To: Members, Finance Plan Independent Review Panel
From: Kate Hansel, Assistant Director, California Bay-Delta Authority
Date: November 4, 2003
Re: Finance Options – Framework and Issues Report

Attached please find the document, "Developing Bay-Delta Program Finance Options – Framework & Issues Report."

This document provides both an outline of the proposed general framework to be used to develop finance options and a summary of overarching finance issues identified by Program managers, stakeholders and others. This document has been previously reviewed by and discussed with the California Bay-Delta Public Advisory Committee, California Bay-Delta Authority, and stakeholder and agency representatives serving on the Ad Hoc Work Group supporting this Panel's deliberations.

This document is to be the focal point of the Panel's 10:30 a.m. deliberations.

Developing Bay-Delta Program Finance Options--Framework & Issues Report

California Bay-Delta Authority

OCTOBER, 2003

Developing Bay-Delta Program Finance Options -- Framework & Issues Report

EXECUTIVE SUMMARY

The Bay-Delta Authority (BDA), agencies, and stakeholders agree on the need for a long-term finance plan for the Bay-Delta Program(BDP) to provide balanced and reliable funding into the future. This report is the first of a series of reports being prepared in 2003 and 2004 by BDA staff and consultants for development of the long-term finance plan. This report describes a Framework to follow and summarizes finance issues—both of which will help guide the development of a Bay-Delta Program Finance Options Report in 2004.

Framework for Developing Finance Options
Given the scope of potential Bay-Delta needs, a variety of financing approaches will be required. This Framework will be used to evaluate the costs and benefits of the many BDP program elements and projects and to develop corresponding finance options. It is important that any of the approaches to financing the BDP adhere as much as possible with the following guiding principles:

- Support CALFED solution principles
- Follow a Benefits-based approach
- Promote cost allocations that encourage participation
- Promote cost allocations that avoid or minimize subsidies

General Approach for Developing BDP Finance Options
In addition to principles, an important objective is to also set forth the basic steps to be used to develop the data and information necessary to do an evaluation of benefits and costs. While there is general uncertainty in many parts of the program regarding costs estimates and program benefits, it is still useful to adopt a systematic approach to organize the large amount of information for the BDP and to identify the areas where additional information is not known. The number of methods available to allocate costs and craft finance options is limitless. This Framework proposes the following four interconnected steps for collecting data and developing information on costs, benefits, and finance options:

1. Determine program or project funding requirements (i.e. what will this cost?)
2. Identify cost responsibility (i.e. who pays how much?)
3. Develop revenue mechanisms and financial structure (i.e. how will the BDP be paid for over time)
4. Develop an accounting system to organize and track finance information

Finance Issues

In order to understand the complexities and challenges of applying the conceptual Framework to the reality of the BDP, BDA staff has compiled a list of issues that must be addressed as it implements the Framework over the coming months. These issues were identified through interviews with the Bay-Delta Advisory Committee's Steering Committee, other interested BDPAC members, and state and federal agency managers.

1. Stakeholder concerns regarding baseline
2. Public funds for locally cost-effective projects
3. Counting local contributions to the Bay-Delta Program
4. Joint costs are difficult to allocate among beneficiaries
5. Interdependent nature of projects
6. Difficulty of quantifying and tracking benefits
7. Ability to pay
8. Assurances
9. Existing laws and policies
10. Financing tools
11. Funding for science and monitoring
12. Future funding needs for the Bay-Delta Program

Next Steps

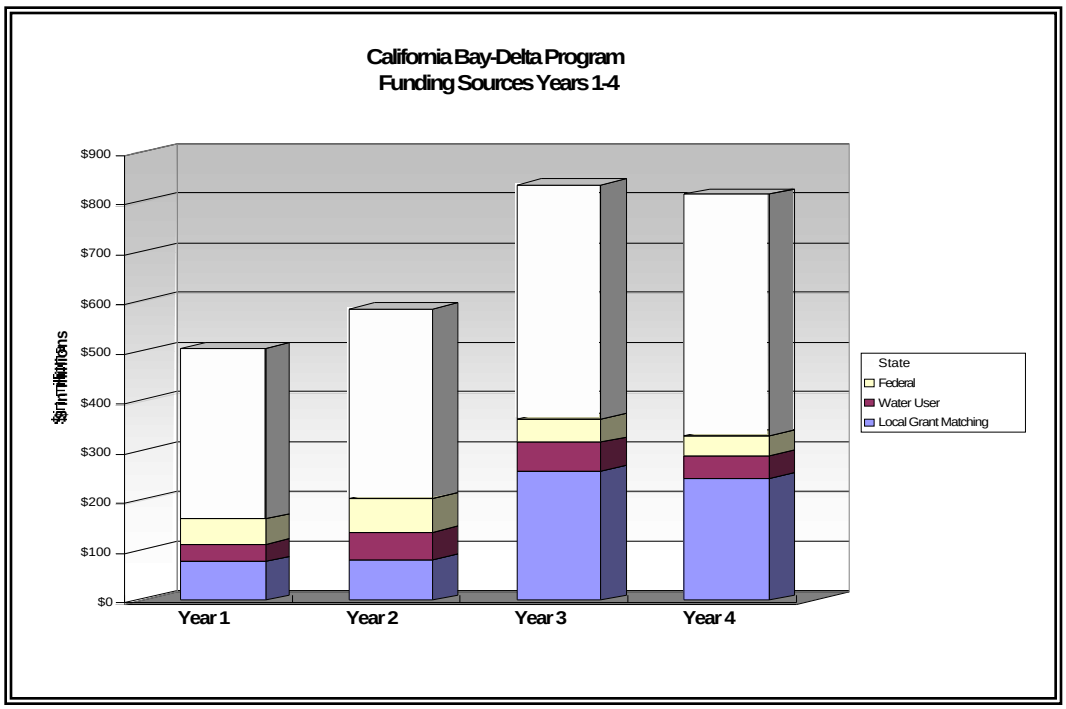
Using the Framework described in this report, BDA will develop a Finance Options Report in 2004. To provide broad input into review of the reports and development of BDP finance options, the BDA staff will convene an Independent Review Panel, an Ad Hoc Workgroup and Technical Workgroup.

INTRODUCTION

The Bay-Delta Program (BDP) is in its 4th year of implementation to improve water supplies in California and the health of the San Francisco Bay – Sacramento / San Joaquin River Delta. While short term funding has been available (see bar chart below), the Bay-Delta Authority (BDA), agencies and stakeholders agree on the need for a long-term finance plan to provide balanced and reliable funding into the future.

This report is the first of a series of reports being prepared in 2003 and 2004 by BDA staff and consultants for development of the long-term finance plan. The purpose of this first report is two-fold:

- Describe a Framework including principles and a general approach to use in developing BDP finance options.
- Summarize finance issues that will need to be addressed in the development of finance options. The issues were identified through interviews with stakeholders and state and federal agency managers.



