Chapter V

COMPARISON OF ALTERNATIVES

For the three alternatives considered in this study, this chapter presents the results of the allocation of costs to the seven authorized purposes of the CVP and then the determination of repayment responsibilities. The computational process is described and results for key steps are provided. Results for the Proportional Alternative and the Contractors' Proposal are compared to those for the Existing Allocation.

EXISTING ALLOCATION

As described in Chapter III, the Existing Allocation is based on cost allocation factors developed in the 1975 cost reallocation study. That study, which was undertaken as an update to the 1970 reallocation study, utilized the SCRB method to develop separable and joint cost allocation factors for the multi-purpose facilities in the CVP. The allocation of multi-purpose features that were constructed by the COE and transferred to the CVP for financial integration and repayment was not modified from the COE allocation. Although Folsom

Dam and Reservoir were constructed by the COE, these costs were allocated by Reclamation using the factors developed in the 1975 reallocation study.

To date the total cost of CVP plant-inservice facilities is approximately \$3,290 million (1999 CVP interim cost allocation annual update). This amount represents total nonindexed costs incurred since construction of CVP facilities began. Of this amount, a total of about \$623 million (about 19 percent of total costs) represents joint costs of multi-purpose facilities that were constructed by Reclamation. Table V-1 identifies portions of this amount that are allocated using separable or joint cost allocation factors developed in the 1975 SCRB This process was described in reallocation. Chapter III. The remaining plant-in-service costs, amounting to more than \$2.6 billion, represent costs of single-purpose facilities, costs not subject to allocation to one of the seven authorized purposes of the CVP, or costs of multi-purpose facilities for which the allocation of separable and joint costs was made by the COE.

TABLE V-1
COSTS ALLOCATED USING SEPARABLE AND
JOINT COST ALLOCATION FACTORS

ITEM	(\$MILLION)
Costs allocated using joint factors	469.3
Costs allocated using separable factors	153.5
TOTAL 622.7	
Note: Totals may not be completely accurate due to rounding.	

Total costs allocated to the seven authorized purposes of the CVP can be classified into three categories. These are costs of single-purpose facilities that are allocated in total to that purpose, costs of multi-purpose facilities that are allocated by Reclamation using factors from the 1975 SCRB reallocation, and costs of COE-constructed facilities allocated by it. Table V-2 summarizes the allocation of CVP plant-inservice costs as of September 30, 1999, to the seven authorized project purposes and also lists those costs not subject to allocation to these purposes.

Repayment of allocated costs in the Existing Allocation is based on repayment criteria applicable to each project purpose. As described in Chapter III, costs allocated to water supply and power are sub-allocated to reimbursable and non-reimbursable functions based on the proportion of water delivered or power used in the delivery of water for specific functions. Water supply costs are sub-allocated based on the sum of historic and projected water deliveries to irrigation and M&I water users and to wildlife refuges. Power costs are first sub-allocated between project use and commercial power functions based on a power generation.

ALLOCATION OF PROJECT COSTS IN THE EXISTING ALLOCATION

TABLE V-2

ITEM	Cost (\$Million)
Project Purposes	(4
Water Supply	1,790.8
Power	665.1
Fish and Wildlife	263.4
Recreation	69.1
Flood Control	138.0
Navigation	5.8
Water Quality Improvement	5.5
Subtotal	2,937.7
Other Authorized Costs	
Authorized deferred use	56.9
Archeological, cultural, historical	4.1
Highway improvement	14.7
Non-reimbursable IDC	27.2
Safety of dams	25.6
State Share of San Luis	224.1
Subtotal	352.6
TOTAL	3,290.2
Notes:	

Notes:

Results based on the 1999 CVP Interim Cost Allocation Annual Update.

Costs for multi-purpose facilities allocated using factors derived from 1975 reallocation study.

and use study completed by Reclamation. Then, costs associated with project use power are further sub-allocated to irrigation, M&I and wildlife refuges based on energy requirements associated with water deliveries to these entities. Table V-3 summarizes total repayment responsibilities for plant-in-service costs in the Existing Allocation.

