiction creates distorted outcomes, including inequitable allocations among beneficiaries. For example, the separable-cost / remaining-benefits allocation method

³ See Project Memorandum #1 for a description of current and historic financing.

⁴ See Project Memorandum #7 on cost allocation issues.

used by California agencies may not arrive at the same cost-sharing as the benefits-based method required to be used by reclamation districts under Proposition 218.

8. As a related matter other fiscal considerations, such as revenue capacity⁵ and revenue-generating potential⁶, relative tax burdens on affected taxpayers, and debt-to-income or assets ratios, can limit property owners' ability to pay their state- or federally-determined cost share. This Study does not address the additional issue of solving this ability- to- pay conundrum, but we raise it for further consideration by stakeholders and decision makers.⁷
9. Because some of the financial mechanisms legally require a benefit-cost analysis, we calculated benefit-cost ratios for hypothetical investments in each of the five archetypes. While we caution readers against interpreting these results as endorsements of specific investments in particular levees, we found that the benefit-cost analysis (BCA) ratios appear to justify further investment in flood protection in most of the archetypes, with the following caveats:

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- a. For agriculturally-dominated islands and tracts, benefits exceed costs when meeting Bulletin 192-82 / PL84-99 standards, but not for higher flood risk reduction levels. This outcome suggests that for these settings other public benefits would need to be identified to justify investments beyond Bulletin 192-82 standards to protect against seismic failure or sea-level rise.

⁵ *Revenue capacity* is the ability of the targeted beneficiary group to sustain and absorb the levy or charge given its income and wealth. This is an important dimension of assessing ability to pay for a particular beneficiary group.

⁶ *Revenue generating potential* is the amount of funds that can be produced by the mechanism relative to total costs and as a relative share among beneficiaries. This dimension reflects on whether sufficient funds will be generated to cover costs, and whether a particular mechanism generates sufficient funds to justify overcoming political opposition and subsequent transaction costs of collecting the revenue.

⁷ A separate report is being prepared for the Delta Protection Commission addressing application of ability to pay provisions under existing law. That report will cover these issues in more specificity.

- b. For tracts or islands encompassing linear infrastructure or water conveyance corridors, the BCA ratios are large even for the higher cost scenarios. This suggests that investments in enhanced flood risk reduction are economically justified in these situations.
- c. For islands with small or urban communities, whether or not the island already has sufficient protection significantly influences the BCA ratio. For small communities, the archetype BCA ratio is similar to that found by the U.S. Army Corps of Engineers in its 2014 report, which could not justify federal spending on these levees.⁸ For tracts in the Secondary Zone with significant urban development, the BCA ratio appears to be many times greater than the costs, implying that the economic benefits clearly justify investment in structural flood risk reduction.

Feasible Mechanisms

The following mechanisms are most feasible based on pursuit of a beneficiary-pays approach to paying for Delta levee work: assessments, public funding (both state and federal), water use fee, water conveyance fee, and flood prevention fee. The project team envisions that these mechanisms would be implemented as a portfolio—each mechanism would apply to specific beneficiaries depending on whether and where the benefits are received. No single mechanism can reach all Delta levees beneficiaries in a manner that reflects the proportion of benefits they receive. Consequently, multiple

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mechanisms could apply to each category of beneficiaries. Implementation of the new mechanisms—water use, water conveyance and flood prevention fees—require further research and discussion among stakeholders.

⁸ U.S. Army Corps of Engineers, “Appendix B: Economics for Delta Islands and Levees Feasibility Study, California,” Sacramento District, Water Resources Branch, Economics Risk Analysis Section, April 2014. Note, however, that this conclusion applied only to the costs of proactively managing flood risk through levee improvements. The USACE report includes inundation repair costs as an upper bound on at least a portion of the benefits as an alternative cost. The authors have not compared the benefits in this archetype against the costs to rehabilitate a flood damaged structure in order to determine if after-the-fact compensation by USACE or FEMA is likely to be economically justified. Note, no funding is paid out by USACE if the BCA is too low or if the project is not meeting the current inspection criteria (i.e., are currently ineligible).

1. Assessments

As used by reclamation districts, assessments can continue to be the primary means of collecting revenues from local property owners who benefit from in-Delta activities and purposes, e.g., farming behind levees or owning property in local communities. Subject to Proposition 218 and associated case law, assessments must be based on the value of the special benefit provided to each parcel.