Based on the Framework, BDA will release a Draft Finance Options Report in early 2004 and Final Finance Options Report in Spring of 2004. To provide broad input into review of the reports and development of BDP finance options, the BDA staff is in the process of setting up the following groups:

- Independent Review Panel composed of academics and practitioners with expertise in public financing.
- Ad Hoc Work group composed of policy-level representatives from interested stakeholder groups and state and federal agencies.
- Technical Work group composed of technical representatives recommended by stakeholders and state and federal agencies.

FRAMEWORK FOR DEVELOPING FINANCE OPTIONS

Long-term financial planning must be an integral part of overall planning and continued development for the BDP. Once program element or project alternatives are defined, cost allocation and financing options need to be crafted. Given the scope of potential Bay-Delta needs, a variety of financing approaches will be required – such as federal cost sharing, state tax revenue funding, or enterprise revenue financing. Regardless of which approach to financing is adopted for a specific program element or project, all approaches should strive to adhere to the principles and general approach embodied in the proposed Framework described below. This Framework will be used to evaluate the costs and benefits of the many BDP program elements and projects and to develop corresponding finance options. Some of the options would require legislation and any specific options pursued would follow the appropriate legal and procedural requirements for doing so.

Finance Plan Principles

Any finance plan will need to be flexible enough to adapt to changes in program implementation and available financing tools. In preparing the Finance Options Report in a way that allows for reasonable flexibility over time, it is important that the approach adhere as much as possible with the following guiding principles:

Support CALFED solution principles: The CALFED solution principles should always be kept at the forefront of any Bay-Delta finance discussion. Finance options should be crafted in a way deemed equitable, affordable and durable. They must be straightforward to implement and not result in significant redirected impacts. Overarching the CALFED solution principles is the need to reduce Bay-Delta system conflicts.

Follow a Benefits-based approach*:* All program or project costs must be borne by: (1) direct beneficiaries, (2) indirect beneficiaries, or (3) general taxpayers. BDP

financing policy should as nearly as possible correlate associated project benefits and costs, and recover project costs accordingly. Although it may be difficult to allocate costs to specific groups of beneficiaries, the tendency to over-allocate costs to the public sector and recover these costs through general tax dollars should be avoided. The importance of this principle is clearly stated in the July 2000 CALFED Financing Plan - "A fundamental philosophy of the CALFED Program is that costs should, to the extent possible, be paid by the beneficiaries of the program actions."[1]

Promote cost allocations that encourage participation*:* Beneficiary groups will have an incentive to participate in a multi-purpose program element or project if the proposed cost allocation is lower than the costs of going it alone. This is the "stand-alone" test of cost allocation, which simply states that no project participant or group of participants should be charged more than their "stand-alone" (i.e. opportunity) costs. Financing options that fail this test are not stable[2] – those charged more than their stand-alone costs have no economic incentive to support the cost allocation and strong incentive to abandon it. For example, if a BDP finance option raises the cost of surface water use significantly above the cost of groundwater, the option will likely encourage agricultural water districts or growers with access to groundwater to "stand alone", i.e., pump groundwater rather than pay the additional cost burden on some or all of their surface water use.

Promote cost allocations that avoid or minimize subsidies*:* Cost allocations that involve one or more groups subsidizing benefits received by one or more other groups are often unstable, unless such subsidization is transparent and involved parties explicitly agree to the subsidies. One way to avoid subsidies in an initial allocation of costs is to charge each beneficiary group at least the marginal cost of including them in the project. In the cost allocation literature, this is referred to as the "incremental cost" test.[3]

General Approach for Developing BDP Finance Options

The number of methods available to allocate program element or project costs and craft finance options is limitless.[4] This is because cost allocation for public projects is equal

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[1] CALFED Bay-Delta Program (July 2000). Financing Plan, Final Programmatic EIS/EIR Implementation Plan.

[2] In the cost allocation literature the principle of stability is also known as consistency. Regardless of terminology, the objective is to avoid finance options that cause one or more project participant to want to "re-contract" their project responsibility.

[3] Cost allocations that meet the stand-alone cost and incremental cost tests are, in cooperative game-theory terminology, said to be in the core of the game. Core allocations are individually rational and efficient. Core allocations do not always exist, however.

[4] As noted by H. Peyton Young, "there is no all-embracing solution to the cost allocation problem. Which method suits best depends on the context, the computational resources, and the amount of cost and benefit information available." H. Peyton Young, Ed. (1983) Cost Allocation: Methods, Principles, Applications, North-Holland, New York.

parts science, art, and politics, and will always embed within it some degree of arbitrariness. "The essence of the problem," states one expert, "lies not in defining methods, but in formulating principles and standards that should govern allocations, and then determining which methods satisfy them."[5] In this spirit, the previous section of this report has set forth several guiding principles that the BDP will use to formulate and evaluate finance options. A second, no less important objective is to set forth the basic steps to be used in the Finance Options Report to develop the data and information necessary to do the evaluation.

Developing data and information on BDP costs and benefits should be approached systematically. This is necessary in order to organize what is known. Conducting an analysis of costs and benefits in a haphazard way opens the door to omission. But perhaps more importantly, a systematic approach is needed to understand what is not known about BDP costs and benefits.

This Framework proposes the following four interconnected steps for collecting data and developing information on costs, benefits, and finance options:[6]

1. Determine program or project funding requirements (i.e. what will this cost?)
2. Identify cost responsibility (i.e. who pays how much?)
3. Develop revenue mechanisms and financial structure (i.e. how will the BDP be paid for over time)
4. Develop an accounting system to organize and track finance information

Step 1. Determine program or project funding requirements (i.e. what will this cost?): Compile direct and indirect costs for each program element or project configuration under consideration. To the extent practicable, the analysis will account for all expected costs, including construction, operations and maintenance, replacements, planning and special studies, taxes and other government charges, and allowances for increases in prices. The analysis of costs will include the sequence of necessary expenditures over a reasonable timeframe, possibly up to 20 years if information is available. Cost estimates are in the process of being revised for many of the program elements. Therefore the planning horizon will vary between program elements and projects.

Costs and revenues seldom coincide for projects with long useful lives thus creating potential cash-flow problems that must be addressed through financing. There are numerous examples of public infrastructure investments where incomplete analysis formed the basis for determining project costs, either because difficult-to-quantify costs were excluded from the evaluation, or because of political considerations. Non-market costs, in particular, require careful consideration, because they are difficult to quantify, yet are likely to be part of most new water infrastructure projects. Likewise, joint or

[5] Ibid.

[6] The reader should note that several of these steps involve multiple sub-steps as well. Thus one should not become too confident by the fact that the number of steps can be counted on one hand.

common costs, will need to be fully enumerated and quantified as part of this step.[7] As described more fully later in this report, many of the storage and conveyance projects have not completed the planning and design stage, and do not have costs estimates available. Therefore, detailed finance options will not be developed for these specific projects at this time.

Step2. Identify cost responsibility (i.e. who pays how much?): This step can logically be divided into three sub-steps (1) allocate costs to benefits; (2) associate benefits with beneficiaries, and 3) determine payment responsibility for groups receiving benefits.

