

Funding Options for State Public Share CALFED and other Statewide Water Programs

Working Draft

The purpose of this memorandum is to develop finance examples for funding the California public's share of CALFED program costs and other water-related programs of Statewide interest. Options will focus on three finance tools:

1. General Fund annual appropriations
2. General obligation bonds—repaid by the General Fund
3. A monthly water charge on urban water connections

The options are to assist discussions among stakeholders, agency representatives, the Governor's office, and the legislature. These options have not been developed through any rigorous screening process, except that they are believed to satisfy the CALFED Principles and the basic guidelines for cost allocation and recovery as described in the Draft FOR and in the Finance Plan. Other options are possible, and are likely to be generated as part of the discussion of the options presented in this paper. Therefore, the options here should be viewed as candidates, not as recommendations.

BACKGROUND

The Finance Plan for the California Bay-Delta Program identifies an unmet funding need of about \$6.3 billion over the next 10 years in order to meet Program objectives. The Plan proposes how that unmet need would be allocated among broad beneficiary categories, based on an assessment of the distribution and, to the extent possible, the quantification of benefits. Using this benefits-based approach, which was developed and described in the Draft Finance Options Report (FOR), the costs of each of the CALFED program elements are allocated among beneficiary categories. Beneficiary categories include water user groups, local beneficiaries, the California public as a whole, and the federal public. The Plan has not specified the exact financial tool or tools that would be used to provide the funding to meet the State public's allocated costs.

The CALFED program restricts its projects and activities to the Bay-Delta watershed and areas receiving water supply benefits from it – collectively these areas are called the Bay-Delta Solution Area. Other water-related projects and activities in other areas of the State also provide broad public benefits to the citizens of the state. These can include, for example, flood management, coastal water quality improvements, and other regional water management and water quality improvements.

FUNDING TARGET

For the CALFED Bay-Delta Program the total amount of unmet funding allocated to the public of California is summarized by year and program element in Table 1 below. Additional funding could be sought for other water and environmental infrastructure that meet the criteria of providing public benefits but falls outside the scope of the CALFED Program; such as flood management. The appropriate share of such projects to be allocated to State public funding has not yet been assessed. For purposes of this analysis, funding options for a combination of CALFED programs and other projects are developed totaling about **\$200 million per year**.

The CALFED Program funding estimates have subtracted the available state funding from Propositions 13 and 50 or from other sources. The total unmet funding need is about \$1.5 billion over the 10 years. The average annual funding need (again, only for the California public's allocated share) is about **\$165 million per year** from year 6 through year 14. The year 6 need is only about \$11 million, but the need in years 7 through 14 ranges between \$169 and \$191 million.

TABLE 1

CALFED Bay-Delta Program State Public Share of Unmet Funding Need (\$ in millions)			
Program Year	Total State Public Share	Eligible for Bond Financing	Not Eligible for Bond Financing*
Year 5	\$ -	\$ -	\$ -
Year 6	\$ 10.8	\$ 2.9	\$ 7.9
Year 7	\$ 190.9	\$ 175.4	\$ 15.5
Year 8	\$ 169.5	\$ 154.0	\$ 15.5
Year 9	\$ 189.4	\$ 173.9	\$ 15.5
Year 10	\$ 181.2	\$ 163.3	\$ 17.9
Year 11	\$ 181.7	\$ 166.2	\$ 15.5
Year 12	\$ 188.3	\$ 172.8	\$ 15.5
Year 13	\$ 186.9	\$ 171.4	\$ 15.5
Year 14	\$ 186.9	\$ 171.4	\$ 15.5
TOTAL	\$ 1,485.6	\$ 1,351.3	\$ 134.3
Average for Years 6-14	\$ 165	\$ 150	\$ 15

* For analysis purposes, Science and Oversight costs are assumed to be non-capital expenditures ineligible for bond funding. A more detailed accounting by program is being undertaken to assess which portions of all programs would be potentially eligible.

The portion of the State share of the CALFED Program that may be eligible for bond funding is both a technical and legal question. For purposes of analysis, the annual share

of two programs (Science and Oversight) is assumed to be funded only through annual revenue sources, with other program costs potentially eligible for bond financing. An accounting of costs potentially eligible in each program has not been complete; such an accounting will identify which portions of program elements are likely to be eligible for bond financing.

The costs shown in Table 1 do not include construction costs for some conveyance and surface storage projects. The State public share (if any) of these projects would be in addition to the \$165 million average per year.

