Appendix I

Cost and Funding

I COST ESTIMATE METHODOLOGY AND CATEGORIES FOR DRECP MITIGATION COST ESTIMATION

Appendix I provides estimates for acquiring and managing land attributable to the cumulative mitigation contribution requirements for renewables projects under each of the six alternatives. A discussion about options for funding this activity follows.

I.1 Description of the Cost Estimation Model and Scenario Analysis

The DRECP Mitigation Cost Model computes a total estimated cost for all mitigation projects on private and public residential, agricultural and open space lands in Imperial, Inyo, Kern, Los Angeles, Riverside, San Bernardino, and San Diego Counties. The costs presented here represent only a few possible scenarios, and reflect the assumptions embedded in the preparation of the Plan. The actual amount of affected acreage, the mix of mitigation activities and the underlying economic conditions are likely to differ from the assumptions here, but this analysis provides a useful approximation of the expected program costs.

The cost estimation model can identify acreage acquisition and management costs within each county segmented by land use. The cost categories in the model include:

- Land acquisition
- Level 1 environmental site assessment
- Appraisal
- Initial site work - clean-up, enhancement, restoration
- Transaction, overhead, closing and escrow costs
- Boundary survey and monumentation
- Biological survey for determining mitigation value of land
- Long-term management and maintenance
- Third party administrative costs
- Agency costs to review and determine acceptable land donation

The model estimates potential costs for a selected Alternative using a set of assumptions and parameters about the cost categories, generation build-out, acreage to be acquired or managed for mitigation, and variations in economic and financial parameters. The cost data and assumptions in the cost categories are detailed in Appendix I.

I.1.1 Cost Evaluation Assumptions and Forecasts

The cost model is driven by specific forecasts and assumptions drawn from the environmental planning and analysis developed for the Plan. Forecasts and assumptions about economic and financial conditions also affect the analysis. As mentioned previously, this analysis carries the caveat that the future can diverge significantly from the underlying assumptions presented here. This section describes the methods and data used to develop these forecasts and assumptions.

The analysis is driven by the assumptions made and data collected in Section H.3, Approach to Determining Compensation, in Appendix H; Appendix O, Existing Renewable Energy Projects Within DRECP Plan Area; and Appendix F, Megawatt Distribution. Please refer to those appendices for further documentation.

II.1.1.1 Number and Timing of Projects

Scenarios have been developed for the rollout of compensatory mitigation acquisitions.[1] The pathway of development of power plants will drive when land will need to be acquired. The location and timing of Covered Activities will ultimately drive when land will need to be purchased. This will depend on the forecasted generation capacity by technology type and the expected typical size of individual projects. The timing of the acquisition of mitigation acreage will affect the total discounted cost over the planning period to 2040 or "net present value" (NPV)[2] cost of the overall NCCP and GCP. The time value of money affects overall project expenditures. This in turn will affect the funding requirements. If acreage is acquired far in the future, funds collected now can earn interest to help fund those purchases.

Project Build-out Assumptions

The DRECP plans for up to approximately 20,500 MW of renewable energy facilities and associated transmission capacity in the Plan Area by 2040. Specifically, this assumes that a total of 20,500 MW could come on-line between 2016 and 2040. This build out scenario is used to prepare a preliminary estimate of the potential costs of implementing the Plan through the 2040 horizon, and is only one among many potential scenarios for the

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1 Appendix F and Aspen Environmental Group, DRECP Baseline RE Projects FULL LIST 8-6-13.xlsx, August 2013.

2 "(T)he net present value (NPV)… of a time series of cash flows, both incoming and outgoing, is defined as the sum of the present values (PVs) of the individual cash flows. In the case when all future cash flows are incoming …and the only outflow of cash is the purchase price, the NPV is simply the [discounted] PV of future cash flows minus the purchase price (which is its own PV). NPV is a central tool in discounted cash flow (DCF) analysis, and is a standard method for using the time value of money to appraise long-term projects. Used for capital budgeting, and widely throughout economics, finance, and accounting, it measures the excess or shortfall of cash flows, in present value terms, once financing charges are met." (http://www.princeton.edu/~achaney/tmve/wiki100k/docs/Net_present_value.html)

development pathway. The build out schedule starts at 375 MW on line in 2017, with annual additions increasing 20% per year to 2020 and then 3% per year thereafter to reach 1,240 MW in 2040.