The first sub-step is allocating costs to program element or project benefits. Costs will either be identified as separable costs or joint costs. *Separable* costs are those costs that are identified with a specific output and would be completely avoided if the output were eliminated from the project design. A powerhouse attached to a dam is a frequent and simple example of a separable cost. If hydropower generation were dropped as a project output for a dam the cost of the powerhouse could be wholly eliminated from the project. Other kinds of separable costs are not as easy to identify and estimate. For example, the dam itself might have a lower cost design if the powerhouse was removed, and that cost savings is another kind of separable cost. Quantifying it requires estimating dam costs with and without the powerhouse. Separable costs, whether easy or difficult to estimate, correlate directly with a specific project output and therefore are the most straightforward to associate with a beneficiary group.

The remaining costs are considered *joint* project costs. These may be straightforward or difficult to estimate, but are clearly more difficult to allocate. Within water resources planning the most widely applied method is the Separable-Costs-Remaining-Benefits (SCRB, pronounced scrub) method. Other frequently cited methods include the Shapley value method, the nucleolus method, and Ramsey pricing. Every allocation method yet devised has something to recommend it and something to condemn it. Satisfying the finance plan principles may result in using one allocation method in one context and a different method in another. It may require a highly detailed treatment of costs and benefits in one situation and a more general treatment in another.

A major task of any method for allocating joint costs will be identifying and measuring benefits generated by the common facility or program. This requires identifying the primary purposes of the project or program, quantifying the benefits, and assigning a value to this benefit. Benefits can vary widely from project to project. Generally, however, benefits are expected to fall within one of the categories shown on page 8.

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[7] As will be discussed later in this report, joint or common costs refer to the costs of facilities that are shared by two or more project purposes. For example, a dam can be so configured to jointly produce both water supply and flood hazard protection. Under such a configuration meeting one purpose also provides the other. Allocating common costs to two or more project purposes presents challenges and can generate substantial controversy. Joint or common costs are a dominant feature of multi-purpose water projects.

Bay-Delta Program Benefits

- Water Supply -- new yield & water supply reliability
- Drinking water quality
- Ecosystem – water quality, habitat improvement, & species protection
- Flood management
- Hydropower
- Recreation

As a general rule, it is much easier to identify benefits than it is to quantify the level of benefit. When moving from theory to practical application, BDA will encounter a variety of issues affecting the degree to which it can *quantify* and *value* benefits (see the Finance Issues section of this report). These issues will, in part, determine which cost allocation method will best serve a particular program or project.

The second sub-step in identifying cost responsibility is a mapping exercise that takes benefits and associates them with specific user groups benefiting. Table 1 provides the categorization that will be used for developing finance options for the BDP. When appropriate, the Options Report will further distinguish among beneficiaries within each category. For example, finance tools tied to water use in the Delta Export areas may need to distinguish between SWP contractors and CVP contractors. Given this set of beneficiary groups, the BDA will develop a system to show the gains and/or losses that

Table 1.
General Classification of Bay Delta Program Beneficiaries

User Category	Sub Category	Description
Agricultural Water Users	Sacramento Valley Agriculture	Primarily water rights holders or settlement contracts
	Delta Agriculture	Primarily riparian and appropriative users
	Delta Export Agriculture	CVP and SWP Agricultural Contractors south of Delta
	Other SJV Agriculture	Eastside and other districts affecting flow into Delta
Urban Water Users	Urban Delta Exporters	Urban SWP and CVP contractors in Bay Area, So. Cal., Central Coast
	Urban In-Delta Diverters	CCWD and other urban users diverting from Delta
	Urban Above-Delta Diverters	Hetch-Hetchy system, EBMUD, Sacramento area, other above-Delta urban diverters
Recreation		Recreational users of lakes, reservoirs, streams connected to Delta, such as fishing and boating
Flood Protection Recipients	Private	Residents and private property owners in areas subject to flooding
	Public	Users of highways, railroads, other public facilities and utilities in areas subject to flooding
Hydropower recipients		Power utilities and their customers that utilize the state's hydropower resources
Commercial Fishing		Industries that directly rely on Bay-Delta fisheries for commercial gain.
General Public		Recipients of public good benefits that accrue statewide (e.g. environmental restoration & enhancement; technology transfer)

correspond to the benefits and costs for a program element or project. This will allow for a distributional assessment of the net benefits across beneficiary groups. The BDA will then use the information on the distribution of net benefits as a basis for allocating costs.

The final sub-step in identifying cost responsibility is determining how much each beneficiary group should pay. The finance plan principles generally recommend that a beneficiary pay its full share of costs. In some circumstances, other CALFED solution principles (equitability, affordability and durability) may lead the finance plan to deviate from a strict "beneficiary pays" rule. If a portion of allocated costs are shifted off of one group, some other beneficiary groups must pay more to compensate.

Step 3. Develop revenue mechanisms and financial structure (i.e. how will the BDP be paid for over time?): Once costs are allocated to specific beneficiary groups, revenue mechanisms to repay these costs will be developed. The Finance Options Report will consider a wide variety of revenue mechanisms suitable to each program or project under investigation. Commonly employed revenue mechanisms include water and power user charges, standby/availability charges, impact fees, recreation fees and licenses, commercial fees and licenses, special assessments, special taxes, sales taxes, income taxes, and property taxes.

Large-scale capital projects usually involve significant up-front costs that must be financed in order to address the timing imbalance between the occurrence of project costs and the receipt of project revenue. Typically, the finance structure for large-scale projects will include a combination of up-front payments and medium- to long-term debt obligations. User fees and/or other revenue sources may be used both to secure debt obligations and to cover on-going project expenses, such as for operation and maintenance. For projects with long useful lives, some amount of debt financing – either revenue-backed debt or general obligation debt -- is usually preferable to exclusive reliance on pay-as-you-go financing.[8]

Revenue-backed debt instruments include self-liquidating general obligation bonds, revenue bonds, or certificates of participation. This source of financing is conditional on a reliable and dedicated revenue source, such as might be provided by user and access fees or special assessments. Several different studies have estimated annual revenue potential from a broad-based Delta diversion fee to support ecosystem restoration or other programs.[9] Revenue-backed debt instruments are a traditional means to finance project

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[8] The use of debt permits future beneficiaries of a project to help pay for it. This, in turn, enables more capital to be raised than would be possible out of current revenue alone. Second, fairness dictates that the total cost of a long-lived project should not be charged solely to current users or to those who happen to reside in the area during the time the project is constructed and financed. Debt financing permits project costs to be shared with those who will benefit from it in future years. Third, debt financing allows better coordination between project revenues and costs, particularly when project costs are mostly incurred up-front whereas revenues will be generated over the life of the project.

[9] Reports that include estimates of Delta user fee revenue potential include: (1) California Business Roundtable, California Chamber of Commerce, California Farm Bureau Federation,

costs associated with production of salable commodities, such as water supply or electricity. For example, finance of the State Water Project is based on self-liquidating general obligation bonds backed by water sales revenues. It is likely that some form of revenue-backed debt will play an important role in BDP financing.