As described above and in Chapter III, with the exception of M&I and irrigation fixed obligation repayment contracts, the repayment responsibility of M&I water users and irrigation water users is collected by Reclamation in the water rates it charges its water contractors. The repayment responsibility of commercial power customers is collected by Western in the power rates it charges preference power customers. These repayment responsibilities represent costs

of facilities for water storage, water conveyance and pumping, power generation, and power transmission, and costs for other related systemwide facilities that are allocated to the water supply and power purposes. Water rates are based, in part, on the type of services utilized in storing and conveying water to each water user. For example, the rate for water that is stored in a CVP reservoir and then directly diverted by a water contractor from the stream below the reservoir would be lower than the rate for water that is stored in the same reservoir but also conveyed through a CVP canal and lifted for delivery to a water contractor by CVP pumping The final step in the cost allocation process is the determination of costs associated with the water rate components that make up the repayment responsibility of M&I and irrigation water users.

TABLE V-3

REPAYMENT RESPONSIBILITIES IN THE EXISTING ALLOCATION

REPAYMENT ENTITY	Cost (\$Million)
M&I Water Users	436.5
Irrigation Water Users	1,476.2
Commercial Power Customers	568.8
State of California and Local Governments	244.5
Federal Non-reimbursable	564.1
TOTAL	3,290.2

Notes:

Results based on the 1999 CVP Interim Cost Allocation Annual Update.

Costs for multi-purpose facilities allocated using factors derived from 1975 reallocation study.

Totals may not be completely accurate due to rounding.

Table V-4 shows total costs associated with the water rate components for M&I and irrigation water contractors for the Existing Allocation. The rate component "Other" represents reimbursable costs of facilities considered environmental mitigation for the CVP as a whole rather than mitigation for a specific facility and is applied to all CVP M&I

and Irrigation water contractors. As explained in Chapter III. if an environmental mitigation facility can be associated with a specific facility. such as the Coleman National Fish Hatchery mitigating for Shasta and Keswick Dams, its repayment obligation would be classified in the same rate component as the facility it is For project-wide mitigation mitigating. measures, such as the Trinity River Restoration Program, repayment obligations are classified as "Other" and included in all CVP water contractors' rates. The amounts shown as repayment contracts are fixed repayment obligations of M&I and irrigation water contractors for water distribution systems and do not enter into the determination of water rates.

PROPORTIONAL ALTERNATIVE

The Proportional Alternative differs from the Existing Allocation in the allocation of joint costs. In the Proportional Alternative, the allocation of the \$623 million of joint costs shown in Table V-1 is made in proportion to the

allocation of specific costs, which are the costs of single-purpose features. As described in Chapter IV, the derivation of joint cost allocation factors requires careful consideration of the nature of costs in the CVP cost allocation. Chapter IV describes approximately \$359 million in costs that are excluded from this calculation because they are non-reimbursable expenditures, many of which are not allocated to one of the seven authorized project purposes. In addition, a second group of costs are exempt from this process because they represent costs of facilities that do not affect water and power rates, or because they are associated with features that were allocated by the COE, or because their allocation has been fixed prior to the 1975 reallocation study. The San Felipe Division is included in this group because it is out-of-basin, does not contribute to the waterand power-generating capacity of the CVP, and its costs are the repayment responsibility of the two out-of-basin contractors in the San Felipe Division.

TABLE V-4
WATER RATE COMPONENTS IN THE EXISTING ALLOCATION

RATE COMPONENT	REPAYMENT RESPONSIBILITY OF M&I WATER USERS (\$Million)	REPAYMENT RESPONSIBILITY OF IRRIGATION WATER USERS (\$Million)
Storage	75.6	341.5
Conveyance	286.4	471.3
Conveyance Pumping	3.1	45.6
Direct Pumping	39.2	107.0
Other	8.3	40.4
Project Use Power	17.5	109.5
San Luis Drain	0.0	46.5
Subtotal Used in Setting Rates	430.2	1,161.8
Repayment Contracts for Distribution Systems	6.4	314.4
TOTAL	436.5	1,476.2

Notes

Results based on the 1999 CVP Interim Cost Allocation Annual Update.

The removal of the above-described costs reduces the total of specific and joint costs to approximately \$1,808 million, of which about \$623 million is considered joint costs and \$1,185 million is considered specific costs. As explained in Chapter IV, the allocation of specific costs based on this distribution would result in no allocation to flood control because no single-purpose CVP facilities have ever been developed for flood control. To address this deficiency, a "specific" cost for flood control was estimated based on proportional flood control storage in reservoirs authorized and operated for flood control. This adjustment creates a specific cost of about \$24 million for

flood control and raises the total specific cost to \$1,209 million and decreases total joint costs to \$599 million. A summary of total specific costs and the calculated joint cost allocation factors for the Proportional Alternative is presented in Table V-5.

