

Benefit Calculation, Monetization, and Resiliency Tab

Attachment 10: Allocation of Total Costs

Provide a proposed allocation of total project costs to all project beneficiaries, including the Program, and an explanation of how the allocation was calculated consistent with TR section 8 and section 6004(a)(7) of the regulations. If this information is included in another attachment, identify the location.

WSIP Application Instructions, March 2017

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Acronyms and Abbreviations

IDC	interest during construction
JPA	Joint Powers Authority
NODOS	North-of-the-Delta Offstream Storage
OM&R	operations, maintenance, and replacement
SCRB	Separable Cost-Remaining Benefits
TR	Technical Report
WSIP	Water Storage Investment Program

A cost allocation was performed to determine the costs to be allocated to the project purposes. Based on its results, a subsequent cost assignment was performed, including beneficiaries and funding sources (accounting for funding sources), to determine the costs to be assigned to the project beneficiaries. The cost assignment also incorporated the requested Water Storage Investment Program (WSIP) grant and potential Federal funding participation (consistent with the Draft North-of-the-Delta Offstream Storage [NODOS] Feasibility Study analysis) to determine the total costs (capital and operations, maintenance, and replacement [OM&R]) that each beneficiary would need to contribute.

The Sites Reservoir Joint Powers Authority (JPA) considers future Federal participation in the project to be likely given both the Federal government's extensive development of the Feasibility Report, other studies, and its current interest in securing incremental Level 4 refuge and anadromous fish benefits from the project. As a result, consistent with Draft NODOS Feasibility Study, Federal funding of up to \$730 million was incorporated into the WSIP economic analyses and factored in to determine the \$1,662 million in requested WSIP funding.

In addition to securing funding for the project's public benefits, the Federal and WSIP funding would also benefit the project by lowering the cost of development. Assuming that funding would be disbursed as construction expenses are incurred, the project's interest during construction (IDC) expenses would be significantly reduced because it would carry a much less capital debt over the estimated construction period. The future IDC reduction has been included in the total cost used for the cost allocation and assignments.

However, given that Federal participation is not assured, the WSIP economic analyses also performed an alternate cost allocation and assignment to the project beneficiaries without Federal participation.

Analytic Methods

Separable Cost-Remaining Benefits Method

The Federal government's Separable Cost-Remaining Benefits (SCRB) method was used to perform the cost allocation for Sites Reservoir. This approach is recognized as an acceptable cost allocation by the WSIP Technical Reference (TR) guidance (Section 8.2, Tools and Methods).

The SCRB method is based on the justified investment for each project purpose. The maximum justified investment for a purpose is the lesser of either (1) its benefits or (2) the cost of the single purpose project alternative to achieve the same benefits. Quantification of the justifiable expenditures is a means for allocating joint cost in proportion to benefits.

Under SCRB, the project's separable and joint costs are estimated and used as the basis for determining each purpose's designated share of the project's total cost. Separable costs are costs that have been added to the project specifically to serve a given function. Joint costs are the costs for joint use facilities that serve multiple purposes. Each purpose's separable costs are subtracted from its justifiable expense to determine its remaining justifiable expenses.

The project's total joint costs are then allocated proportionally between the purposes based on their remaining justifiable expense. The sum of each purpose's allocated joint cost and its separable costs then determines the total cost allocated to each purpose. The allocated joint costs for the project's OM&R, construction, and IDC expenses were also performed to determine corresponding cost allocation for each cost category.

The SCRB cost allocation for each project purpose was used for cost assignment between beneficiaries and expected future Federal and/or WSIP funding amounts (when applicable). The cost assignment

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between the ecosystem improvement beneficiaries was based on their benefits because no separable costs were identified for that purpose.

Data and Assumptions

If the project's Federal funding and requested WSIP amounts are obtained, its IDC cost is estimated to decrease from \$797.6 million to \$429.0 million. This decrease would result in \$368.5 million in IDC savings, which would be equivalent to a \$13 million reduction in the project's future annualized cost. As a result, the total development cost for the project with WSIP and Federal construction funding is \$5,176 million, and its annualized total cost would total \$209.1 million. The project's cost allocation was based on this estimated development cost. In addition, an alternate cost allocation using the same SRCB method was also performed for Sites Reservoir assuming no Federal funding contribution for its construction. Single purpose and separable cost estimates for the project purposes were developed based on evaluation of each purpose's physical benefits and modified reservoir designs to meet those results.