Table 2 on page 11 summarizes the types of revenue mechanisms and financing tools that will be considered by the BDP. This is intended to be an illustrative rather than an exhaustive list of revenue and finance options potentially available to the BDP. It should also be noted that state and federal appropriations are listed both as a revenue mechanism and a possible financing tool. As a revenue mechanism the implication is that some BDP costs may be assigned to state or federal taxpayers and state or federal appropriations would be used to honor this cost obligation. In this example, state or federal appropriations would be used to cover program costs assigned to the general public. As a financing tool, on the other hand, the implication is that state or federal appropriations may be used to fund upfront program costs that will subsequently be repaid by other program revenue sources. In this example, state or federal appropriations would be used to address a timing imbalance between program costs and revenues.

Step 4. Develop accounting system to organize and track finance information*:* The last step in the process of collecting data and developing information on BDP costs, benefits, and finance options is providing an accounting system to organize, track, and store the information. The administration of any BDP Finance Plan will require tracking of benefits, costs, credits for past investments or in-kind contributions, and payments by beneficiary group on a Program-wide basis. Organizing and summarizing this information so as to be useful in various decision-making forums will be a critical task for BDA. The Finance Options Report will discuss various approaches for accomplishing an appropriate level of tracking and how the accounting system could be used to the greatest effect.

California Manufacturers Association (May 1996). *Maintaining Momentum on California Water Issues: Business Leaders' Findings – Financing Options for Water-Related Infrastructure in California*; (2) CALFED Bay-Delta Program (July 2000). "Financing Plan", Final EIS/EIR; (3) CALFED Bay-Delta Program (August 2000). Programmatic Record of Decision; (4) Wahl, Richard W. (November 28, 2000). *Implementing a Broad-based Bay-Delta Diversion Fee, A Report to the CALFED Bay-Delta Program*, draft document*;*

Table 2
Revenue Mechanisms and Finance Tools

Program/Project Benefit	Benefit Examples	Possible Revenue Mechanisms	Possible Financing Tools
Salable commodities and services	1. M&I water supply 2. Agricultural water supply 3. Hydroelectric power generation 4. Recreation facilities (e.g. boat ramps)	1. User/commodity fees (e.g. project re-payment contracts) 2. Capacity charges 3. Contributions in aid of construction 4. Auctions 5. Privatization	1. Revenue bonds 2. Certificates of participation 3. Self-liquidating GO bonds 4. Contributions-in-aid-of construction 5. Sale or leasing to private sector 6. State appropriations 7. Federal appropriations
Enhancement of common-property resources	1. Commercial/ sports fisheries 2. Unadjudicated groundwater 3. Assimilative capacity of waste-receiving water bodies	1. Access fees 2. License/permit fees 3. Fees on complementary goods (e.g. parking) 4. Taxation of complementary goods 5. State appropriations 6. Federal appropriations	1. GO bonds 2. Self-liquidating GO bonds 3. Certificates of participation 4. State appropriations 5. Federal appropriations
Public goods/services	1. Flood protection 2. Species protection/ enhancement 3. Ecosystem restoration 4. Economic development	1. Property taxes and special assessments 2. General taxes (e.g. income or sales) 3. Special taxes and surcharges (e.g. water utility customer surcharge) 4. State appropriations 5. Federal appropriations	1. GO bonds 2. Special-general-assessment bonds 3. State appropriations 4. Federal appropriations

This table is adapted from Table 1 in California Business Roundtable, California Chamber of Commerce, California Farm Bureau Federation, California Manufacturers Association (May 1996) *Maintaining Momentum on California Water Issues: Business Leaders' Findings – Financing Options for Water Related Infrastructure in California*.

FINANCE ISSUES

The Framework described above lays out principles and methods BDA will use in developing a Finance Options Report. The BDA recognizes that applying the conceptual Framework to the complex reality of the BDP is a significant challenge. In order to understand the complexities and challenges, BDA staff has compiled a list of issues that must be addressed as it implements the Framework over the coming months.

The following section addresses a number of these issues and how they may impact the development of the finance options. These issues were identified through interviews with the Bay-Delta Public Advisory Committee's Steering Committee, other interested BDPAC members, and state and federal agency managers.

BDP Finance Issues

1. Stakeholder concerns regarding baseline
2. Public funds for locally cost-effective projects
3. Counting local contributions to the BDP
4. Joint costs are difficult to allocate among beneficiaries
5. Interdependent nature of projects
6. Difficulty of quantifying and tracking benefits
7. Ability to pay
8. Assurances
9. Existing laws and policies
10. Financing tools
11. Funding for science and monitoring
12. Future funding needs for the BDP

1. Stakeholder concerns regarding baseline

The term "baseline" generally refers to the system of laws, regulations, and contracts used as the reference point for measuring benefits and identifying project beneficiaries for new actions. In essence, the baseline can be viewed as establishing the set of "rights" that are given standing in the cost allocation process. As such, the choice of a baseline can influence whether a given interest group views a project output as a benefit that they are willing to pay to receive, or as mitigation for past infringement of rights that should be paid by someone else to compensate for a previous loss of benefits. Thus, depending on the selection of a baseline, one may view an improvement in water supply reliability as a new benefit or as restoration of a past benefits one already had rights to. The same is the case for improvements to water quality and the natural environment.

Not surprisingly, stakeholders with an interest in the **storage, conveyance, and ERP** programs have wide ranging opinions about what baseline should be used for purposes of cost allocation. For example, it is clear from interviews with stakeholders that some view investments intended to improve environmental conditions as an enhancement that generates public benefits and water supply reliability benefits, and therefore eligible for

both public funding and water user funding. Others feel that most ecosystem improvements created by these programs should be viewed as mitigation for past actions/impacts and therefore should be charged as costs to those causing the impacts (such as water users). Similar divergent viewpoints emerged during discussions about improvements in water supply reliability and quality.

The BDA acknowledges that questions about baseline are important and merit discussion. However, the BDA also recognizes the enormous potential to create stakeholder gridlock by making baseline issues a focal point. As such, the Finance Options Report will evaluate options considering various perspectives on the appropriate baseline from which to assess benefits and identify beneficiaries. The Options Report will look first to the ROD and EIS/R documentation for guidance. During the development and evaluation of alternative financing options, stakeholder concerns and input will be considered with the intent to describe, evaluate and present several potentially viable approaches to generate stable, long-term funding to accomplish the objectives established in the ROD.

2. Public funds for locally cost-effective projects

Agency staff and stakeholders have raised questions regarding public funding for projects that are locally cost effective. Currently, different parts of the BDP follow different policies. For example, recent funding cycles for **groundwater storage** projects under Proposition 13 have required that projects be locally cost-effective in order to receive public funds, based on the notion that broad public benefits are produced by encouraging more effective regional and local water resource management through conjunctive use. The current **WUE** cost-share policy is different. The grant program provides state grant funds *only* for project costs in excess of local benefits, provided statewide benefits from the project justify the expenditure.

In some situations a policy that strictly excludes state or federal funds for seemingly locally cost effective projects may be at odds with the beneficiary pays principle. For example, a project for which expected local benefits are sufficient to cover costs may also jointly produce statewide benefits. In this situation, a beneficiary-pays cost allocation would share these joint costs among all project beneficiaries. In other situations, local benefits may seem to cover project costs but the risks associated with the project limit local investment. In such situations there may be justification for these projects to receive public funds (i.e. grants/low-interest loans) if they promote technology transfer, have demonstration benefits, or have the potential to seed new markets with statewide significance.