The joint cost allocation factors shown in Table V-5 are applied to the \$599 million of joint costs. Allocated joint costs are added to (a) the specific costs listed in Table V-5 and (b) the excluded and exempt costs to develop the allocation of total costs. Table V-6 summarizes total plant-in-service costs allocated to the authorized project purposes and other authorized costs in the Proportional Alternative.

TABLE V-5
SPECIFIC COSTS AND JOINT COST ALLOCATION FACTORS IN THE PROPORTIONAL ALTERNATIVE

PROJECT PURPOSE	TOTAL SPECIFIC COST (\$MILLION)	JOINT ALLOCATION FACTOR IN PROPORTIONAL ALTERNATIVE
Water Supply	725.8	0.60036
Power	365.3	0.30215
Flood Control	24.0	0.01983
Fish and Wildlife	83.4	0.06902
Recreation	10.4	0.00864
Navigation	0.0	0.0
Water Quality	0.0	0.0
TOTAL	1,208.9	1.00000

Notes

Costs based on the 1999 CVP Interim Cost Allocation Annual Update.

TABLE V-6

ALLOCATION OF PROJECT COSTS IN THE PROPORTIONAL ALTERNATIVE

ITEM	Cost (\$Million)		
Project Purpose			
Water Supply	1,888.5		
Power	707.4		
Fish and Wildlife	170.9		
Recreation	69.4		
Flood Control	95.7		
Navigation	0.0		
Water Quality Improvement	5.5		
Subtotal	2,937.6		
Other Authorized Costs			
Authorized deferred use	56.9		
Archeological, cultural, historical	4.1		
Highway improvement	14.7		
Non-reimbursable IDC	27.0		
Safety of dams	25.6		
State Share of San Luis	224.1		
Subtotal	352.6		
TOTAL	3,290.2		
Notes:			

Notes:

Costs based on the 1999 CVP Interim Cost Allocation Annual Update.

Totals may not be completely accurate due to rounding.

The calculation of repayment responsibilities in the Proportional Alternative is based on the same process described for the Existing Allocation. The sub-allocation of water supply costs is based on the same water delivery assumptions as in the Existing Allocation, and the sub-allocation of power costs is based on the same power generation and use study results as

the Existing Allocation. Table V-7 summarizes total repayment responsibilities for plant-inservice costs in the Proportional Alternative, and Table V-8 shows the total costs associated with the water rate components for M&I and irrigation water contractors for the Proportional Alternative.

TABLE V-7

REPAYMENT RESPONSIBILITIES IN THE PROPORTIONAL ALTERNATIVE

REPAYMENT ENTITY	Cost (\$Million)
M&I Water Users	435.5
Irrigation Water Users	1,503.8
Commercial Power Customers	581.1
State of California and Local Governments	245.1
Federal Non-reimbursable	524.7
TOTAL	3,290.2
Notes: Costs based on the 1999 CVP Interim Cost Allocation Annual Update.	
Totals may not be completely accurate due to rounding.	

TABLE V-8
WATER RATE COMPONENTS IN THE PROPORTIONAL ALTERNATIVE

RATE COMPONENT	REPAYMENT RESPONSIBILITY OF M&I WATER USERS (\$MILLION)	REPAYMENT RESPONSIBILITY OF IRRIGATION WATER USERS (\$MILLION)
Storage	71.4	383.8
Conveyance	286.4	445.6
Conveyance Pumping	3.1	45.6
Direct Pumping	39.2	107.0
Other	11.2	49.1
Project Use Power	17.8	111.9
San Luis Drain	0.0	46.5
Subtotal Used in Setting Rates	429.1	1,189.4
Repayment Contracts for Distribution Systems	6.4	314.4
TOTAL	435.5	1,503.8
Notes: Costs based on the 1999 CVP Inter	im Cost Allocation Annual Updat	e.

