CALFED
BAY-DELTA
PROGRAM

Financial Strategy

DRAFT

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Section

1

Introduction

A basic tenet of the CALFED Bay Delta Program is that a financial strategy for funding of the eventual long term solution should be developed as an integral part of the overall program. This concept stems from the implementability solution principle, and is one of the important means by which this principle is applied to the Program. During Phase I of the CALFED Bay Delta Program, developing a financial strategy has meant creating a methodology for allocating costs of the long term solution to various stakeholder groups and the public, as well as identifying the types of revenue tools and financing techniques which are necessary and appropriate as a means of securing the financial participation of those benefiting from the program. Detailed costs are not available as part of Phase I, so exact amounts of revenues and cost participation have not been computed in Phase I. Phase I efforts should, however, provide a range of expected costs for various alternatives.

This report presents the results of the financial strategy work to be completed in Phase I. The goal of this work is to define the process which will be used to arrange for funding of the long term solution. It is important to note that using this process to define specific costs and benefits with increasing levels of detail will occur in later phases of the CALFED Bay Delta Program. This process has several steps for each potential alternative as outlined below:

1) Define the alternative.

2) Assign benefits of the alternative to various sectors.

3) Determine the amount and timing of funding requirements of the alternative.

4) Allocate the costs to various beneficiaries.

5) Determine revenue tools, financing techniques and institutions to be used to recover costs from each sector.

Performing each of these steps involves a number of detailed actions. The body of this report will discuss these detailed actions and recommend a methodology to be used in implementing them for the selected alternative.

It should be noted that the economic analysis of the impacts of alternatives, although closely related to the financial strategy, is a distinct process. The major part of the economic analysis will be performed in later phases of the CALFED process, when more details are known concerning the alternatives and the five steps outlined above have resulted in a more detailed estimate of the actual costs for various sectors.

Solution Principles

A second important aspect of the Phase I process has been to evaluate alternatives with respect to solution principles. The CALFED Bay Delta Program has established a set of six principles to which the long term solution must adhere. All six principles must be considered in developing the financial strategy, but the three that have the most direct impact on the financial strategy are the principles of equity, affordability, and durability. The following paragraphs explain how these principles have being addressed in the development of the financial strategy.

Equity

A part of the equity principle is that costs should relate to benefits, and that benefits received should relate to financial contribution. To satisfy this principle each alternative was balanced during the Phase I refinement process so that within the alternative, each constituency's objectives are being addressed in a balanced manner.

Achieving this balance in Phase I should mean that later in the process, when benefits are known in greater detail, the principle of equality will have been met. When costs are allocated as described in step 4 above, these allocations must relate to results of step 2. If these steps are implemented in a consistent fashion, then the financial strategy should comply with the principle of equity.

Affordability

Affordability is the principle most clearly related to the financial strategy. The revenue and financing tools developed in step 5 above can have major impact on the question of affordability, perhaps second only to the overall cost of the entire solution package. How the money is obtained and the timing of the revenue can significantly alter the financial burden on various sectors, and has the potential to enable an expensive alternative to be affordable.

During Phase I, rough cost estimates will be used as part of the refinement process for each alternative. Using these estimates, the cost of each alternative will be computed as well as the performance of the alternative using measures related to the 14 program objectives. Affordability at this stage has been defined as relative cost effectiveness. During Phase I, this is defined as developing alternatives that

have the lowest estimated cost for using a given approach to address the conflicts and solve the problem.

Subsequent to Phase I, when more detailed information is available, affordability will be considered in more detail. At these later stages, the affordability principle will be closely linked with evaluation of economic impacts.

Durability

The financial aspect of the durability principle, like other durability issues, requires a reconciliation of two apparently conflicting concepts. The financial strategy needs to be permanent enough to ensure that the solution will be implemented as intended. At the same time, the financial strategy must have the flexibility to respond to changing financial needs over time.