3. Counting local contributions to the Bay-Delta Program

In many of the interviews with agency managers and stakeholders, concerns were raised regarding “counting” local actions/projects as part of the BDP. Certain stakeholders indicated that a process needs to be established to review and “count” these actions/projects, other stakeholders indicated a concern that an increase in local

contributions should not decrease the need for "new" state and federal funding for the BDP.

Over the first three years of implementation, the BDA has provided fiscal oversight, coordination, and tracking of state and federal funding and SWP and CVP water user funding. For local and private funding/contributions, only those funds that were linked to state or federal financial assistance programs have been tracked and "counted". Local and private projects that are occurring without financial assistance from the BDP but that may be contributing to the BDP objectives include for example, water conservation, recycling, drinking water quality, watershed, ecosystem, and groundwater storage projects.

There are conflicting concerns among stakeholders about the merits of "counting" all local funding that is meeting BDP objectives. In most cases, stakeholders and agencies believe that it is critical that local funding be identified in order to track progress in meeting the BDP's goals for water and ecosystem improvements. In addition, only after local contributions are identified, would it be possible to assess what level of additional state or federal funding is needed, and where it is needed, to meet BDP objectives. The other perspective is that an increase in "counting" ongoing local contributions will decrease the pressure to obtain new state and federal funding for the BDP. Certain stakeholders have indicated that for some program elements, a significant increase in new state and federal funding is needed to meet BDP objectives, and "counting" existing local contributions will not provide the benefits expected from the ROD.

This issue raises a larger issue regarding the changing role of State and Federal governments in water management. While the State and Federal governments played a large role in water management in the 1900's with the construction of the SWP and CVP, in recent years there has been a shift in responsibility to local and regional entities. With this shift it is more important now to establish a system for accounting for local contributions.

To "count" all local contributions, a new system needs to be established to review and track these local projects that will require the following:

- Some means to encourage local agencies and private organizations to identify their projects and submit information describing the project to the BDP agencies.
- A method and resources to review local and private projects to determine if they contribute to BDP objectives.
- If a project is determined to meet BDP objectives, a means to describe what BDP requirements were met, such as monitoring or public outreach. In addition, funding and project status information would need to be provided to the BDA for tracking purposes.

This process of reviewing and coordinating could involve potentially hundreds of projects throughout the state. The primary reason that the BDA has not attempted to count all local contributions to date is because the task could be cost-prohibitive and overwhelming given current resources. Many of the administrative and budgetary

constraints that apply to tracking local costs and contributions also apply to the measurement of local benefits. Some compromise between counting local contributions, both financial and programmatic benefits, and maintaining a workable administrative load, will be required.

4. Joint costs are difficult to allocate among beneficiaries

Any benefits-based finance plan requires some method of identifying what benefits are being generated by a project and then assigning costs among the beneficiaries – a process called cost allocation. Costs of projects or programs that cannot be directly linked to a single purpose are referred to as joint costs. Deciding how to allocate joint costs among beneficiaries can be a difficult task.

Many of the BDP programs and projects serve multiple purposes (see table of benefit categories on page 8). Examples include:

- An **ERP** habitat restoration project could provide water supply reliability for Delta exporters, while also providing ecosystem improvements that provide general public benefits.
- The **Levees Program** provides multiple benefits – flood protection, habitat enhancement, water supply reliability, drinking water quality protection, recreation, and broad public benefits related to protection of transportation systems.
- **North-of-Delta off-stream storage** could be operated to provide releases to improve water quality in the Delta, while also increasing reliability of supplies for Sacramento Valley water users.

Cost allocation can range from a highly formalized and rigid procedure to a less quantitative description of benefits used to negotiate financial terms and responsibilities. As previously mentioned, the most widely used cost allocation procedure for water resource projects is the Separable Cost Remaining Benefit (SCRB) technique. SCRB was adopted by a federal interagency agreement in 1954 as the preferred method for multipurpose project cost allocation, and its preferred status has been reaffirmed in subsequent legislative and regulatory decisions. Methods other than SCRB exist for multipurpose project cost allocation, and they may also help determine a suitable cost allocation process for projects. All formal procedures require extensive, incremental, and quantitative analysis of the programs and projects. For some of the program elements, such as the ERP and EWA, cost allocation will likely follow a less formalized procedure to describe benefits in order to negotiate financial terms and responsibilities.

5. Interdependent nature of projects

It is clear from interviews with agency managers and stakeholders that there are significant interdependencies among **storage** projects under consideration, among various **conveyance** projects, and between storage and conveyance projects. In such cases, benefits derived from one set of projects or programs may depend in part on whether other projects and programs are implemented and how they are subsequently

operated. Most large, multi-facility water supply systems, such as the CVP and SWP, have been designed, operated, and financed as integrated systems.

For example, the performance of a proposed storage project (where performance might be measured in terms of its water supply reliability, effect on water quality, and unit cost) may depend to a large extent on how it is operated in conjunction with other existing and proposed facilities. These relationships are often quite complex and could have important implications for the generation of program benefits. Accounting for project interdependencies will be an important part of developing finance options for individual or groups of storage and conveyance projects.

6. Difficulty of quantifying and tracking benefits

Quantifying benefits and tracking how, when, and to whom they accrue is a challenge for all program elements. Agency managers and stakeholders frequently have raised three particular concerns:

- The general methodological problem of how to quantify benefits in a reasonably accurate manner using acceptable techniques.
- The complexity of collecting, tracking, and managing benefit information in a way that will assist program evaluation and finance.
- The specific problem of how to quantify benefits that accrue to the public as a whole. These benefits are frequently large but diffuse.

Quantifying Benefits. Stakeholders and agency managers specifically identified methodological issues for the **ERP, EWA, Watershed, DWQ, and WUE** programs, but the issue applies to other programs as well. Quantification difficulties can arise in estimating or predicting the physical change resulting from program implementation, such as improved habitat, reduced probability of flooding, increased water delivery, or improvement in a water quality parameter. Some categories of benefits, such as water supply, have relatively well-developed methods for quantifying benefits in both quantity and dollar units, but even they can be subject to dispute.

The following potential difficulties in quantifying benefits were cited by managers and stakeholders:

- **Ecosystem** benefits are among the more difficult to measure. The ERP produces benefits to fisheries, riparian and upland habitat, water quality, and non-use values related to the environment. Fisheries benefits resulting from the ERP are very difficult to discern from changes in habitat and populations caused by other factors.
- There is general agreement that the **EWA** primarily provides water supply reliability and fishery benefits. However, measurement of those benefits is difficult. In some cases the EWA Program has provided more than just the avoidance of jeopardy under the Endangered Species Act; it has contributed towards fish species recovery and habitat improvements.
- Some of the benefits of the **Watershed Program** are difficult to measure and characterize. For example, projects have been implemented to limit the inflow of

sediment into rivers and streams in the BDP planning area. The benefits of limiting sediment volumes are difficult to measure, in part because the positive impacts are only realized years – or even decades – after project implementation.