Beneficiaries currently assessed include: *residential, commercial and agricultural properties within those districts (but excluding public safety beneficiaries, i.e., reduced mortality), in-Delta water users with property within the reclamation district, and privately-owned infrastructure located in the district.*⁹ These groups benefit from reduced flood damage risk to their property.

Further analysis is needed to determine whether owners of infrastructure within those reclamation districts pay sufficient amounts, given benefits accruing to outside-of-Delta activities and purposes. This group of infrastructure owners could be covered by an alternative mechanism, such as the Delta Flood Prevention Fee discussed below.

Assessments do not reach beneficiaries that are not local property owners. Consequently, local property owners alone pay for the “local” share of state-sponsored projects, as well as the entire cost of any other levee construction and maintenance efforts.

2. Public Funding

The beneficiaries covered by public funding mechanisms include: *public safety (reduced deaths from flooding), the local and State economy, the ecosystem, recreational users, upstream dischargers, and indirectly, government agencies.* Other beneficiaries (Delta water users, utilities and infrastructure users, national economy) contribute to public funding of levees (through general taxes) but in very small proportion relative to their individual benefits from Delta levees.

⁹ Beneficiaries who do not own or rent property within an existing district and most public agencies fall outside of this group.

This distinction is the basis for identifying alternative mechanisms that cover these other beneficiary groups.

Public funds pay for levee work that provides three types of *public benefits*¹⁰ specific to the Delta—habitat services, use of ecosystem resources, and the ongoing existence of the Delta as a distinct place. Additional state interests—avoiding disruptions to economic activity and maintaining the Delta as a hub of water and energy infrastructure networks—further justify spending public funds on Delta levees.¹¹

State General Fund: This mechanism is an appropriation from the General Fund to qualifying levee management agencies (LMAs), just as the State makes direct contributions to school districts or counties for their ongoing operations on a continuing basis. This funding is authorized by the Legislature in the annual Budget Act.

State Bonds: Although California used to pay for its share of levee work with its General Fund, it has relied largely on General Obligation bonds to pay for this work since 2002. State General Obligation bonds require voter approval. Consequently, funding for flood risk reduction (which is typically a small portion of each bond act) depends on public support for other issues, such as safe drinking water, water supply infrastructure, parks, and open space. The transition from General Fund to episodic bond funding has undermined the perceived reliability of State funding for local levee projects. Existing funding from available General Obligation bonds for Delta levees will last approximately seven to 10 years, at current expenditure rates.

Federal Funds: Federal money pays for a portion of Delta project levee work. The U.S. Army Corps of Engineers (U.S. ACE) administers these funds,¹² which reflect the national interests in the Delta, including *public safety, the national economy, the ecosystem, and recreation*. To receive funding, levee construction projects must pass a benefit-cost test or have ecosystem benefits that merit national

¹⁰ Broadly speaking, public benefits are those that cannot be assigned explicitly to individuals or entities. The beneficiaries cannot be easily excluded from enjoying those benefits, so they cannot be charged a price or an entry fee to enjoy them. A classic example of a public benefit is the enjoyment of a sunset—no one can sell tickets to the event.

¹¹ These benefits are delineated in the supporting appendix to Project Memorandum #5. DLIS Technical Memorandum 3.1 describes how it estimates benefits for terrestrial habitat protection in Section 3.5. 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, 2016.

¹² This process is described in Project Memorandum #1 on historic funding.

attention,¹³ though recently, the U.S. ACE found that the flood risk reduction benefits did not exceed the costs of most Delta levee improvements.¹⁴ To obtain federal funding for non-project levees would require new Congressional authorization and appropriations.

3. Water Use Levy

Agricultural and municipal water users, both in-Delta and exporters, receive significant benefits from the Delta levees on the tracts or islands that convey fresh water to the pumps or provide a salinity barrier. The potential benefits of flood protection measures to Delta water users take the form of avoided economic damages and/or overdrafting of groundwater supplies. Both hydrologic modeling¹⁵ and real-world events such as the Jones Tract levee failure in 2004 indicate that the benefits of avoiding economic losses are large relative to the benefits to agricultural operations or habitat values on these particular islands. In addition, upstream flood control agencies and other dischargers benefit by having a downstream place to move their excess waters. The magnitude of the potential benefits should be further evaluated with specific analysis of the different ways that levees affect water conveyance and water quality before determining the amount of any fee or charge to water users or dischargers.