During Phase I, the permanence aspect of the financial strategy will be addressed in two ways. The discussion of appropriate institutional forms for implementation of the solution directly bears on the issue. The requirements for the institutional form as defined in Phase I include providing stability and accountability over time for the implementation of the long term solution. In addition, a concept of linking expenditure of funds on various pieces of the alternatives has been proposed. One way this could be accomplished is through provisions in the financing vehicles.

Flexibility can be obtained by enabling the institution to use a wide range of financial tools for revenue production and financing, and by structuring the institution so that these tools can be used when needed to adjust finances during the implementation of the long term solution. This requirement for flexible financing tools has also been included in the discussions of institutional forms for implementation.

Section

2

Financial Strategy

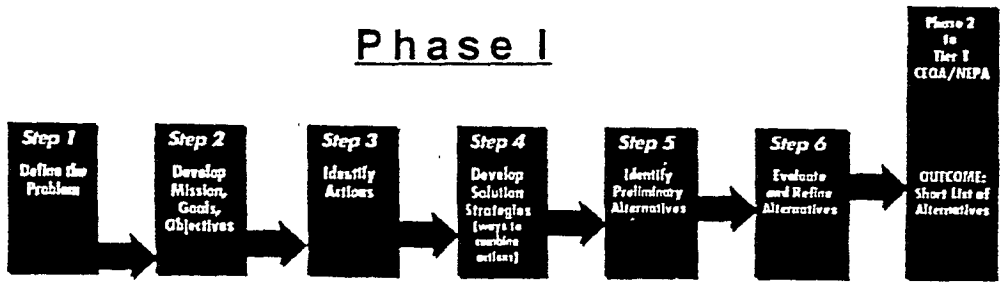
The purpose of the Phase I financial work has been to develop a strategy for funding the long term solution. As discussed above, this strategy has been created in light of the Program's solution principles. In addition to the pragmatic work of providing the funding, the financial strategy has been viewed as a tool to be used in adhering to the solution principles.

The following sections describe the process by which the long term funding will be obtained.

1. Define the alternative

Defining the alternatives transcends the financial process. It has been the major work of the entire program since its inception. A multi-step step process has been used to lead to the definition of alternatives:

Figure 1.



The completed alternative descriptions will include a list of actions which compose the alternative. Developing this action list is explicitly focused on the solution principle of conflict resolution, of which the performance measures are a measure. The completed action list can be used in step 2 of the financial strategy.

One of the important aspects of the alternative refinement process is the efforts at balancing the alternatives. As noted above, this balancing effort is the first attempt to apply the solution principle of equity to the alternatives. The useful implication of this balancing in the later development of the financial strategy is that is results in an equitable distribution of benefits.

2. Assign benefits of the alternative to various sectors.

The next step in the financial strategy is to assign benefits created by the alternative to various beneficiaries. Assigning benefits has several intermediate steps:

A. Define the benefits

The first step is to define the types and relative amounts of benefits which the alternative produces. Benefits can be categorized generally according to the Program's major objective areas. The performance measurement process, which is based on this same structure, provides an identification of the type of benefits generated by each action.

Defining the relative amount of benefit being generated on an action by action basis, when a single action may create a score of benefits in different objective categories, is somewhat arbitrary. A partial solution to this problem lies in the fact that the action list is divided into a number of logical groups. Using this information, it is possible to get an indication of the relative contribution each of these logical groups had in achieving each objective. Because the benefits are divided using this same objective structure, this information can be translated into the relative contribution to the total benefit in that objective area that was provided by each action group.

For example, a category of actions may be credited in the performance evaluation process with addressing 20 percent of an environmental objective, and at the same time with solving 60 percent of a water supply objective. This implies that this category of actions is relatively more important to achieving water supply objectives than to achieving environmental objectives, although it benefits both.

An additional factor which may be considered is the relative certainty of the level of benefit. Certainty can relate to technical knowledge, timing, and institutional factors. Weighting benefits received by a level of certainty is another technique which can be used to implement the equity principle.