- Benefits from the **DWQ program** include improved drinking water quality, water supply reliability, and ecosystem water quality. Other possible benefits include improved industrial water quality, recreation, avoided future regulatory use conditions from TMDLs, and knowledge gained from the demonstration of new technologies. While the benefits from DWQ can generally be described, it is difficult to measure these benefits.

Complexity of Benefit Tracking. The **WUE program**, for example, has been discussing how to track benefits. Because most WUE investments are relatively small-scale and diffuse, the benefits of any one project may be quite small relative to overall water flows in the Bay-Delta watershed. This means that benefits of a single project are difficult to delineate within the normal variation in water use and flows, even though collectively such projects could produce a significant benefit. This presents WUE with a measurement conundrum that has bearing on the beneficiary pays approach to cost allocation. To date, WUE grant and loan programs have required that individual projects demonstrate expected statewide benefits and monitor the production of these benefits over time.

The sheer number of benefit measures to track was also raised as a concern. A single benefit measure, such as fish habitat improvement, may be complex and costly to track if it is an aggregation of a number of benefits. For example, describing **EWA** benefits specifically for fish habitat can be difficult, since the EWA benefits multiple species (e.g. Delta Smelt, Chinook Salmon, and Steelhead Trout) and each species of fish experiences different benefits from the Program. Tracking benefits over time would require making an assessment of the improvement for each species.

Public Benefits. Most, if not all, program elements generate benefits that are shared broadly by the public, either state-wide or within the region surrounding a project. Stakeholders and agency managers recognized the particular difficulty estimating public benefits, but also recognized the important link between public benefits and broad-based financing tools. Decisions about whether a program will be funded, at least in part, by broad-based tools such as taxes could depend on how much of the program's benefits are viewed as public.

Benefits of environmental restoration are generally agreed to accrue in large part to the public – all can enjoy the benefit and no one can be excluded. Flood management is generally believed to have a component of public benefit - although a significant part of the benefit accrues to affected property owners, the general public also has an interest in avoiding disruption to transportation and economic activity. There are also state-wide and nation-wide benefits from reducing the dependency on federal and state emergency assistance and insurance by avoiding loss of property and life. Other programs were mentioned as providing some amount of public benefit.

- Locally implemented and managed **Groundwater storage** projects can promote regional self-sufficiency, potentially reduce the demand on the Delta at critical periods, and encourage coordinated regional resource management.
- The **WUE Program's** current cost-share policy provides state funds for project costs in excess of local benefits, provided statewide (public) benefits from the project justify the expenditure. Public benefits may include: reduced demand on the Delta, increased stream flow, reduced non-point-source runoff, and technology transfer.
- Depending on the criteria used, certain **Surface Storage project** benefits, such as water quality, might be identified as a public benefit or as a benefit for a specific group of beneficiaries. Given the large total costs associated with surface storage projects, the identification of public benefits, and the choice of criteria used to make those decisions, will need to be carefully conducted so that public funds are used only when appropriate.
- The **DWQ Program** could generate broad public benefits**,** such as gains in scientific knowledge and innovative treatment technology development.
- **Watershed Program** projects undertaken near the headwaters of a river can have positive results for many downstream parties, even though the downstream interests may not be contributing to project implementation.

7. Ability to Pay

Stakeholders and agency managers expressed concerns regarding the degree that ability to pay considerations should play a role in BDP finance options. The Finance Options Report will identify where ability to pay considerations is likely to be an important factor in developing program or project finance options. It will also show the extent to which alternative ability to pay criteria would cause program or project repayment proposals to deviate from a "pure" benefits-based cost allocation.

Frequently, the phrase "ability to pay" refers specifically to an administrative procedure used by the U.S. Bureau of Reclamation to assess and set repayment rates for some irrigation water contracts. The phrase as used here refers more generally to a process of reducing the repayment obligation of a beneficiary group to less than its allocated cost, based on some measure of affordability. If the overall benefits of the project are great enough, the beneficiaries may negotiate changes in payment schedules that are mutually beneficial, redistributing the costs that would be suggested through cost allocation techniques to make projects affordable for all parties.

The extent to which ability to pay is included in repayment decisions could have significant implications for how costs are recovered for some BDP projects. For example, the large cost of bringing the levees to a higher standard could stretch or exceed the available financial resources of some beneficiaries. Likewise, the ability to pay issue has been raised with respect to watershed projects, where it has been noted that rural communities benefiting from watershed projects may lack the financial resources to pay for all the benefits they receive. On the other hand, the ability to pay issue has been raised regarding public funding for projects in regions that are capable of supporting the

projects through local assessments and fees. For example, state and federal funding is provided for recycling and groundwater projects and the local ability to pay for the project is not considered when determining the amount of the grant.

8. Assurances

Some stakeholders have advanced a line of reasoning supporting the need to tie assurances about project or program operating criteria to cost allocation and finance proposals. The distribution of benefits realized by a project or program, they note, depends to a large extent on how it is operated over time. For example, a storage project could be operated to individually maximize flood hazard protection, water supply development, hydroelectric generation, ecosystem enhancement, or some combination of these benefits. The initial expectation about the distribution of benefits from a project will be predicated on how it is assumed the project will be operated in the future. In turn, this ex ante forecast of benefits will have a significant role in how project costs are, at least initially, allocated to different program or project beneficiary groups. This situation, they argue, poses a substantial contracting risk for groups expected to repay the costs of the project. The risk is that the project will not be operated as originally anticipated and hence project benefits will not materialize as originally forecast. The more operational flexibility a project or program has, according to this line of reasoning, the greater the risk that actual operations will deviate from initial expectations over the long run. Likewise, the larger the up-front financial commitment required for a program or project, the larger the risk to the contracting parties if benefits deviate from their initial forecast.

Thus, this line of argument concludes that some operational guarantees or rules should be linked to the cost allocation and finance proposals. The need for operational assurances, according to this viewpoint, will be most manifest for the Storage and Conveyance Programs.[10]

Other stakeholders have advanced a very different viewpoint. According to this viewpoint, operational *flexibility* is key to realizing benefits from storage and conveyance projects. Without this flexibility, they argue, conveyance and storage operations become rigid and are less able to adapt to changing circumstances or take full advantage of opportunities as they develop. Particularly as management of existing developed supply, as opposed to developing new supply, becomes more important, the ability to adapt program or project operating criteria to changing circumstances becomes more essential. The real risk to beneficiary groups, it is argued, is that inflexible operating criteria will stymie a program or project's ability to adapt to new conditions.

From the point of view of the Finance Options Report, both arguments have some validity, and each will need to be taken into account during development of cost allocations and finance options. The Finance Options Report can be used to illustrate both risks and opportunities associated with different degrees of operational flexibility. It

[10] Surface storage projects and increasing SWP pump capacity to 8500 cfs or more, are two examples of BDP projects where some stakeholders have raised this issue.

can also be used to assess the sensitivity of program or project benefits with respect to different operating parameters. In this way the Finance Options Report may serve as a useful tool to decision makers that will have to balance these two considerations when crafting equitable, affordable, and durable finance options for the BDP.