SUMMARY OF OPTIONS CONSIDERED

Although presented individually below, revenue mechanisms need not be exclusive. For example, dedicated water charges could be combined with general fund appropriations and/or with bonds to create a package of financing tools. Also, bonds are generally designated to pay for capital investments and directly related expenditures, so they would need to be combined with another revenue source (annual appropriations or dedicated water charges) in order to finance the entire California public share of the CALFED program.

1. **Annual Appropriations.** One option is simply annual appropriations from the State's general fund. Such appropriations would follow the funding pattern described above, with the State public's average funding share of \$165 million for the CALFED program, or higher to include other statewide water programs.
2. **General Obligation Bonds.** Statewide bonds are an important financing option for infrastructure, including projects to improve water supply, management, and quality and to restore fish and wildlife populations and habitat. General obligation bonds typically have a repayment period of 15 to 30 years, and are repaid from the State's general fund. A related financing tool is the self-liquidating general obligation bond, which has a dedicated revenue stream used for repayment, but which also is backed by the faith and credit of the State if that dedicated revenue stream fell short. Self-liquidating general obligation bonds could be issued and repaid with a new revenue source implemented for that purpose, such as a water charge).
3. **Water Infrastructure Charges.** Several variations of the water charge option were considered, including a monthly charge on residential connections only and a charge on all municipal collections (residential, industrial, commercial, and other). Variations on these two options were created to attempt to reduce the perceived inequity in charging all connections the same monthly rate. First, multi-family connections were charged at half the rate per residential unit as single-family detached units. Second, estimates of households on limited and fixed incomes (defined for purposes of the analysis here as households below the poverty level and whose heads of household were over 65) were removed from

the rolls subject to the charge.¹ Finally, a volume-based charge was also developed.

OPTION 1 -- ANNUAL APPROPRIATIONS

The simplest implementation of funding through annual appropriations is to match the appropriation to the annual State’s share of CALFED and other water programs. This approach would require a variable appropriation request. Alternatively, a more stabilized annual appropriation of \$165 million per year would allow the program to build a fund in the initial year (Year 6, when unmet need is low) and avoid the need for a highly variable appropriation request.

Assumptions

No additional assumptions are needed to assess this option other than what is described above in the Funding Target.

Results

The table below shows the average and range of annual appropriations for the State’s share of CALFED programs only, and the appropriation for CALFED plus other statewide projects that fall outside the CALFED solution area. The costs of these other projects are not yet known, so a total average appropriation request of \$200 million is assumed here.

Option 1 Annual Appropriation to Meet State's Public Share of Costs (Million \$)		
General Fund Budget Request	Amount or Range, CALFED Programs Only	CALFED plus Other Statewide Projects
Variable Annual Request, Years 6 - 14	\$10.8 - \$190.9	\$45.8 - \$225.9
Fixed Annual Request, Years 6 - 14	\$165	\$200

Unmet State share of CALFED costs is \$0 in Year 5 and \$10.8 million in Year 6.
 Variability in public share of other statewide projects is unknown at this time

Issues and Discussion of Annual Appropriations

¹ Data available from the U.S. Census were used to estimate limited-income and elderly households. Actual implementation of limited-income and elderly exemptions would require some kind of verification procedures.

Adherence to benefits-based approach. Annual appropriations are made from the State's general fund, which draws most of its revenue from broad-based taxes such as the State income tax and sales taxes. Equity questions aside (see below), the cost distribution implied by using the State's general fund to pay for its share of CALFED costs is consistent with the way the State funds other public goods.

Social equity. About 70 percent of the revenues to the general fund come from personal income taxes and sales taxes. While the former is progressive, the latter is considered to be a regressive tax (lower income families pay a larger proportion of their income than do higher income families). The combined effect of the two taxes is unclear, but the tax rates for income and sales taxes represent the current political compromise on how government should pay for public services having broad public benefits.

Annual appropriations imply that the public's share of costs is fully paid for by current taxpayers, although many of the projects funded will be long-lived and therefore will benefit future citizens and taxpayers.

Administrative feasibility and cost. Taxes and other revenues to the general fund are already in place, so no additional costs or administrative issues arise from the general fund's use for CALFED's public cost share.

Ability to improve resource efficiency. Use of the general fund to pay for public costs would have no effect on how efficiently water and related resources are used. With no additional revenue into the general fund, money devoted to pay for CALFED costs would come out of some other government program or service, with unknown overall effects on resource use and efficiency.