Development Pace After 2016

The analysis assumes that the development of renewables in the DRECP region will proceed in two phases that reflect the legal and operational considerations in California's electricity system.

In the first phase to 2020, the state's 33% Renewable Portfolio Standard and the 20% reduction in greenhouse gas emissions from 1990 levels mandated in Assembly Bill 32 (2006) drive energy resource development. Between 2008 and 2012, there was a rush of renewable project applications in the Plan Area in response to specific federal and State legislation encouraging renewable development and setting a time limit on financial incentives funding project development.[3] Consequently, California's utilities were able to acquire much of the power needed to meet the 33% Renewable Portfolio Standard and to provide sufficient greenhouse gas reductions. Analysts are uncertain about whether the state's electricity grid can support renewable generation beyond the 33% target before 2020 for a variety of technical issues, so we have adopted this as an upper bound on the penetration rate. We calculated the amount of renewables already committed from the CEC's calculation of the Renewable Net Short for the High Demand Case[4] and further review of projects in the Plan Area operating or under construction. Based on the residual net short we assume that another 2,000 MW of renewables of solar, wind and geothermal will be constructed in the Plan Area by 2020 beyond what has already been constructed and approved.

In the second phase from 2020 to 2040, the analysis assumes that state policy will accelerate renewable development to achieve greater reductions in greenhouse gases. The State Air Resources Board adopted an objective of reducing emissions by 80% from 1990 levels by 2050, and the State Legislature is currently considering a 51% Renewable Portfolio Standard by 2030. We have relied on the CEC's Renewable Portfolio Standard Calculator published in December 2012 to calculate the renewable development rate from 2020 to 2040. Renewables will deliver more than 60% of the energy to meet retail loads under this scenario by 2040.

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[3] These include the state's RPS mandate and the 2008 Energy Policy Act and 2009 American Recovery and Restoration Act (ARRA) which provided numerous tax credits and grant opportunities.

[4] CEC Staff, "New Renewable Generation Needed to Comply with Policy Goals: Update for 2022 Planning," CEC-200-2013-001, March 2013.

Development Locations

This schedule does not distinguish among locations of the development of renewable projects. It is not possible at this time to know where in the Plan Area development would first occur; the first 1,000 MW may be distributed within DFAs throughout the Plan Area or may be clustered in one or more areas. Most likely, early development would be focused in areas where transmission upgrades would be least costly.

I.1.1.2 Land Potentially Available for Acquisition to Address Covered Species Mitigation

The model assumes a finite number of private lands are potentially available for mitigation in the DRECP area. The DRECP estimates the total amount of private land potentially available for purchase for compensatory mitigation within Biological Conservation Planning Areas for each alternative. Land appropriate for purchase includes all acres within Biological Conservation Planning Areas and private in-holdings within BLM LUPA Conservation Land Designations. This analysis assumes that lands will be purchased for compensatory mitigation in Biological Conservation *Priority* Areas within the county where the Covered Activity impacts occur. If private lands are not available within such Biological Conservation *Priority* Areas, the analysis assumes lands would be purchased from the remaining Biological Conservation *Planning* Areas within that county. If no more private land is available within the county, the analysis assumes that lands would be purchased within Biological Conservation *Priority* Areas in other counties. Costs are provided by county, rather than by Ecoregion Subarea, because land cost information varies from county to county, and land costs are different from county to county.

Analysis conducted by the DRECP Team estimated the total acreage available of the appropriate type by land-use designation for each alternative. These tables exclude lands in DFAs.[5] Tables I-1 through I-5 shows a breakdown of available acreage for each alternative. The tables categorize land potentially available between privately-held and non-federal publicly-owned. The latter is composed of lands owned and/or managed by local and state government entities including enterprise agencies that are not legislatively or legally protected.

These values may include a small amount of already acquired acres. In developing the baseline for the Cumulative Impacts Analysis, Aspen identified 4,860 MW with 77,913 acres that are operational or under construction in the DRECP. These project developers are already at different stages of acquiring and managing mitigation lands. We used this list of projects (which includes both solar and wind) to compute the acreage that may have

[5] Most of the agricultural land in Imperial County lies within a DFA so those lands are not available for mitigation acquisition under the assumptions used in this analysis.

already been acquired from the available supply of habitat acreage. For solar projects, we used a 2:1 mitigation ratio on the entire footprint; this assumes a balance between 1:1 and 3:1 mitigation requirements likely imposed on the projects. For wind projects, we used a 2:1 ratio (same rationale as above) for 10% of the footprint. This resulted in an estimate of roughly 65,000 acres towards mitigation. The location of these acres within the DRECP area is unknown, however, so they are not included in our analysis.