V-7

CONTRACTORS' PROPOSAL

The Contractors' Proposal differs from the Existing Allocation in two ways. First, the factors used to allocate joint costs are based on results from the 1970 reallocation study rather than results from the 1975 reallocation study. Second, the sub-allocation of water supply costs assumes uses of CVPIA-dedicated water for environmental purposes to be additional end uses of CVP water and combines these amounts with historical and projected deliveries to M&I and irrigation contractors and wildlife refuges.

The primary differences between the 1975 and the 1970 joint cost allocation factors are evident in the power and flood control purposes. Changing from the 1975 to the 1970 factors would reduce the power joint cost allocation factor from nearly 22 percent to less than 6 percent and would increase the flood control joint cost allocation factor from about 20 percent to nearly 36 percent. A comparison of joint cost allocation factors for the 1970 and 1975 reallocation studies is provided in Table V-9. Total allocated costs for the Contractors' Proposal are summarized in Table V-10.

TABLE V-9
COMPARISON OF JOINT COST ALLOCATION FACTORS

	1970 ALLOCATION REVISED BY	
PURPOSE	CONTRACTORS	1975 ALLOCATION
Water Supply	0.54344	0.55790
Power	0.05883	0.21810
Fish and Wildlife	0.02004	0.0
Flood Control	0.35520	0.20490
Navigation	0.02249	0.01910
Recreation	0.0	0.0
Water Quality	0.0	0.0
TOTAL	1.00000	1.00000

TABLE V-10

ALLOCATION OF PROJECT COSTS IN THE CONTRACTORS' PROPOSAL

COST		
ITEM	(\$MILLION)	
Project Purpose		
Water Supply	1,787.8	
Power	616.6	
Fish and Wildlife	269.4	
Recreation	69.1	
Flood Control	182.5	
Navigation	6.8	
Water Quality Improvement	5.5	
Subtotal	2,937.7	
Other Authorized Costs		
Authorized deferred use	56.9	
Archeological, cultural, historical	4.1	
Highway improvement	14.7	
Non-reimbursable IDC	27.2	
Safety of dams	25.6	
State Share of San Luis	224.1	
Subtotal	352.6	
TOTAL	3,290.2	

Notes:

Costs based on the 1999 CVP Interim Cost Allocation Annual Update.

Costs for multi-purpose facilities allocated using factors derived from 1970 re-allocation study as revised by Contractors.

Totals may not be completely accurate due to rounding.

The calculation of repayment responsibilities in the Contractors' Proposal is based on the same process described for the existing allocation. The sub-allocation of water supply costs, however, is based on assumed end uses of CVPIA-dedicated water as well as historical and projected deliveries for M&I,

irrigation, and wildlife refuges. Table V-11 summarizes total repayment responsibilities for plant-in-service costs in the Contractors' Proposal, and Table V-12 shows the total costs associated with the water rate components for M&I and irrigation water contractors for the Contractors' Proposal.

TABLE V-11

REPAYMENT RESPONSIBILITIES IN THE CONTRACTORS' PROPOSAL

REPAYMENT ENTITY	COST (\$MILLION)
M&I Water Users	434.6
Irrigation Water Users	1,443.4
Commercial Power Customers	533.0
State of California and Local Governments	244.3
Federal Non-reimbursable	634.9
TOTAL	3,290.2

Notes:

Costs based on the 1999 CVP Interim Cost Allocation Annual Update.

Costs for multi-purpose facilities allocated using factors derived from 1970 re-allocation study as revised by Contractors.

TABLE V-12

WATER RATE COMPONENTS IN THE CONTRACTORS' PROPOSAL

RATE COMPONENT	REPAYMENT RESPONSIBILITY OF M&I WATER USERS (\$MILLION)	REPAYMENT RESPONSIBILITY OF IRRIGATION WATER USERS (\$MILLION)
Storage	73.3	327.3
Conveyance	286.0	459.0
Conveyance Pumping	3.0	43.9
Direct Pumping	39.2	107.0
Other	10.3	44.8
Project Use Power	16.5	100.6
San Luis Drain	0.0	46.5
Subtotal Used in Setting Rates	428.3	1,129.0
Repayment Contracts for Distribution Systems	6.4	314.4
TOTAL	434.6	1,443.4

Notes:

Costs based on the 1999 CVP Interim Cost Allocation Annual Update.