OPTION 2 -- BOND FUNDING

The following analysis and discussion assume that bonds are repaid from the general fund. This has been the normal mechanism used in recent years for funding water infrastructure having broad public benefits. It is also possible to combine bond funding with a new revenue source such as a water charge (see Options S1 and S2 below).

Assumptions

General obligation bonds are assumed to be the financing tool used, with payback over 30 years at an effective interest paid of 5%. Issuance costs of 2% are assumed, meaning \$102 million would be issued in order to provide \$100 million in available funds for projects. Three equal bond authorizations are assumed to occur in years 6, 9, and 12.

Results

The table below shows the annual bond authorization amounts assumed for the analysis, the repayment of principal and interest, and additional costs assumed ineligible for bond funding. The estimates assume a target funding that includes both CALFED programs

and other statewide projects. The costs of these other projects are not yet known, so a total average funding need of \$200 million is assumed here.

Repayment occurs over thirty years, so a significant fraction of the repayment is deferred beyond the 10-year horizon of the finance plan. The sum of the deferred payments is shown in the bottom line of the table.

Option 2 Bond Issuance to Meet State's Public Share of CALFED Costs and Other Statewide Projects (Million \$)				
Program Year	Bonds Issued	Bond Repayment Amount from General Fund	Annual Costs Not Funded by Bonds	Total Annual Costs to General Fund
Year 5	\$ -	\$ -	\$ -	\$ -
Year 6	\$ 566.1	\$ 36.8	\$ 15.0	\$ 51.8
Year 7	\$ -	\$ 36.8	\$ 15.0	\$ 51.8
Year 8	\$ -	\$ 36.8	\$ 15.0	\$ 51.8
Year 9	\$ 566.1	\$ 73.7	\$ 15.0	\$ 88.7
Year 10	\$ -	\$ 73.7	\$ 15.0	\$ 88.7
Year 11	\$ -	\$ 73.7	\$ 15.0	\$ 88.7
Year 12	\$ 566.1	\$ 110.5	\$ 15.0	\$ 125.5
Year 13	\$ -	\$ 110.5	\$ 15.0	\$ 125.5
Year 14	\$ -	\$ 110.5	\$ 15.0	\$ 125.5
TOTAL	\$ 1,698	\$ 663	\$ 135	\$ 798
Average for Years 6-14	\$ 189	\$ 74	\$ 15	\$ 89
Additional Repayment beyond Year 14		\$ 2,651	\$ -	\$ 2,651

Includes other statewide projects

All dollars are nominal, not discounted

Bonds are assumed to be 30-year G.O. bonds at 5%, with issuance costs of 2%.

Note that bond financing could be combined with a water charge to repay the bonds, rather than relying on the general fund. If that were done, the revenue estimates shown in Options 3A or 3B below could be scaled to match the repayment schedule shown for Option 2 in the table above.

Issues and Discussion of Bond Financing

Adherence to benefits-based approach. General Obligation bonds are paid back from the State's general fund, which draws most of its revenue from broad-based taxes such as the State income tax and sales taxes. Equity questions aside (see below), the cost distribution implied by using the State's general fund to pay for its share of CALFED costs is consistent with the way the State funds other public goods.

Social equity. About 70 percent of the revenues to the general fund come from personal income taxes and sales taxes. While the former is progressive, the latter is considered to be a regressive tax (lower income families pay a larger proportion of their income than do higher income families). The combined effect of the two taxes is unclear, but the tax rates

for income and sales taxes represent the current political compromise on how government should pay for public services having broad public benefits.

Bond financing of capital projects spreads the repayment out over a period of time more consistent with the life of benefits accruing from the projects. In other words, the distribution of costs between current and future taxpayers is relatively well-matched to the distribution of benefits between those groups.

Administrative feasibility and cost. Taxes and other revenues to the general fund are already in place, so no additional costs or administrative issues arise from the general fund's use for CALFED's public cost share. Bonds require costs to issue (printing, underwriting costs, etc.), and a cost for this has been included. Because statewide bonds require voter approval, additional costs and political risks must be considered for this financing option. Bonds may not be approved, or may not be approved in time to keep project development proceeding.

Ability to improve resource efficiency. Use of bonds and the general fund to pay for public costs would have no effect on how efficiently water and related resources are used. With no additional revenue into the general fund, money devoted to pay for CALFED costs would come out of some other government program or service, with unknown overall effects on resource use and efficiency.

OPTION 3 -- WATER INFRASTRUCTURE CHARGE OPTIONS

Two options are presented below (3A & 3B): a monthly water charge on municipal water connections, in which a fixed monthly charge applies to each residential unit or business; and a volume-based charge on municipal water use.