9. Existing Laws and Policies

In several program areas there are existing laws or policies that specify certain cost share requirements, govern agency planning processes for cost benefit analyses and cost recovery procedures, limit the availability of funding for BDP priorities, or limit the ability of the agencies to implement a consistent approach to financing across the entire Program over the long term. Concerns were raised during stakeholder and agency interviews regarding how these existing laws and policies may constrain the development of finance options. Consequently, State and Federal laws, regulations, and policies will be reviewed and changes proposed if necessary.

One example of a cost share requirement in existing law relates to the **Levee Program**. The Levee program was first established in 1973 (SB 531) to provide state financial assistance to local districts for improving Delta levees. Legislation was subsequently enacted (SB 34, SB 1065, and AB 360) that amended cost share requirements and expanded the program. In addition, there are Federal flood control cost sharing requirements adopted under the Water Resources Development Acts. These cost share requirements may produce a different allocation of costs to beneficiaries than would arise from an independent assessment done as part of the Finance Options Report.

In addition, policies will also need to be evaluated as part of the finance plan assessment of benefits and cost. For example, the **WUE Program** follows a policy to maintain an overall approximate 50% local cost share as originally proposed in the ROD. Therefore, as funding is tracked from state, federal, water user and local sources, the WUE Program seeks to maintain a 50% local share for the overall program. This policy will be evaluated as part of the Finance Options Report, and recommendations made to either modify or continue based an assessment of benefits and costs of the WUE activities. Modification of the 50% cost share objective may create greater funding flexibility for the Program.

Another area to evaluate includes existing financing and pricing rules in the CVP and SWP. The willingness of CVP or SWP contractors to purchase relatively expensive supplies from new **storage** may depend on whether the cost is “melded” in with a contractor’s lower-cost supplies and how that might be done under existing rules. If the new supply cost cannot be melded under existing rules, contractors may not be willing to buy the water -- and operations, cost allocation, and finance for the supply project would be affected. Also, state and federal laws affect the opportunities and benefits for districts considering **WUE** investments. Rules and restrictions on selling conserved water, beneficial use tests, and water pricing can all affect a district’s decision to participate in WUE grant programs. This could subsequently affect the WUE Program’s ability to meet its cost share targets.

Finally, federal and state legislation will be necessary to implement any finance plan consistently across the Program. Although the ROD contemplated a joint federal-state agency with sufficient authority to implement the BDP in a coherent and consistent manner, no such agency has been created. The Legislature created the BDA to consolidate specific planning and budgeting functions on the state side, but the federal agencies participate in the BDP voluntarily to provide coordination and advice, the Congress has not authorized the BDP, and, due to the limited nature of the BDA's authority, the state implementing agencies retain considerable discretion over their projects and programs. The Finance Options Report will not attempt to resolve the disjointed governance of the Bay-Delta watershed. It will lay out the best options, from a planning perspective, and the Legislature, Congress and state and federal administrations will determine what legislation or other legal requirements are necessary to implement them consistently.

10. Financing tools

Agencies and stakeholders have expressed concerns about developing a reliable funding stream for each of the program elements using a mix of financing tools. The ROD included proposed cost shares between the state, federal, local, and water user funding sources for Stage 1 of the Program. The cost shares in the ROD in most cases were based on a general assumption that funding for the program should be shared equally between the state, federal and other sources (such as local government, and water users). A detailed review and analysis of program and project benefits was not done at the time of the ROD. Moreover, the ROD anticipated that a general approach to financing the program would be considered by the state and federal governments along with legislation to create a joint federal-state governance entity to oversee the program.

Actual funding provided in the first 4 years of the Program has rarely followed the cost shares projected in the ROD. In most cases state and local contributions have exceeded projections. Federal and water user contributions have been less than projected, primarily because Congress has not authorized the Program, and the State Legislature has not adopted a new water user fee.

The Finance Options Report will consider whether existing cost shares assumed in the ROD should continue, or if a different mixture of federal, state, local and water user funding should be sought based on funding needs, an analysis of benefits, and the likelihood of various funding sources being available. For example in the **Levee Program**, certain financing tools may be more appropriate for providing reliable annual maintenance funding, and other financing tools more appropriate for large capital investments associated with levee improvements such as raising the height of the levees. Similarly, the **EWA** will need to accommodate both the annual variation in funding to cover water acquisitions and power costs, and the large capital costs associated acquiring storage facilities for EWA water.

General Obligation Bonds. The primary source of BDP financing up to this point in time has been state general obligation bonds repaid by state tax revenue. To date, four state bonds have been approved that contributed funding to the BDP. Most recently in 2002, Proposition 50, The Water Security, Clean Drinking Water, Coastal and Beach Protection Act, was passed providing $825 million specifically for the BDP, and up to several hundred million more for statewide management activities that could contribute to the BDP. It is likely that bond financing (supported by fees/revenue or taxes) will continue to play an important role in BDP financing in the future.

Water User Fees. One of the revenue sources suggested by many stakeholders for several of the program elements is a new water user diversion fee, as proposed in the ROD. The ROD included a recommendation to develop a broad-based water user fee on diversions by Year 3. In addition, the proposed FY 03-04 State budget bill includes budget language requiring the BDA to develop a broad-based user fee in the Governor's Budget proposal for FY 04-05 to be released January 2004. To comply with the budget language and the intent of the ROD, water user fee options will be included in the Finance Options Report.

Numerous stakeholders and agency managers interviewed for this report raised the issue of a user fee. In general the concerns and comments supported the adoption of a water diversion fee similar to CVPIA. However, many stakeholders believed that any new water user fee should credit the fees currently being paid by CVP contractors into the CVPIA Restoration Fund. For example, it was suggested that other delta diverters should be charged a user fee before CVP contractors, and that any fee imposed on CVP contractors should include the amount currently paid before an increase is proposed.

Furthermore, some SWP contractors expressed concern about what projects or programs the user fee revenue would support along with a more general concern that any fee structure adhere to a benefits based approach to program cost recovery. Many agencies and stakeholders suggested which BDP elements should receive the fee revenue. The drinking water quality, ecosystem, watersheds, levees, EWA, science, and WUE were suggested as possible program elements to receive revenues from a user fee -- more programs and projects than a fee could likely support.

In the Finance Options Report, a water user fee, as well as other revenue sources, will be analyzed and options proposed, which describe various fee structures, identifies who will pay the fee, proposes various fee levels, and identifies which programs are eligible to receive the fee revenue based on the link between users and program benefits. In all cases, any user fee scenario being considered must demonstrate that any and all groups paying a user fee must receive benefits from the programs being funded with the fee revenue.

11. Funding for science and monitoring

Benefits from science, monitoring, and evaluation investments are difficult to characterize and measure. Stakeholders and agencies raised concerns that science and monitoring might not get a secure source of funding and that inadequate funding could

cause consequences across the entire BDP. It is generally anticipated that science and monitoring activities will provide the foundation for gauging the extent to which investments are contributing to overall BDP objectives. However, these activities can move forward and be sustained only to the extent that they have a reliable source of funding. A general concern has been expressed that inadequate investments in science and monitoring could compromise the BDP's ability to fully implement some programs or demonstrate program achievements and thus could undercut support for future initiatives and funding.