Costs for multi-purpose facilities allocated using factors derived from 1970 re-allocation study as revised by Contractors.

SUMMARY OF RESULTS

Table V-13 provides a summary of total costs allocated to each project purpose for the Existing Allocation, Proportional Alternative,

and Contractors' Proposal. For the latter two alternatives differences from the Existing Allocation are also shown for ease of comparison.

TABLE V-13

SUMMARY OF TOTAL ALLOCATED COSTS FOR ALL ALTERNATIVES (\$ MILLION)

ITEM	EXISTING ALLOCATION	PROPORTIONAL ALTERNATIVE		CONTRACTORS' PROPOSAL	
	TOTAL COST	TOTAL COST	CHANGE FROM EXISTING	TOTAL COST	CHANGE FROM EXISTING
Project Purpose					
Water Supply	1,790.8	1,888.7	97.9	1,787.8	-3.0
Power	665.1	707.4	42.3	616.6	-48.6
Fish and Wildlife	263.4	170.9	-92.5	269.4	6.0
Recreation	69.1	69.4	0.3	69.1	0.0
Flood Control	138.0	95.8	-42.3	182.5	44.5
Navigation	5.8	0.0	-5.8	6.8	1.0
Water Quality Improvement	5.5	5.5	0.0	5.5	0.0
Subtotal	2,937.6	2,937.6	0.0	2,937.6	0.0
Other Authorized Costs Authorized deferred	56.9	56.9	0.0	56.9	0.0
Archeological, cultural, historical	4.1	4.1	0.0	4.1	0.0
Highway improvement	14.7	14.7	0.0	14.7	0.0
Non-reimbursable IDC	27.2	27.2	0.0	27.2	0.0
Safety of dams	25.6	25.6	0.0	25.6	0.0
State Share of San Luis	224.1	224.1	0.0	224.1	0.0
Subtotal	352.6	352.6	0.0	352.6	0.0
TOTAL	3,290.2	3,290.2	0.0	3,290.2	0.0

Notes:

Costs based on the 1999 CVP Interim Cost Allocation Annual Update.

Table V-14 summarizes total repayment responsibilities for the three alternatives. This table shows that the repayment responsibility for M&I water users in the Proportional Alternative and Contractors' Proposal would change very little from that in the Existing Allocation. Compared to the Existing Allocation, the total irrigation repayment responsibility increase in the Proportional Alternative and would decrease by a somewhat larger amount in the Contractors' Proposal. Similarly, total commercial power repayment responsibility increases in the Proportional Alternative and decreases by a larger amount in the Contractors' Proposal.

The total repayment obligations by the State and local governments in the Proportional Alternative and Contractors' Proposal would be nearly the same those as in the Existing Allocation. The changes in reimbursable repayment obligations for water and power users would be offset by changes in Federal non-reimbursable costs. In the Proportional Alternative, Federal non-reimbursable costs would decrease by somewhat more than \$39 million while in the Contractors' Proposal Federal non-reimbursable costs would increase by nearly \$71 million.

TABLE V-14

SUMMARY OF REPAYMENT RESPONSIBILITIES IN ALL ALTERNATIVES (\$ MILLION)

REPAYMENT ENTITY	EXISTING ALLOCATION	PROPORTIONAL ALTERNATIVE		CONTRACTORS [,] PROPOSAL	
	TOTAL COST	TOTAL COST	CHANGE FROM EXISTING	TOTAL COST	CHANGE FROM EXISTING
M&I Water Users	436.5	435.5	-1.0	434.6	-1.9
Irrigation Water Users	1,476.2	1,503.8	27.6	1,443.4	-32.8
Commercial Power Customers	568.8	581.1	12.3	533.0	-35.8
State of California and Local Governments	244.5	245.1	0.6	244.3	-0.2
Federal Non- reimbursable	564.1	524.7	-39.4	634.9	70.8
TOTAL	3,290.2	3,290.2	0.0	3,290.2	0.0

Notes:

Costs based on the 1999 CVP Interim Cost Allocation Annual Update.

The changes in water supply repayment responsibilities shown on Table V-14 are reflected in changes in costs associated with the M&I and irrigation rate components. As shown in Table V-15, costs for the M&I water rate components in both the Proportional and Contractors' Proposal are very similar to the Existing Allocation, with minor changes in the "Storage," "Other," and "Project Use Power"

components. Table V-16 shows that changes in costs for the irrigation water rate components in both the Proportional Alternative and Contractors' Proposal relate primarily to changes in the "Storage" and "Conveyance" components, with limited changes to the "Other" and "Project Use Power" components.