Table I-1
Lands Potentially Available for Covered Species Mitigation Acquisition —Preferred Alternative

County / Owner		Agriculture	Rural	Open Space	Total
Imperial	Private	4,146	27,427	88,369	119,941
	Public	1,386	51,017	16,616	69,019
Inyo	Private	14,960	2,938	3,686	21,584
	Public	14,424	113,612	107,816	235,853
Kern	Private	146,825	84,382	141,130	372,337
	Public	412	390	2,534	3,337
Los Angeles	Private	258,804	14,813	5,289	278,906
	Public	321	1,567	618	2,506
Riverside	Private	4,488	6,129	94,017	104,633
	Public	1,350	73	37,889	39,312
San Bernardino	Private	180,933	38,985	643,607	863,525
	Public	1,160	164	161,225	162,550
San Diego	Private	1,292	1	4,383	5,677
	Public	40	0	150	190
Total Private		*611,448*	*174,675*	*980,481*	*1,766,603*
Total Public		*19,093*	*166,824*	*326,850*	*512,767*
Total		**630,541**	**341,499**	**1,307,330**	**2,279,370**

Table I-2
Lands Potentially Available for Covered Species Mitigation Acquisition —Alternative 1

County/Owner		Agriculture	Rural	Open Space	Total
Imperial	Private	4,316	27,468	90,420	122,204
	Public	1,393	51,029	16,616	69,038
Inyo	Private	16,304	5,537	10,965	32,806
	Public	14,423	113,585	101,229	229,236
Kern	Private	190,842	91,156	173,259	455,258

Table I-2
Lands Potentially Available for Covered Species Mitigation Acquisition —Alternative 1

County/Owner		Agriculture	Rural	Open Space	Total
	Public	412	390	2,542	3,344
Los Angeles	Private	289,552	15,840	5,445	310,837
	Public	321	1,567	618	2,506
Riverside	Private	4,419	6,129	96,205	106,752
	Public	1,362	73	37,894	39,329
San Bernardino	Private	188,983	39,915	659,374	888,272
	Public	1,823	173	166,452	168,447
San Diego	Private	1,292	1	4,383	5,677
	Public	40	0	150	190
Total Private		*695,708*	*186,047*	*1,040,051*	*1,921,806*
Total Public		*19,775*	*166,817*	*325,500*	*512,091*
Total		**715,483**	**352,863**	**1,365,551**	**2,433,897**

Table I-3
Lands Potentially Available for Covered Species Mitigation Acquisition—Alternative 2

County/Owner		Agriculture	Rural	Open Space	Total
Imperial	Private	4,146	27,408	84,156	115,710
	Public	1,386	51,017	15,179	67,582
Inyo	Private	13,927	1,830	2,885	18,641
	Public	14,336	113,128	97,287	224,750
Kern	Private	144,988	80,317	126,706	352,010
	Public	412	353	2,492	3,257
Los Angeles	Private	251,082	14,863	5,274	271,219
	Public	321	1,567	618	2,506
Riverside	Private	4,472	6,129	94,016	104,617
	Public	1,350	73	37,889	39,312
San Bernardino	Private	145,493	32,573	621,373	799,439
	Public	1,177	164	155,816	157,156
San Diego	Private	1,292	1	4,383	5,677
	Public	40	0	150	190
Total Private		*565,401*	*163,120*	*938,793*	*1,667,314*
Total Public		*19,021*	*166,301*	*309,431*	*494,753*
Total		**584,422**	**329,421**	**1,248,224**	**2,162,068**

Table I-4
Lands Potentially Available for Covered Species Mitigation Acquisition —Alternative 3