Assumptions

Benefits accrue to all residents in the state: The portion of benefits from CALFED programs that are allocated to the California public are judged to accrue to the entire state. These include the benefits of ecosystem restoration, improved scientific knowledge about the State's resources, reduced demands on the fragile Delta ecosystem, and reduced risks to the State's economy from water shortages and levee failures. These benefits do not accrue solely to those areas in the CALFED solution area, but to all citizens of California. Therefore, all options considered draw revenue from all citizens in the State. The water charges are applied to municipal water customers throughout the State.

Agricultural water use is excluded: The purpose of the charge is to fund costs allocated for public benefits. Although unquantified, the majority of public benefits are in the form of non-use benefits that individuals enjoy from CALFED activities such as ecosystem restoration, species recovery, and watershed and water quality protection. Appropriate mechanisms to fund such public goods should distribute the cost in a way that has a reasonable relationship to the distribution of benefits. Urban water use satisfies that criterion, whereas agricultural water use does not.

Use 2005 estimates of connections and water use: Data used in the analysis are from the California Department of Water Resources (DWR), California Department of Finance (DOF), the California Urban Water Conservation Coalition's (CUWCC) urban water use database (voluntarily reported), and the U.S. Census Bureau. Data reported from earlier years are indexed to year 2005 using population changes from DOF.

Scale data to represent statewide estimates: Data on number of connections were provided from both CUWCC and DWR, but both data sets included only a sampling of agencies reporting. Data were scaled up based on the ratio of reported population served to the State population.

Administrative costs are not estimated: No costs to administer the water charge are included in these estimates. It is recognized that some costs would be incurred by both the state and by the local water purveyors. An estimate of these costs will be provided in future.

Option 3A: Monthly Water Charge on Municipal Water Connections, Excluding Households in Poverty or Whose Head-of-household is Over 65

Description: A monthly charge is applied to the estimated residential units in California and all commercial, industrial, institutional, and other municipal accounts. For multi-family connections, Census of Housing data are used to estimate the total number of units served.

This option makes an adjustment to exclude households of limited means. Precise adjustments are not possible, especially at this aggregate level of evaluation. In order to make a rough estimate of how a means-tested charge might be implemented, Census data are used to estimate and subtract the units in each category that are occupied by a family below the poverty level or that are headed by a person over 65.

Both a flat and a tiered charge were considered. A tiered charge is shown, in which attached and multi-family units are charged half the charge that single-family detached residences are charged. Commercial, industrial, institutional, and other municipal accounts are charged the same as the single-family detached rate.

Results: The table entitled Option 3A below summarizes the tiered charges evaluated and the resulting estimated revenue by class of municipal water user. The charges are \$2.00 per month for single-family detached and all business and institutional accounts, and \$1.00 per month per unit for attached and multi-family connections. Based on the data and assumptions, revenue raised under this option would be about \$207 million per year.

Option 3A			
Monthly Water Charge on Municipal Water Connections			
Excluding Households in Poverty or Whose Heads are Over 65			
(Revenue estimates based on housing structures Statewide)			
<i>Example: Tiered Rate at \$2.00/\$1.00 per month</i>			
Residential Structures	No. of Units	Monthly Surcharge	Total Revenue (million \$)
SF, Detached	5,546,960	\$ 2.00	\$ 133
SF, Attached	731,628	\$ 1.00	\$ 9
Apartments	2,901,412	\$ 1.00	\$ 35
Mobile homes/Other	428,529	\$ 1.00	\$ 5
Commercial Accounts			
Commercial	573,279	\$ 2.00	\$ 14
Industrial	46,441	\$ 2.00	\$ 1
Institutional/Other	438,819	\$ 2.00	\$ 11
Total	10,667,070		\$ 207

Results are scalable assuming the water charge structure remains the same; that is, halving the charge in each user class would halve the revenue. These results assume no avoidance behavior is induced – increases in water bills would not induce residents to leave the State.

The adjustment to exclude households of limited means results in about a 24% reduction in revenue as compared to the same rate without the exclusion.

Option 3B: Volume-Based Water Charge on All Municipal Water Users

Description: A volume-based charge is applied to the estimated municipal water use in California. Data is from DWR recent estimates for the State Water Plan Update.

Several different water charge levels were considered for illustration. Only a flat charge structure of \$25 per acre-foot is shown. The revenue implications of applying the charge only to residential users can be seen in the first row of the example in the table below.