TABLE V-15
SUMMARY OF M&I RATE COMPONENTS IN ALL
ALTERNATIVES
(\$ MILLION)

RATE COMPONENT	EXISTING ALLOCATION	PROPORTIONAL ALTERNATIVE		CONTRACTORS' PROPOSAL	
	COST	TOTAL COST	CHANGE FROM EXISTING	TOTAL COST	CHANGE FROM EXISTING
Storage	75.6	71.4	-4.2	73.3	-2.3
Conveyance	286.4	286.4	0.0	286.0	-0.4
Conveyance Pumping	3.1	3.1	0.0	3.0	-0.1
Direct Pumping	39.2	39.2	0.0	39.2	0.0
Other	8.3	11.2	2.9	10.3	2.0
Project Use Power	17.5	17.8	0.3	16.5	-1.0
San Luis Drain	0.0	0.0	0.0	0.0	0.0
Subtotal Used in Setting Rates	430.2	429.1	-1.0	428.3	-1.9
Repayment Contracts for Distribution Systems	6.4	6.4	0.0	6.4	0.0
TOTAL	436.5	435.5	-1.0	434.6	-1.9

Notes:

Costs based on the 1999 CVP Interim Cost Allocation Annual Update.

TABLE V-16

SUMMARY OF IRRIGATION RATE COMPONENTS IN ALL ALTERNATIVES (\$ MILLION)

RATE COMPONENT	EXISTING ALLOCATION	PROPORTIONAL ALTERNATIVE		CONTRACTORS' PROPOSAL	
	COST	TOTAL COST	CHANGE FROM EXISTING	TOTAL COST	CHANGE FROM EXISTING
Storage	341.5	383.8	42.3	327.3	-14.2
Conveyance	471.3	445.6	-25.7	459.0	-12.4
Conveyance Pumping	45.6	45.6	0.0	43.9	-1.7
Direct Pumping	107.0	107.0	0.0	107.0	0.0
Other	40.4	49.1	8.6	44.8	4.4
Project Use Power	109.5	111.9	2.4	100.6	-9.0
San Luis Drain	46.5	46.5	0.0	46.5	0.0
Subtotal Used in Setting Rates	1,161.8	1,189.4	27.6	1,129.0	-32.8
Repayment Contracts for Distribution Systems	314.4	314.4	0.0	314.4	0.0
TOTAL	1,476.2	1,503.8	27.6	1,443.4	-32.8

Notes:

Costs based on the 1999 CVP Interim Cost Allocation Annual Update.

Totals may not be completely accurate due to rounding.

Consistent with the relatively small changes in the M&I water users repayment responsibility shown in Table V-14, it can be seen from Table V-15 that the changes in costs associated with the M&I water rate components are relatively minor. From Table V-16, it can be seen that costs associated with the irrigation water rate components either do not change or increase for the Proportional Alternative, with one exception, and either do not change or decrease for the Contractors' Proposal, again with one exception. The entire reduction of almost \$26 million in the "Conveyance" component of the Proportional Alternative results from the change in the

allocation factors for the Tehama-Colusa Canal, with a cost of \$81 million, and Tehama-Colusa Canal Fish Facilities, with a cost \$43 million. Both facilities are classified as "Conveyance" for ratesetting purposes. In the Existing Allocation, the costs of these facilities are allocated using separable cost factors from the 1975 reallocation, and therefore these costs are considered joint costs in the Proportional Alternative. In the Existing Allocation, some 93 percent of the cost of the canal and 13 percent of the cost of the fish facilities are the repayment responsibility of irrigation. In the Proportional Alternative, on the other hand, only about 42

percent of the cost of the canal and 48 percent of the cost of the fish facilities are the repayment responsibility of irrigation. The net effect of these two changes is a reduction in the irrigation repayment responsibility of nearly \$26 million.

The "Other" component for both M&I and irrigation in the Contractors' Proposal increases

because the environmental water account includes an element that would be considered mitigation. It would be entirely reimbursable and appears in this table for ratesetting purposes in the "Other" component.