County/Owner		Agriculture	Rural	Open Space	Total
Imperial	Private	4,344	27,362	89,352	121,058
	Public	1,393	51,029	16,616	69,038
Inyo	Private	15,969	4,771	10,914	31,654
	Public	14,423	113,612	101,229	229,264
Kern	Private	190,658	90,451	164,670	445,779
	Public	412	390	2,542	3,344
Los Angeles	Private	288,403	15,150	5,425	308,978
	Public	321	1,567	618	2,506
Riverside	Private	4,472	6,129	94,172	104,773
	Public	1,350	73	37,889	39,312
San Bernardino	Private	178,827	38,909	652,953	870,689
	Public	1,728	164	161,841	163,734
San Diego	Private	1,292	1	4,383	5,677
	Public	40	0	150	190
	Total Private	*683,965*	*182,774*	*1,021,869*	*1,888,607*
	Total Public	*19,667*	*166,836*	*320,885*	*507,388*
	Total	**703,632**	**349,610**	**1,342,754**	**2,395,996**

Table I-5
Lands Potentially Available for Mitigation Acquisition — Alternative 4

County/Owner		Agriculture	Rural	Open Space	Total
Imperial	Private	4,316	27,357	90,285	121,957
	Public	1,393	51,029	16,407	68,829
Inyo	Private	15,966	3,037	7,920	26,922
	Public	14,423	113,581	101,229	229,232
Kern	Private	160,304	87,963	144,323	392,590
	Public	412	390	2,534	3,337
Los Angeles	Private	258,804	14,813	5,289	278,906
	Public	321	1,567	618	2,506
Riverside	Private	4,472	6,128	94,005	104,606
	Public	1,350	73	37,887	39,309
San Bernardino	Private	178,881	38,591	653,048	870,520
	Public	1,728	164	161,270	163,163

Table I-5
Lands Potentially Available for Mitigation Acquisition — Alternative 4

County/Owner		Agriculture	Rural	Open Space	Total
San Diego	Private	1,292	1	4,383	5,677
	Public	40	0	150	190
Total Private		*624,035*	*177,889*	*999,253*	*1,801,178*
Total Public		*19,667*	*166,805*	*320,095*	*506,567*
Total		**643,702**	**344,694**	**1,319,349**	**2,307,744**

Acreage Counts

The number of compensation acres projected in each county is equal to the estimated compensation acreage for siting construction and decommissioning impacts in agricultural and non-agricultural lands by county included for each alternative.[6] Though potentially available mitigation contribution acreage is divided between private, public and undesignated lands, the model assumes all acquisition compensation will occur on private land. The model does not allocate non-acquisition between private and public land and assumed that those costs are the same regardless of ownership. Public land includes non-federal lands. Potentially available land includes priority and non-priority acres.

The model has two methods of determining how compensation acres will be selected from available land: (1) least-cost first and (2) equal proportions across all land use types or proportionate.

- The least cost method first selects available open space land in the same county as the required compensation because open space land is less expensive than residential and agricultural land. When and if all available local, private open space land is depleted, the model acquires compensation acres from private agricultural land in the same county. When this is exhausted, the model acquires the remaining compensation acres from private open space throughout the DRECP footprint.

  The proportional method computes the proportional of available private open space, agricultural and rural residential land in each county and selects land to fulfill compensation requirements based on those proportions. This method is particularly conservative in estimating costs in that it ignores obvious low-cost acquisitions, but it does capture in part the constraint of local mitigation decisions.

Of particular note is in all of the Alternatives under the least-cost approach, the Plan would not acquire all open space land.

6 See REVISED COMPENSATION FOR THE PUBLIC REVIEW DRAFT 8.7.14.docx

Table I-6 displays the required acreage-equivalent compensation for siting, construction, decommissioning and terrestrial operational impacts for each alternative. These values are taken from Appendix H and allocated to political jurisdictions. Tables I-7 through I-11 include the required compensation, available lands, and selected compensation using each selection method for each of the five alternatives.