Applied to the previous example, if the environmental benefits were 75 percent certain, while the water supply benefits were only 50 percent certain, the weighted benefits could be adjusted to be 30 percent for water supply and 15 percent for environmental. The implication is that this category of actions is about twice as important to achieving water supply objectives as it is to environmental objectives, after considering the uncertainty of the effectiveness of the action. (Different action categories would have different weights. The relative importance of each category to the total for the objective would be different after weighting, requiring that the allocation percentages be calculated after weighting. To simplify this example, assume the weighting does not change the relative importance of the action category to the objective.)

Using the same example, the relative importance ratio is 2 to 1(water supply to environmental). This would suggest that the relative benefits be split in the same 2 to 1 ratio. This means that one third of the total benefit of that category of actions can be assigned to environmental objectives, and two thirds to water supply. This approach has a strong intuitive appeal, for if an action category is twice as important in meeting one objective as it is in meeting another, allocating twice as much benefit to that objective seems reasonable.

The result of this process would be a listing showing the relative levels of weighted benefits provided by each action category to each objective. The types of benefits which the listing would include is shown below.

Table 1.

Ecosystem	*Water Supply*	*Vulnerability*	*Water Quality*
Habitat (various)	Quantity	Local Flood Control	Microbes
Species (various)	Timing	Regional Flood Control	Organics
	Reliability	Local Seismic Protection	Salinity
		Shore Protection	Toxics
			Turbidity

B. Define beneficiaries

The next step is to define the list of potential beneficiaries. This is essentially a list of the parties at interest in the long term solution:

Table 2.

Urban	*Agriculture*	*Environmental*	*Recreation*	*Commercial*
Upstream	North of Delta	Upstream	Boating	Fisheries
Delta	Delta	Delta	Fishing	Hydropower
Export	Export	Bay	Nature	Industrial
	Tributary: San Joaquin	Export		

C. Allocate benefits

The third step is to allocate the benefits identified to the beneficiaries. Because the benefit categories are based on the objectives, and each of the objectives generally represents the interest of a specific subset of beneficiaries, it follows that the beneficiaries will tend to receive benefits in a limited number of benefit areas. For example, water supply interests do not receive environmental enhancement

benefits. This does not mean that environmental enhancement actions had no benefit for water supply interest. It is just that the water supply benefits for these types of actions were recorded under a benefit category such as enhanced reliability, which is of interest to water suppliers. Conversely, environmental benefits from the logical group of actions relating to water supply are recorded as either habitat or species benefits, not water supply benefits.

Areas in which each interest group might be expected to receive benefits are shown on the next page:

Table 3.

Beneficiary Groups	Ecosystem		Water Supply			Vulnerability				Water Quality				
						Local Flood Control	Regional Flood Control	Seismic Protection	Shore Protection					
	Habitat	Species	Quantity	Timing	Reliability					Microbes	Organics	Salinity	Toxics	Turbidity
Urban														
Upstream														
Delta														
Export														
Agriculture														
North of Delta														
Delta														
Upstream San Joaquin														
Export														
Environmental														
Upstream														
Delta														
Bay														
Export														
Commercial Fisheries														
Delta Industrial														
Recreation														
Boating														
Fishing														
Nature														

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Because benefits can be associated with certain groups of users, what remains is to divide the benefits generated by each group of actions among the different classes of users sharing the benefit. For certain of the objectives, allocating the relative benefits to the groups sharing the benefit can be done in an objective manner relating to amount of usage, acreage, or another quantitative measure. Water supply objectives, vulnerability objectives, and water quality objectives appear to be in this group. Environmental objectives are more difficult to divide among groups. Division of these benefits may require a combination of professional judgment and negotiation.

The final result will be a proportional allocation by action category of the benefits flowing to each identifiable beneficiary group. To continue the example used above, assume a determination is made that 25 percent of the water supply benefit for a given action category should be allocated to delta urban beneficiaries, and 75 percent to delta agricultural beneficiaries. All of the environmental benefit is allocated to delta environmental beneficiaries. The final breakdown, then, would indicate for that action category 50 percent of the benefit would be allocated to delta agriculture, 33 percent to delta environmental, and 17 percent to delta urban.