12. Future funding needs for the Bay-Delta Program

BDP targets, schedules and funding needs are being reviewed and updated as part of a mid-Stage 1 review. This information will be used as part of the finance planning process because updated funding projections that span a 10 to 20 year period will be needed for all program elements. Developing new projections can be difficult because:

- Revisiting the funding projections in the ROD raises concerns among many stakeholders.
- Several of the program elements cannot accurately project the funding needs for a 10 to 20 year period.

ROD Funding Projections. The ROD included projected funding needs over a 7 year period (Stage 1) for the BDP. The funding projections were done at a time when the state and federal budgets had abundant revenues rather than large deficits. Various methods were used to develop these projections. For example, for the Conveyance or **Levee** programs, projections were based on specific project cost estimates available at that time. In other cases, such as for **WUE** or **ERP**, funding projections were based on the expected funding needed to meet program objectives and still maintain general balance with all other program elements.

For the **ERP**, the ROD included a minimum commitment to spend $150 million per year for regulatory commitments during the first 4 years of Stage 1. The agency managers and stakeholders will need to determine whether this funding commitment will continue, or whether there is another basis on which to estimate funding needs.

For the **Levee Program**, the ROD contained a distribution of funds between the Suisun Marsh and Delta Levees. In developing a new long-term cost estimate, the agency managers and stakeholders will need to consider whether the distribution of costs between these two program tasks should continue or be revised, and what the appropriate level of financial investment should be to obtain program objectives.

Many stakeholders and agencies believe that the ROD funding projections and corresponding cost shares between federal, state, local, and water user funding sources are a critical component to maintaining balance within the BDP. Consequently, any change to the funding projections and cost shares will need to be developed in close coordination with interested stakeholders and agencies.

Future costs uncertain at this time. Not all of the program elements are able to accurately project future funding needs for the next 10 or 20 years.

For example, final decisions on **surface storage projects** have not yet been made. Surface storage feasibility studies are underway and completed environmental documentation is anticipated for Shasta expansion, North of Delta Off-stream Storage, and In-Delta Storage by June 2005, for Los Vaqueros expansion by December 2005, and for Upper San Joaquin River Storage by June 2006. Once final decisions are made regarding project configuration, then determining project construction costs will be straightforward.

In the **WUE Program**, water conservation and recycling potentials are undergoing review and possible revision. The Year 4 WUE Program's Comprehensive Review will put forward refined estimates of conservation and recycling potential. This review will also estimate the funding needed to achieve WUE Program objectives. It is possible that these estimates could differ from estimates contained in earlier CALFED planning documents. Not all of this work will be completed in time for the Finance Options Report. Consequently, the Finance Options Report will need to include a reasonable projection but revise the WUE Program cost projections in future years as information from these studies becomes available.

The **DWQ Program** and BDPAC subcommittee has recently developed the "Equivalent Level of Public Health Protection (ELPH) Strategy", which describes the interrelationship of the Bay-Delta drinking water system from source to tap. This Strategy will take into account the cost-effectiveness of different tools to meet drinking water quality objectives. The ELPH strategy will not change the DWQ actions that were included in the ROD, but the amount of funding needed for different types of projects could change, depending on the relative cost-effectiveness of different DWQ actions within different regions.

SURFACE STORAGE CASE STUDY

The Surface Storage Program illustrates many of the issues described above, especially interdependencies, joint costs, and benefits estimation and tracking. It also presents unique challenges because the operational rules and associated costs for the projects will not be defined at the time the Finance Options Report is completed.

Potential projects could have multiple benefits, and the type and scale of benefits and the groups receiving the benefits are dependent on the final form of the project. Only after the project characteristics (e.g., the storage capacity, diversion criteria, how water supplies will be divided between uses, how and when releases for water quality will be made, etc.) have been determined can benefits be fully identified and characterized, and cost allocation begin.

Given this lack of specific information, the Finance Options Report will contain a proposed process for developing finance options for surface storage projects, and will describe how finance options could be applied to an example storage project. In addition, the following concerns will be addressed in the Surface Storage Finance process.

- *Technical evaluation of public benefits.* Some stakeholders are aware that significant public benefits (and therefore broad-based public financing) will be claimed for Surface Storage projects, and want to assure they are legitimate claims. They have requested that a formal technical benefits assessment process be established to estimate the magnitude of storage benefits to the public. Other beneficiaries (water districts, water agencies, the State Water Project, and the Central Valley Project) will be required to perform their own benefits analysis.

- *Assurances that beneficiaries continue to receive expected benefits into the future*. This will reduce the financial risk for those who participate in funding the project, and likely encourage interested potential beneficiaries to assume part of the cost burden for a beneficial project.

- *Balance between operational flexibility and certainty*. Balance between operational flexibility to allow the system to adapt to changing conditions and operational certainty to provide those underwriting the costs of the project reasonable assurance that expected benefits will occur.

- *Public benefits—criteria and cost effectiveness*. Given the substantial level of total investment required for each project, the criteria used to determine public benefit is of concern. Quantifying public benefits that will be generated from storage projects is not a straightforward task, especially in terms of economic value. Depending on the criteria used, certain project benefits, such as water quality, might be identified as a public benefit or as a benefit for a smaller group of beneficiaries. In addition, it is important to that the public benefits associated with surface storage are evaluated against of other actions to achieve those benefits and a determination made that investing in surface storage for these benefits is the most cost effective approach.[11] Given the large total costs associated with surface storage projects, the identification of public benefits, and the choice of criteria used to make those decisions, will need to be carefully conducted to ensure public funds are used only when appropriate.

- *Transparent Process*. The identification of benefits, beneficiaries, and the development of cost allocation and repayment plans will be part of a transparent and open process.

- *Cost Allocation processes*. Most surface storage projects, including those proposed by the Bay Delta Program, serve multiple purposes. Any benefits-based

[11] In addition, project applicants for each storage project are required, as part of the Section 404 Clean Water Act permit, to show that the "least environmentally damaging practicable alternative was selected for the projects' purposes".

finance plan requires some method of identifying which purposes and groups are being served by a project – a process called cost allocation. Deciding how to allocate these costs can be a difficult task.

- *Cost Repayment*. If the overall benefits of a project are great enough, the beneficiaries may negotiate changes in payment schedules that are mutually beneficial, redistributing the costs that would be suggested through cost allocation techniques to make projects affordable for all parties. The extent to which ability to pay is included in repayment decisions could have significant implications for how surface storage costs are recovered.

Another issue relevant to repaying costs is the selection of who will build, own, and operate the storage project. The State or Federal government, or local entities, could take the lead, constructing the project as an addition to the SWP or CVP, as a joint state-federal-local project, or as a local/private unit. The choice of ownership is important to cost share levels, other cost recovery issues, and subsidy concerns related to agricultural water prices.

NEXT STEPS

BDA staff and consultants will apply the principles and steps outlined in the Framework section of this Report to develop options for financing the BDP. Options may vary according to how costs are allocated, the mix of financing tools used for individual programs, and the overall mix of financing tools used. It is expected that the Finance Options Report will provide the information, technical analysis, and policy options necessary to support the adoption of a Finance Plan for the BDA.