Delta Water User Fee: Users of Delta water could be charged a fee based on the amount of water diverted from or discharged into Delta waters.¹⁶ The fee revenues would be disbursed to the islands and tracts where levees benefit water conveyance. This fee would reflect benefits received by *in-Delta water users, water exporters, and upstream dischargers*.

¹³ See discussion of historic financing in Project Memorandum #1 and cost allocation methods in Project Memorandum #7.

¹⁴ See U.S. Army Corps of Engineers, Delta Islands and Levees Feasibility Study <http://www.spk.usace.army.mil/Missions/Civil-Works/Sacramento-San-Joaquin-Delta/>

¹⁵ The project team both reviewed Delta Levee Investment Strategy modeling results and tested cases in its archetype using DWR's Delta Emergency Planning Tool. Further modeling is required to substantiate these and other analyses, but the results to date have been consistent in direction and magnitude.

¹⁶ This mechanism is similar to Bay-Delta Financing Plan user fee proposed in 2004, which identified levee financing as one component. The 2004 Plan proposed that SWP/CVP fund 15% of levee costs throughout the Delta without targeting specific islands that provide these benefits. See the California Bay-Delta Authority, "CALFED Bay-Delta Program Finance Plan," December 2004.

Water Conveyance Fee: Water exporters—both the State Water Project (SWP) and Central Valley Project (CVP)—do not pay directly for Delta levees work. Because water exporters generally do not own property within reclamation districts,¹⁷ they do not contribute to assessments.

A Delta Water Conveyance Fee could take one of two forms— a user fee or a lease payment:

User fee: A user fee is a state-imposed charge for the use of a resource. As a user fee it would be subject to Proposition 26, which would require it to be based on the cost-of-service basis, rather than on relative benefits (as with assessments).

Lease payment: A lease payment is a rental payment specified in a contractual agreement—for use of a resource—for the Delta channels and the supporting levees in this case. Both the SWP and the CVP paid for their upstream reservoirs and the downstream California Aqueduct, but they have not directly invested in the essential infrastructure in between, namely the Delta channel levees. This 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 (who are separate corporations) who ship the gas.

The Proposition 26 restrictions on fees do not apply to the use of government property. As a lease payment, property-use rates would be based on fair market value.¹⁸

Creating either form of a Water Use Levy would require a majority vote by the State Legislature. In addition, the federal and state water contracts would need to be amended to collect the fee. These significant challenges notwithstanding, the revenue capacity and generating potential could be large given the economic value associated with water exports.

¹⁷ With the exception of Metropolitan Water District’s recent purchase of four Delta islands; some of these islands provide significant benefits to conveyance or act as salinity barriers.

¹⁸ Determining the value of a channel basin lease would be akin to gas pipeline pricing. The cost allocation method would need to be determined—it could use a Federal Energy Regulatory Commission pricing model for pipelines as this is an analogous situation.

4. Delta Flood Prevention Fee

In some areas of the Delta, owners and users of linear infrastructure (e.g., pipelines, railroads, shipping channels, and highways) benefit from Delta levees in the form of service reliability and avoided infrastructure downtime. The loss of product or service revenues is potentially a larger consequence to infrastructure owners than the direct loss of the physical infrastructure. Because these facilities typically span several islands and tracts, local reclamation districts may not capture the full value of benefits in their assessments.

A Delta Flood Prevention Fee would capture the broader range of benefits that accrue to the owners and users of linear infrastructure. This state-administered and property-based charge would apply to a very broad set of beneficiaries including *property owners in local Delta communities, all Delta water users and exporters, and infrastructure owners*. The Flood Prevention Fee could be implemented in a manner akin to the existing Fire Prevention Fee in the State Responsibility Area.¹⁹

However, significant variation in ownership and regulation of linear infrastructure facilities could require a different form of user fee for each. Implementation challenges include imposing comparable fees across different forms of linear infrastructure (i.e., electricity transmission lines, natural gas pipelines, roads, shipping channels, and railroads); using commensurate metrics (e.g., is a mile of railroad equal to a mile of electrical transmission?); and coordinating among agencies (CalTrans, the California Public Utilities Commission, the Ports of Stockton and West Sacramento).

For publicly-owned facilities such as highways and shipping channels, there would be a significant challenge in collecting fees from the millions of individual users. Consequently, it may be more cost-effective to use additional State funding to cover these beneficiaries. For privately-owned infrastructure, further research is needed to examine the additional revenue from a user fee (compared to a standard assessment), as well as an evaluation of the transaction costs of developing and administering such a fee by a public agency.