3. Determine the amount and timing of funding requirements of the alternative.

The next logical step in the process is to determine the funding needs for the alternative. Funding needs must be broken down between capital and Operations & Maintenance. The timing of the required funding must also be estimated.

Rough estimates of these amounts have been made as part of Phase I, but more precise estimates of amounts and timing must be made prior to determining the viability of various revenue and financing tools.

These costs, which will be estimated by action, can be aggregated to the logical action group level, in order to facilitate allocating them to various beneficiaries in the next step.

4. Allocate the costs to various beneficiaries.

In its most simple form, this step would involve taking the costs determined in step 3 and allocating them according to the breakdowns obtained in step 2. There are a number of factors which complicate the actual allocation. These factors are must be considered in making the breakdowns, and the ultimate breakdowns cannot be made until extensive detail is available regarding the exact composition of expenses in step 3. To a great extent these factors relate to step 5, and highlight the need for considering the practical implications of the cost allocations on the ability to generate the necessary revenue and use financial techniques such as bonding when necessary.

A. Liquidity of beneficiaries

1. It may make sense to allocate more of the early costs to entities with greater liquidity. Others may gain greater liquidity later as a result of the Program.

B. Credit strength of beneficiaries

1. If revenue streams must be bonded against, then those beneficiaries with higher credit rating may be better candidates.

5. Determine revenue tools, financing techniques and institutions to be used to recover costs from each sector.

The final step is to identify the necessary and appropriate revenue tools and financing mechanisms to recover the costs from the beneficiaries as assigned in step 4. The decisions made in this step affect not only affordability, but also the durability and practical ability to implement the alternative. Creating the financial architecture for the long term solution presents the opportunity to build in provisions which can provide the combination of stability and financial flexibility which will be essential to the success of the long term solution.

The basic task of selecting revenue tools, although a separate logical task from the cost allocations made in step 4, must be done in an iterative manner with that step, as the two are closely linked.

For the purposes of eventually defining revenue tools, it is useful to group benefits into three types. These three types are public benefits, common benefits, and private benefits(defined below). The relevance of dividing benefits into these groups is the implication the division has on who is likely to be receiving these benefits, and what types of revenue alternatives can be used to obtain funding for creation of these benefits.

There are a number of parameters which can be used to classify a benefit into one of these three groups. These parameters are described as follows:

Benefit Parameters

Divisible

A benefit is divisible if amounts of usage can measured in units which can be divided up and given to different groups. Another way to define this is that amounts can be objectively quantified. This is a characteristic of private and some common benefits. From a revenue perspective, the significance of this parameter is that in order to assess revenue based on amounts of usage, the benefit must be divisible.

Excludable

A benefit is excludable if one person's usage excludes another from usage of that unit of benefit. It also implies that someone can be excluded from receiving the benefit, without denying the benefit to others. This is also a characteristic of private and some common benefits. If a benefit is excludable, then paying for the benefit can be made optional, with access to the benefit based on payment. Conversely, if a benefit is not excludable, then revenue must be generated in a way which avoids the "free rider" problem.

Vendible

Vendible simply means that the benefit can be sold to a willing market. Again, this is a characteristic of private and some common benefits. Benefits which are vendible can be offered in a market setting, while benefits which are not must rely on revenue sources which are imposed on those who may receive the benefit.

Benefit Category Definitions

Using these parameters, the three types of benefits are defined as follows:

Private Benefits

Private benefits are those that meet all three of the above conditions. They are divisible, excludable and vendible. Examples of private benefits include water supply and hydroelectric generation.

Public Benefits

Public benefits are those that fail to meet any of the above listed conditions. They are not divisible, excludable or vendible. Examples of public benefits include many of the environmental enhancement benefits of the Program.

Common Benefits

Common benefits are those that meet one or two of the parameters, but not all three. This leaves them in the middle ground of having some of the characteristics of private benefits, and some of the characteristics of public benefits. Examples of common goods include flood control, and certain water quality and seismic protection benefits.