It was also assumed that consistent with the Draft NODOS Feasibility Study, Federal funding for the project's OM&R costs would be limited to 50 percent and only applicable for incremental Level 4 refuge water.

Calculations

Table A10-1 shows the estimated annualized total costs allocated to each project purpose. The cost allocation also reports individually each purpose's share of the project's construction, IDC, and OM&R costs. The corresponding nominal amount of each purpose's portion of the project's \$5,176 million capital cost is also shown. This includes \$429 million of interest during construction, \$350 million of future environmental mitigation or compliance and \$4,397 million of capital costs.

For all purposes except water supply, the benefits determined their maximum justifiable expense. Separable costs were identified only for Sites Reservoir's hydropower and recreation purposes.

As shown in Table A10-1, water supply was allocated \$92.9 million in total annual costs, which represents 44.4 percent of the project's estimated total \$209.1 million annual cost. Ecosystem improvement was also allocated a major share (42.3 percent and \$88.5 million) of total costs. The annual cost allocations for the other public purposes were \$5.4 million (2.6 percent) for recreation and \$3.9 million (1.8 percent) for flood protection. In all cases, per WSIP TR requirements, the cost shares for all purposes are less than their monetized benefits (TR, Section 8.2).

The total cost share allocated to the project's public benefit purposes was \$97.8 million, which represents nearly half (46.8 percent) of the project's annual total cost. The public benefit purposes' cost share potential eligible for WSIP funding is limited to its capital cost, which is estimated to be \$84.3 million per year. This amount would account for \$2.4 billion (46.2 percent) of the project's total capital cost of \$5.2 billion.

Results

A cost assignment analysis was also performed to determine both the ecosystem beneficiaries' specific cost share and also the WSIP and Federal funding for each public benefit purpose or beneficiary. As required by the application guidelines, Table A10-2 shows the estimated total costs allocated to each project purpose and assigned to the beneficiaries. It also shows the assignment between project purposes and beneficiaries of the requested WSIP funding.

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The present value of the project's total cost is estimated to be \$5,931 million, of which \$755 million would be for future OM&R expenses over the 93-year analysis period. Of the \$755 million, \$44 million would be replacement costs with the remaining \$711 million operations, maintenance and replacement.

Table A10-3 provides the cost assignment for the project's \$5,176 million total capital cost (i.e., construction and IDC). Federal non-reimbursable construction funding of \$730 million would be provided as funding for anadromous fish (\$488 million), Level 4 refuge (\$201 million), and flood reduction (\$41 million). The Federal government would also provide \$1.3 million per year as its 50 percent cost share for the incremental Level 4 refuge's allocated \$2.6 million annual OM&R cost (see Table A10-1).

Table A10-3 also shows the distribution of the requested \$1,662 million in WSIP funding between the public purposes and the beneficiaries. If granted, the WSIP funding would provide sufficient matching funds to fully cover the capital cost for all the project's public benefit categories. WSIP would provide 100 percent funding for the capital cost assignments for the Oroville coldwater pool, Yolo Bypass, and recreation. WSIP would also provide the necessary 56 percent remaining capital needed for the other public benefits receiving Federal funding (i.e., Level 4 refuge, anadromous fish, and flood reduction).

Table A10-4 also shows the total cost assignment on an equivalent annualized basis. However, it should be noted that successful WSIP and Federal funding would instead disburse their contributions during the project's construction phase. As a result, their annualized capital cost share would then be eliminated. WSIP provides no OM&R funding and would ensure that the entire capital costs for all the public benefits were fully funded (either solely by WSIP or with Federal assistance). Consequently, the annual costs shown in Table A10-4 for the public benefit categories under the non-Federal partners are the annual OM&R costs that would need to be paid in the future with non-WSIP funding. The results are summarized in Figure A-1.

As discussed in Sites_A5 Documentation under the BENEFIT CALCULATION, MONETIZATION, AND RESILIENCY TAB, the Sites JPA intends to use future sales of its allocation of recaptured water to cover the OM&R costs assigned for those project public benefit purposes that do not have adequate alternate revenue sources. It is expected that the project would receive Federal funding for 50 percent of the incremental Level 4 refuge supply's annual OM&R. It is also expected that public use fees from the reservoir's recreational visitors would be used to fully fund the \$0.9 million in annual OM&R costs that would be assigned to recreation.