Results: The table entitled Option 3B below summarizes the water charge evaluated and the resulting estimated revenue by class of municipal water user. The example charge results in almost \$210 million in revenue from municipal water use.

Results are scalable given the flat water charge structure; that is, doubling the charge in each user class would double the revenue. These results assume no avoidance behavior is induced – increases in water bills would not induce changes in water use. It is unclear whether this assumption is valid for all regions of the State. For example, a \$25 per acre-

foot charge could represent a significant increase in water price for areas of relatively low current water price.

Option 3B			
Volume-Based Water Charge on All Municipal Water Use			
(Revenue estimates based on municipal water use Statewide)			
<i>Example: Flat Rate at \$25 per AF</i>			
Statewide Use Category	Volume (AF)	Per Unit Surcharge	Total Revenue (million \$)
All Residential	5,567,281	\$ 25.00	\$ 139
Commercial	1,557,822	\$ 25.00	\$ 39
Industrial	544,010	\$ 25.00	\$ 14
Institutional/Other	712,865	\$ 25.00	\$ 18
Total	8,381,978		\$ 210

Uses DWR 2000 estimates of water use by category

Excludes agricultural water accounts

\$25/AF equals about \$0.0575 per ccf

Issues and Discussion of Water Charge Options

Adherence to benefits-based approach. A broad-based water charge reflects the broad-based distribution of public benefits expected from the CALFED program and other State water programs. This is especially true for ecosystem restoration benefits. Within the beneficiary group (California public), the question may be raised of how closely the distribution of benefits matches with the distribution of costs. Funding of public goods can be difficult to pay for through any tightly associated use-based or benefit-based mechanism. Therefore decisions on how to fund broad public goods often default to the broader policy decisions about how to fund government services and public goods in the aggregate. To the extent that a water charge can more closely tie to the level of benefits expected to be received, the more it will adhere to the benefits based approach. However, equity questions aside (see below), a water charge is as legitimate a way to fund the provision of a public good as the income tax, sales tax, or other general fund revenue source.

Social equity. A flat monthly charge per water connection essentially charges all households the same amount, regardless of family size, income, or other consideration. Given that lower-income families pay a larger proportion of their incomes for essential services like potable water, a flat charge per connection falls disproportionately on lower-income families and individuals. A flat charge is regressive in the terminology of economists. Shifting to a tiered charge (in which housing categories more likely to be inhabited by lower-income families are charged a lower rate) can reduce the regressivity, but the overall effect will be very imprecise. Even so, the charge will remain somewhat regressive within each housing category.

Economic studies have indicated that environmental amenities like ecosystem restoration and species recovery tend to be more highly valued by individuals with higher incomes (disproportionately more than their higher income would imply). Therefore, a monthly water charge per connection could charge very low-income families more than they value the benefits provided. The monthly connection structure evaluated here attempts to reduce this problem by excluding from payment any households below the poverty level and any with the head of household over 65 (such individuals are more often than average living on fixed income). Again, this adjustment can be only a very imprecise way to reduce the problem of regressivity. Some water agencies may have more targeted means to identify customers of limited income.

A volume-based charge is another way to improve the regressivity of a water charge – higher-income households tend to use more water than lower-income households.

Administrative feasibility and cost. Water charges per connection are relatively easy to implement because the billing system and database are already in place. There would be additional costs to the purveyor to calculate and add the charge to the bill, and to provide the accounting procedures necessary to remit the collected charge to the State. A more difficult issue is calculating the number of units in a multi-family structure. Some multifamily structures have sub-connections, and some agencies may have good estimates of the number of units in multifamily structures, but many will not.

A volumetric charge is straightforward to implement for metered connections. Many areas in the State still have significant numbers of un-metered or unmeasured accounts. In these areas, the purveyor could implement a hybrid approach, with metered accounts charged by volume and un-metered accounts charged a fixed monthly charge.

Administration could be relatively low-cost for larger agencies, but very small agencies and the many thousands of private well owners may find the cost burdensome.

Ability to improve resource efficiency. Water use efficiency is not the goal of a water charge. A monthly water charge would have essentially no effect on how efficiently water and related resources are used in the State. A monthly charge would send no price signal either to customers or to purveyors that would lead to any improvement – the charge remains the same regardless of how much or how little water is used. A volumetric charge could potentially affect water use by providing an incentive for customers to reduce water use and save money. In areas with relatively low-cost water, the charge could represent a significant increase in the water bill to customers.