The following table categorizes benefits which have been recognized as potentially being created by various alternatives.

Table 4.

Benefit Descriptions	Divisible?	Excludable?	Vendible?	Benefit Category
Ecosystem				
Habitat	N	N	N	Public
Species	N	N	N	Public
Water Supply				
Quantity	Y	Y	Y	Private
Timing	Y	Y	Y	Private
Reliability	Y	Y	Y	Private
Vulnerability				
Local Flood Control	Y	N	N	Common
Regional Flood Control	N	N	N	Public
Local Seismic Protection	Y	N	N	Common
Shore Protection	N	N	N	Public
Water Quality				
Microbes	Y	N	Y	Common
Organics	Y	N	Y	Common
Salinity	Y	N	Y	Common
Toxics	Y	N	Y	Common
Turbidity	Y	N	Y	Common

As noted above, classifying the benefits in this manner is useful because it helps identify the types of revenue tools which may be appropriate in recovering the costs of the action categories which generated the benefits.

Revenue and Financing Tools

Private Benefits

The costs of generating private benefits can generally be recovered using market-based or enterprise techniques. Because users are willing to buy these types of benefits, revenues can be generated on the basis of who is buying or using the relating output of the action. Water charges are an example of this type of revenue source. Local funding, where local agencies pay for items directly, may also be used for this type of benefit. Financing tools include revenue bonds and certificates of participation for which the credit is based on the diversity of users and the demand for the output.

Common Benefits

The costs of common benefits are typically recovered using fee or assessment based revenue tools. Examples include land assessments, and user fees such as licenses, tolls, gasoline taxes or access charges. This relates to the inability to exclude those who do not pay(free rider problem), or to the lack of a ready market

for the benefit. Specific financing tools such as assessment bonds exist for some for some of these revenue types; certain types of fees may be enable use of revenue bonds as well.

Public Benefits

The costs of public benefits are typically recovered through broad based taxes or fees imposed on the general public. Examples include income taxes and property taxes. Financing tools include general obligation bonds, and from a federal perspective U.S. Treasury Bonds.

Specific definition of revenue tools will be made when more detailed information is developed concerning the funding requirements of the alternatives. The list below identifies the range of alternatives that apply to the various types of benefits from table 4 above.

Table 5.

Benefit Descriptions	Benefit Category	Revenue Tools
Ecosystem		
Habitat	Public	federal, statewide funding
Species	Public	federal, statewide funding
Water Supply		
Quantity	Private	water charges
Timing	Private	water charges
Reliability	Private	water charges
Vulnerability		
Local Flood Control	Common	assessments
Regional Flood Control	Public	federal, statewide funding
Local Seismic Protection	Common	assessments
Shore Protection	Public	federal, statewide funding
Water Quality		
Microbes	Common	water charges, user fees, assessments
Organics	Common	water charges
Salinity	Common	water charges, assessments
Toxics	Common	water charges, assessments
Turbidity	Common	water charges, user fees, assessments

Determining the mix of revenues and financing techniques to be used to recover the costs of the long term solution allocated to different beneficiary groups is the last step in the process of establishing the financial program to enable implementation of the long term solution.

With respect to using the financial architecture to support the principle of durability, there appear to be a number of techniques which could be used to create linkage and assurances that the different aspects of the long term solution will move forward together as planned. Among the possibilities are:

I. Trust Indenture Flow of Funds

A. Within the bond documents, specify ratios of available funds to be used for various purposes, or specify predetermined dollar amounts.

B. To allow for unanticipated need for these changes, enable the Trustee to alter the specified amounts upon receipt of independent Consulting Engineer's Certificate that changes are necessary and equitable.

II. Separate Revenue Pledges for identifiable interdependent revenue streams

A. For example, hydroelectric generation revenue from aqueducts

III. Fund Recycling

A. Revolving Fund structure with repaid funds available to different purpose than that to which they were originally lent.