Table A10-1. Cost Allocation Summary: WSIP (w/ IDC Savings) and Federal Funding (w/ IDC Savings) (Annualized Values: 2015\$; \$millions)

Category	WSIP Public Benefits			Non-Prop 1. Eligible Benefits		Total
	Ecosystem Improvement	Recreation	Flood Control	Water Supply	Hydropower (System)	
Allocated Total Cost						
Total Project Costs						\$209.1
Benefits by Purpose	\$112.0	\$6.8	\$4.9	\$175.4	\$19.5	\$318.5
Single Purpose Cost	\$116.7	\$168.0	\$167.5	\$117.5	\$182.5	-
Justifiable Expenditures	\$112.0	\$6.8	\$4.9	\$117.5	\$19.5	\$260.6
Separable Costs	\$0	\$0.3	\$0	\$0	\$14.6	\$14.9
Remaining Benefits (Justifiable Expenditures Less Separable Costs)	\$112.0	\$6.4	\$4.9	\$117.5	\$4.9	\$245.7
Percent (Distribution of Remaining Benefits)	45.6%	2.6%	2.0%	47.8%	2.0%	100%
Allocated Joint Costs	\$88.5	\$5.1	\$3.9	\$92.9	\$3.8	\$194.2
Total Allocated Costs (Separable Plus Allocated Joint Costs)	\$88.5	\$5.4	\$3.9	\$92.9	\$18.5	\$209.1
Percent Total Cost Allocation	42.3%	2.6%	1.8%	44.4%	8.8%	100%
Allocated OM&R Annual Costs						
Separable OM&R Cost	\$0	\$0.2	\$0	\$0	\$0	\$0.2
Allocated Joint OM&R Cost	\$12.05	\$0.7	\$0.52	\$12.64	\$0.5	\$26.4
Total Allocated OM&R Cost	\$12.0	\$0.9	\$0.5	\$12.6	\$0.5	\$26.6
Percent OM&R Cost Allocation	45.3%	3.3%	2.0%	47.5%	2.0%	100%
Allocated Capital Costs (Annualized)						
Separable Capital Cost	\$0	\$0.2	\$0	\$0	\$14.6	\$14.8
Allocated Capital Cost	\$76.5	\$4.4	\$3.3	\$80.2	\$3.3	\$167.7
Total Allocated Annual Capital Cost	\$76.5	\$4.5	\$3.3	\$80.2	\$17.9	\$182.5
Percent Capital Cost Allocation	41.9%	2.5%	1.8%	44.0%	9.8%	100%
Allocated Construction Costs (Annualized)						
Separable Construction	\$0.0	\$0.1	\$0.0	\$0.0	\$13.4	\$13.5
Allocated Construction	\$70.1	\$4.0	\$3.1	\$73.6	\$3.0	\$153.8
Total Allocated Construction Cost	\$70.1	\$4.2	\$3.1	\$73.6	\$16.5	\$167.4
Percent Construction Cost Allocation	41.9%	2.5%	1.82%	44.0%	9.8%	100%
Allocated IDC Costs (Annualized)						
Separable IDC	\$0	\$0	\$0	\$0	\$1.2	\$1.2
Allocated IDC	\$6.3	\$0.4	\$0.3	\$6.6	\$0.3	\$13.9
Total Allocated IDC	\$6.3	\$0.4	\$0.3	\$6.6	\$1.5	\$15.1
Percent IDC Cost Allocation	41.9%	2.5%	1.8%	44.0%	9.8%	100%
Allocated Capital Costs (Nominal)						
Allocated IDC	\$180	\$11	\$8	\$189	\$42	\$429
Construction Cost	\$1,989	\$118.1	\$86.6	\$2,087	\$467	\$4,747
Allocated Total Capital Cost	\$2,169	\$128.8	\$94.4	\$2,276	\$509	\$5,176

Table A10-2. Total Cost Assignment: Present Value (2015\$; \$millions)