¹⁹ The Fire Prevention Fee (FPF) 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 FPF was adopted in 2011 after several destructive fires. The fee currently is \$152.33 per habitable structure. See “About the Fire Prevention Fee,” <http://www.firepreventionfee.org/>

The Legislature would need to enact a Delta Flood Prevention Fee by either a majority or two-thirds vote, depending on the outcome of ongoing litigation related to the Fire Prevention Fee.²⁰ Whether fee legislation can pass will depend on the motivation of all Delta stakeholders—property owners, all water users, and users of infrastructure—to protect themselves and their investments. The June 2016 passage of the San Francisco Bay Restoration Authority parcel tax demonstrates that broad political support for regional parcel taxes is possible.

Conclusion

This Study found that the current suite of financial mechanisms is insufficient to reach the complete set of Delta beneficiaries, and that new mechanisms need to be created. These new mechanisms would collect revenue from those beneficiaries of Delta levees who do not currently pay in proportion to their benefits. This is particularly important in light of the condition of some Delta levees and chronic underfunding of levee work.

This Study presents the mechanisms determined to be most feasible, based on a broad set of criteria. The figure below shows the mechanisms found to be feasible as they apply to the identified beneficiaries.

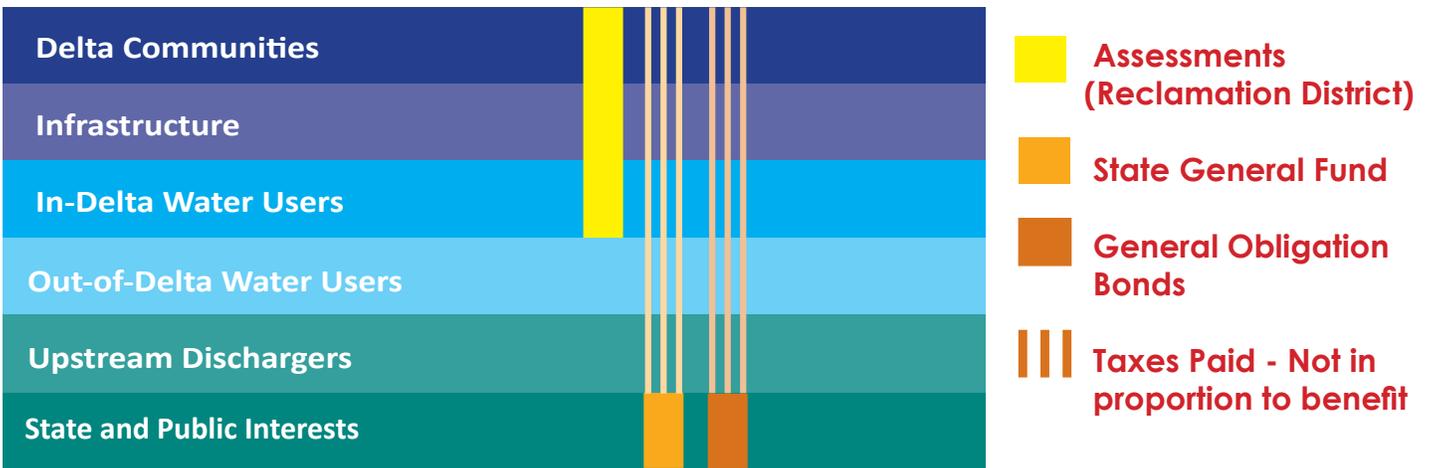
The project team recommends that this analysis serve as a platform for further collaboration to develop a fully effective financing strategy for Delta levee work, including implementation steps. This will require additional quantitative analyses and further deliberation among stakeholders. It may also entail creating a new state-recognized fund for collecting monies, and developing new or amended agency mandates and organizational structures.

²⁰ See <http://firetaxprotest.org/>.

DELTA LEVEE BENEFICIARIES

Delta Communities	Schools - Facilities - Personal Safety - Residents - Local Economy
Infrastructure	Power Lines - Railroads - Telecommunications - Pipelines - Highways - Ports
In-Delta Water Users	Delta Agriculture - Delta Municipal Users
Out-of-Delta Water Users	Central Valley Agriculture, Southern California Municipal Users
Upstream Dischargers	Wastewater and Stormwater Management
State and Public Interests	Public Safety - Ecosystem Health - Recreation - Economy

CURRENT FUNDING MECHANISMS



CURRENT AND FEASIBLE POTENTIAL FUNDING MECHANISMS