IV. Asset Transfer

A. Collateralization of debt for a particular purpose with functionally unrelated assets, providing equity to sectors without conventional financial resources.

V. Capital apportionment from debt issuance

A. Funds segregated for immediate use, endowment or sinking fund

Section

3

Case Studies

Everglades Program

The Everglades in Florida has been ditched, diked and drained for much of this century. Purposes for doing so included flood control and agricultural use. The tremendous cost these changes have exacted from the region have been recognized, and a plan to renew the Everglades is being implemented.

Statement of Principles

In 1993, after years of litigation and disagreement, stakeholders worked together to develop a preliminary Technical Plan and a Statement of Principles over a 120-day period. This Statement included a pledge by all signatories to finalize the Technical Plan, and also to provide the resources for implementation. The Statement of Principles is summarized as follows.

Management Principles

- Pledge an end to litigation, with the immediate step of agreeing to jointly petition for a stay on all pending litigation.
- Commitment to determine a detailed water quality program over 90 days based on the draft Technical Plan.
- Endorsement of draft Technical Plan and commitment to develop a specific construction schedule.
- Commitment to reducing phosphorus levels pursuant to program developed over 90 days.

Everglades continued

Financial Principles

I. Commitment to shared financial responsibility.
II. Agricultural Provisions
  A. Commitment by agricultural stakeholders to provide $322 million over 20 years. Payment levels based on reaching BMP targets. Failure results in higher payments.
  B. A system of credits against pledged payments for reaching target phosphorus reductions based on percent target exceeded. Incentives within credit system to encourage early expenditures.
  C. Commitment to secure payment stream over next 90 days.
III. State of Florida
  A. State funds of $63 million
  B. Florida Power & Light Mitigation Fund $14 million
IV. South Florida Water Management District
  A. New .1 mil property tax levy $21.8 million per year
V. Federal
  A. Implement modified flood control project to increase water supply $87 million.
VI. Certainty and enforcement to be based on signing of mediated agreement.

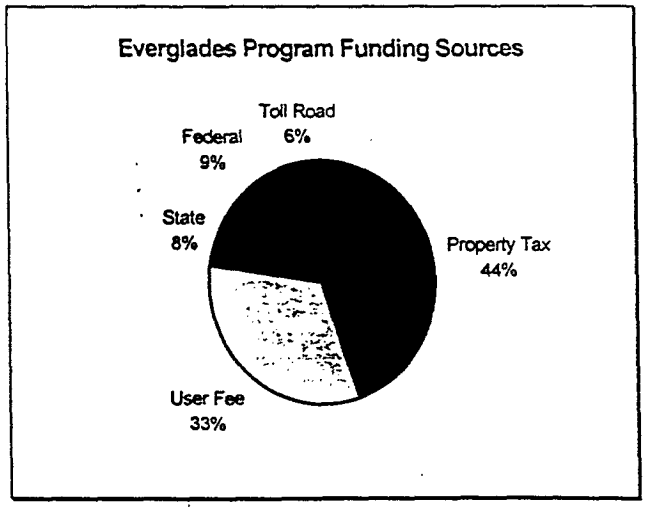
Total funding provided by these measures appears to be approximately $892 million.

Everglades Forever Act

In 1994, the Florida Legislature enacted the Everglades Forever Act, which included provisions to implement the Everglades Program and the agreements made in the Statement of Principles. The Act included:

- Authority for .1 mil levy ad valorem tax within Okeechobee Basin ($440+ million over 20 years).
- New agricultural privilege tax within a defined region as follows (estimated $11.8 million in 1994):

Year	Tax per Acre
1994-1997	$24.89
1998-2001	$27.00
2002-2005	$31.00
2006-2013	$35.00



- Separate agricultural tax on different area equal to $654,656 per year (to be prorated by acreage) through 2013, changing to $1.80 per acre after 2013.

- Ability to impose special assessments for flood control benefits within defined districts (not currently being considered for usage).
- Redirection of thirty percent of a state trust fund for land acquisition ($33 million).