Purpose/Action	Total		Total Cost (Capital and OM&R) - Present Value					
			Federal Non-Reimbursable		WSIP		Authority	
	Percent	Cost (\$M)	Percent	Cost (\$M)	Percent	Cost (\$M)	Percent	Cost (\$M)
Cost Assignment: WSIP (w/ IDC Savings), Federal Funding (w/ IDC Savings)								
WSIP Public Benefits	47%	\$2,773	28%	\$766	60%	\$1,662	12%	\$345
Ecosystem Improvement	42%	\$2,510	29%	\$725	59%	\$1,480	12%	\$305
Anadromous Fish	52%	\$1,294	38%	\$488	49%	\$630	14%	\$86
Level 4 Refuge	21%	\$534	44%	\$238	49%	\$260	7%	\$36
Oroville Coldwater Pool	19%	\$470	0%	\$0	86%	\$406	14%	\$55
Yolo Bypass	8%	\$212	0%	\$0	86%	\$183	14%	\$25
Recreation	3%	\$153	0%	\$0	84%	\$129	16%	\$25
Flood Control	2%	\$109	38%	\$41	49%	\$53	14%	\$15
Non-Prop.1 Eligible Benefits	53%	\$3,158	0%	\$0	0%	\$0	100%	\$3,158
Water Supply	44%	\$2,634	0%	\$0	0%	\$0	100%	\$2,634
M&I Water Supply	65%	\$1,714	0%	\$0	0%	\$0	100%	\$1,714
Ag Water Supply	29%	\$754	0%	\$0	0%	\$0	100%	\$754
Recaptured Water Supply	6%	\$167	0%	\$0	0%	\$0	100%	\$167
Hydropower (System)	9%	\$524	0%	\$0	0%	\$0	100%	\$524
Total	100%	\$5,931	13%	\$766	28%	\$1,662	59%	\$3,503

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Table A10-3. Capital Cost Assignment: Present Value (2015\$; \$millions)

Purpose/Action	Total		Total Cost (Capital and IDC) - Annual					
			Federal Non-Reimbursable		WSIP		Authority	
	Percent	Cost (\$M)	Percent	Cost (\$M)	Percent	Cost (\$M)	Percent	Cost (\$M)
Cost Assignment: WSIP (w/ IDC Savings), Federal Funding (w/ IDC Savings)								
WSIP Public Benefits	46%	\$2,392	31%	\$730	69%	\$1,662	0%	\$0
Ecosystem Improvement	42%	\$2,169	32%	\$689	68%	\$1,480	0%	\$0
Anadromous Fish	52%	\$1,118	44%	\$488	56%	\$630	0%	\$0
Level 4 Refuge	21%	\$461	44%	\$201	56%	\$260	0%	\$0
Oroville Coldwater Pool	19%	\$406	0%	\$0	100%	\$406	0%	\$0
Yolo Bypass	8%	\$183	0%	\$0	100%	\$183	0%	\$0
Recreation	2%	\$129	0%	\$0	100%	\$129	0%	\$0
Flood Control	2%	\$94	44%	\$41	56%	\$53	0%	\$0
Non-Prop.1 Eligible Benefits	54%	\$2,784	0%	\$0	0%	\$0	100%	\$2,784
Water Supply	44%	\$2,276	0%	\$0	0%	\$0	100%	\$2,276
M&I Water	65%	\$1,480	0%	\$0	0%	\$0	100%	\$1,480
Agricultural Water	29%	\$651	0%	\$0	0%	\$0	100%	\$651
Recaptured Water	6%	\$144	0%	\$0	0%	\$0	100%	\$144
Hydropower (System)	10%	\$509	0%	\$0	0%	\$0	100%	\$509
Total	100%	\$5,176	14%	\$730	32%	\$1,662	54%	\$2,784

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Table A10-4. Total Cost Assignment: Annual (2015\$; \$millions)

Purpose/Action	Total		Total Cost (Capital and OM&R) – Annual					
			Federal Non-Reimbursable		WSIP		Authority	
	Percent	Cost (\$M)	Percent	Cost (\$M)	Percent	Cost (\$M)	Percent	Cost (\$M)
Cost Assignment: WSIP (w/ IDC Savings), Federal Funding (w/ IDC Savings)								
WSIP Public Benefits	47%	\$97.8	28%	\$27.0	60%	\$58.6	12%	\$12.2
Ecosystem Improvement	42%	\$88.5	29%	\$25.6	59%	\$52.2	12%	\$10.8
Anadromous Fish	52%	\$45.6	38%	\$17.2	49%	\$22.2	14%	\$6.2
Level 4 Refuge	21%	\$18.8	44%	\$8.4	49%	\$9.2	7%	\$1.3
Oroville Coldwater Pool	19%	\$16.6	0%	\$0	86%	\$14.3	14%	\$2.3
Yolo Bypass	8%	\$7.5	0%	\$0	86%	\$6.5	14%	\$1.0
Recreation	3%	\$5.4	0%	\$0	84%	\$4.5	16%	\$0.9
Flood Control	2%	\$3.9	38%	\$1.5	49%	\$1.9	14%	\$0.5
Non-Prop. 1 Eligible Benefits	53%	\$111.3	0%	\$0	0%	\$0	100%	\$111.3
Water Supply	44%	\$92.9	0%	\$0	0%	\$0	100%	\$93
M&I Water	65%	\$60.4	0%	\$0	0%	\$0	100%	\$60.4
Ag Water	29%	\$26.6	0%	\$0	0%	\$0	100%	\$26.6
Recaptured Water	6%	\$5.9	0%	\$0	0%	\$0	100%	\$5.9
Hydropower (System)	9%	\$18.5	0%	\$0	0%	\$0	100%	\$18.5
Total	100%	\$209.1	13%	\$27.0	28%	\$58.6	59%	\$123.5