Redirection of toll road revenue for Alligator Alley (a total of $60 million over 30 years). This action required federal approval as well.

Chesapeake Bay

The Chesapeake Bay has had widely recognized problems for many years. Like the Bay Delta problems, different government entities had overlapping authority over Chesapeake Bay problems. In the early 1980's the interested parties began a new process to address the problems in the Chesapeake Bay. A unique feature of this case is the fact that the problems transcended state boundaries, thus creating a need for interstate coordination.

Chesapeake Bay Commission

In 1980 the States of Maryland and Virginia established the Chesapeake Bay Commission to coordinate interstate efforts at improving the Chesapeake Bay. This commission expanded to include Pennsylvania in 1985.

Chesapeake Bay Agreements

In 1983, the U.S. EPA together with the three states and the District of Columbia signed a one page agreement with three provisions:

- Establish a Chesapeake Executive Council to oversee implementation of coordinated plans to improve the Chesapeake Bay.
- Order the Executive Council to organize a committee of agency representatives to develop and coordinate such plans.
- Establish a liaison office within the U.S. EPA to provide support for the Executive Council and the agency committee.

The work of the entities created in 1983 together with the Chesapeake Bay Commission resulted in a more detailed agreement which was signed in 1987. This second Chesapeake Bay Agreement identified new goals in six major areas. Each goal was accompanied by a list of related objectives and a series of commitments to achieve the goal. The commitments included dates by which certain actions would be taken by the signatories to the Agreement.

- Provide for restoration and protection of the living resources, their habitats and ecological relationships.
- Plan for and manage the adverse environmental effects of human population growth and land development in the Chesapeake Bay watershed.
- Promote greater understanding among citizens about the Chesapeake Bay system, and provide greater opportunities for the public to participate in formation of policies and actions related to the system.

- Promote greater opportunities for public appreciation and enjoyment of the Chesapeake Bay and tributaries.
- Support and enhance the comprehensive, cooperative and coordinated approach toward management of the Chesapeake Bay system.

Following the signing of the agreements, an extensive system of committees was established to create detailed implementation strategies for each goal.

Financial Approach

As part of the multi-level committee process to formulate strategies, the various actions related to each goal were classified into three groups:

Core

Core actions were those items which were deemed the most critical, requiring immediate attention.

Activities

Activities were actions that were the major thrust of the work to be completed to reach the goal. Activities could stretch out over a long time horizon.

Competitive

Competitive activities were those deemed not essential to reaching the goal, but still highly desirable and related to the goal. These items would be implemented if funding became available.

After the detailed strategies had received the approval of the multi-level committee process, they were forwarded to a budget committee for funding. The budget committee prioritized the expenditure of about $22 million per year in funding from the U.S. EPA.

The two agreements discussed above did not include any specific commitments or provisions relating to providing funding for the goals and objectives. This has led to a chronic funding shortage for the program. Most funding has come through redirection of existing revenue sources within the States.

The current method for providing the funding for these efforts was described by one representative of the Chesapeake Bay Commission staff as an "untraceable political process within state legislatures and the federal government." Funding was secured when a particular aspect of the program had committed interests who were willing, in the words of this representative, to "go to the mat" to get it.

The State of Maryland has determined that about $200 million is spent each year from federal, state, local and private sources to protect and restore water quality in the Chesapeake Bay. Estimates indicate that leaves a shortfall of about $60 million per year to address a Tributary Strategies Plan in coming years. The Governor of Maryland appointed a Blue Ribbon panel in June 1994 to investigate new revenue sources. This panel developed a list of revenue alternatives which includes a wide array of sources of revenue. The panel found it difficult to identify truly new sources, and one of its findings was that there would be continued reliance on existing revenue sources for the bulk of the program.

The panel suggested, among other things, the creation of a new storm water utility to be funded with user fees, the creation of assessment districts, the imposition of a fee for depletion/degradation of the aquifer on wells and septic tanks, and the imposition of an impact fee for new septic systems.