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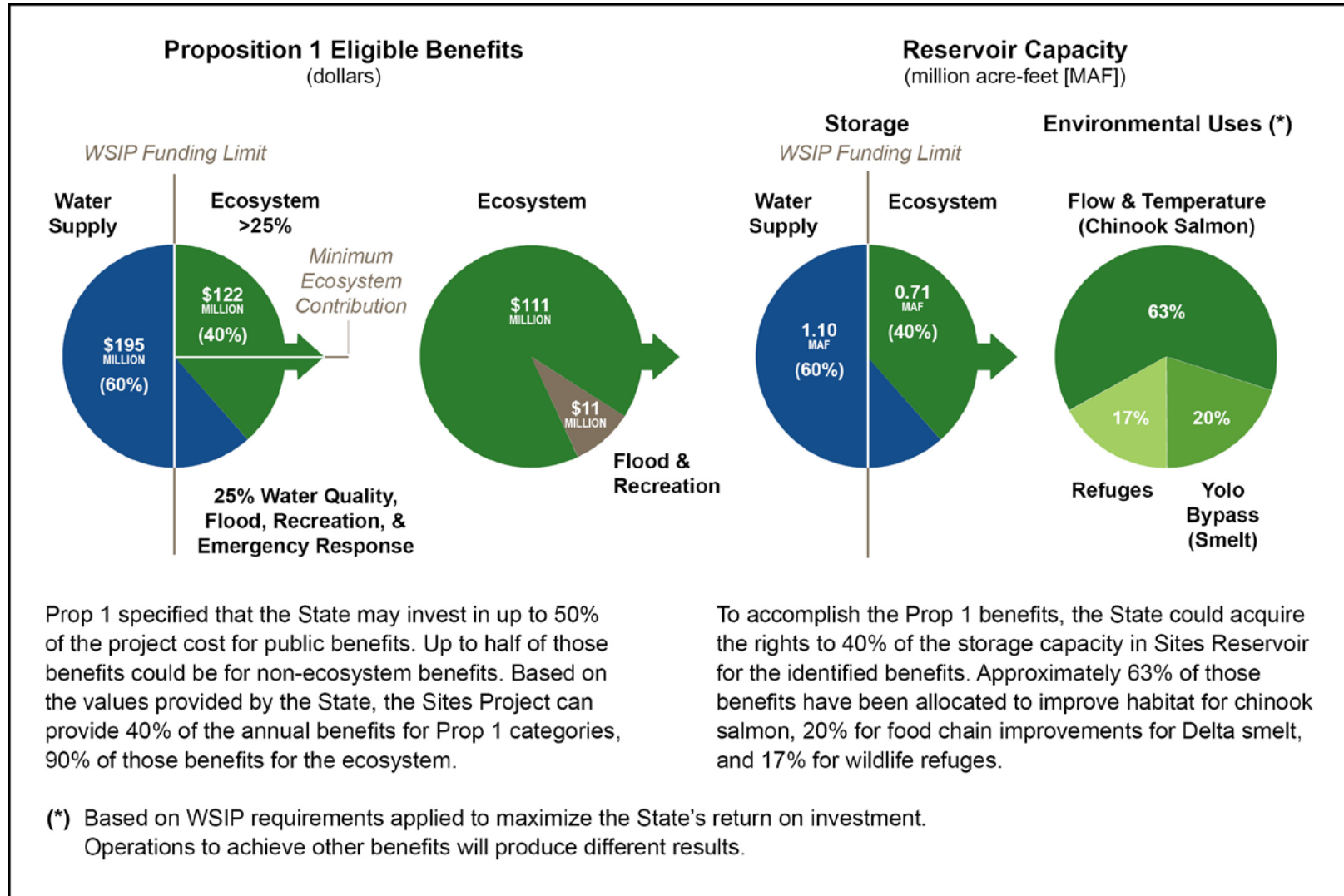
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Figure A-1. Eligible Benefits Graph



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