Table I-6
Estimated Acreage-Equivalent Compensation for Siting, Construction, Decommissioning, and Terrestrial Operational Impacts by Alternative

Total Estimated Acreage - All Land Types					
County	*Alternative 1*	*Alternative 2*	*Alternative 3*	*Alternative 4*	*Preferred*
Imperial	93,773	126,867	93,900	79,644	91,448
Inyo	10,633	21,585	8,064	7,890	5,760
Kern	20,453	67,814	27,410	28,091	28,744
Los Angeles	8,424	27,966	11,275	11,582	11,872
Riverside	29,803	65,945	32,867	62,887	51,843
San Bernardino	63,579	175,373	74,598	77,961	85,123
San Diego	10,587	13,491	10,571	7,183	9,347
Total	**237,252**	**499,040**	**258,685**	**275,239**	**284,137**

Table I-7
Required Compensation, Potentially Available Lands, and Selected Compensation Acreage – Preferred Alternative

County / Owner		Compensation Land	Potentially Available Land			Proportional Compensation			Least-Cost Compensation		
		General	*Ag.*	*Rural*	*Open Space*	*Ag.*	*Rural*	*Open Space*	*Ag.*	*Rural*	*Open Space*
Imperial	Private	74,300	4,100	27,400	88,400	2,600	17,000	54,800	0	0	74,300
	Public	0	1,400	51,000	16,600	0	0	0	0	0	0
Inyo	Private	3,900	15,000	2,900	3,700	2,700	500	700	200	0	3,700
	Public	0	14,400	113,600	107,800	0	0	0	0	0	0
Kern	Private	23,000	146,800	84,400	141,100	9,300	5,300	8,900	0	0	23,400
	Public	0	400	400	2,500	0	0	0	0	0	0
Los Angeles	Private	9,500	258,800	14,800	5,300	9,200	500	200	4,200	0	5,300
	Public	0	300	1,600	600	0	0	0	0	0	0
Riverside	Private	32,200	4,500	6,100	94,000	1,400	1,900	29,000	0	0	32,400
	Public	0	1,300	100	37,900	0	0	0	0	0	0
San Bernardino	Private	58,600	180,900	39,000	643,600	12,500	2,700	44,600	0	0	60,300
	Public	0	1,200	200	161,200	0	0	0	0	0	0
San Diego	Private	7,900	1,300	0	4,400	1,300	0	4,400	1,300	0	4,400
	Public	0	0	0	100	0	0	0	0	0	0

Table I-8
Required Compensation, Potentially Available Lands, and Selected Compensation Acreage – Alternative 1

County / Owner		Compensation Land	Potentially Available Land			Proportional Compensation			Least-Cost Compensation		
		General	*Ag.*	*Rural*	*Open Space*	*Ag.*	*Rural*	*Open Space*	*Ag.*	*Rural*	*Open Space*
Imperial	Private	76,100	4,300	27,500	90,400	2,700	17,100	56,400	0	0	76,200
	Public	0	1,400	51,000	16,600	0	0	0	0	0	0
Inyo	Private	7,200	16,300	5,500	11,000	3,600	1,200	2,400	0	0	7,200
	Public	0	14,400	113,600	101,200	0	0	0	0	0	0
Kern	Private	16,400	190,800	91,200	173,300	7,200	3,500	6,600	0	0	17,000
	Public	0	400	400	2,500	0	0	0	0	0	0
Los Angeles	Private	6,800	289,600	15,800	5,400	6,800	400	100	1,300	0	5,400
	Public	0	300	1,600	600	0	0	0	0	0	0
Riverside	Private	18,500	4,400	6,100	96,200	800	1,100	16,800	0	0	18,800
	Public	0	1,400	100	37,900	0	0	0	0	0	0
San Bernardino	Private	43,800	189,000	39,900	659,400	9,700	2,000	33,700	0	0	46,100
	Public	0	1,800	200	166,500	0	0	0	0	0	0
San Diego	Private	9,000	1,300	0	4,400	1,300	0	4,400	1,300	0	4,400
	Public	0	0	0	100	0	0	0	0	0	0

Table I-9
Required Compensation, Potentially Available Lands, and Selected Compensation Acreage – Alternative 2

County / Owner		Compensation Land	Potentially Available Land			Proportional Compensation			Least-Cost Compensation		
		General	*Ag.*	*Rural*	*Open Space*	*Ag.*	*Rural*	*Open Space*	*Ag.*	*Rural*	*Open Space*
Imperial	Private	103,000	4,100	27,400	84,200	3,700	24,400	75,000	4,100	0	84,200
	Public	0	1,400	51,000	15,200	0	0	0	0	0	0
Inyo	Private	14,600	13,900	1,800	2,900	10,900	1,400	2,300	11,700	0	2,900
	Public	0	14,300	113,100	97,300	0	0	0	0	0	0
Kern	Private	54,400	145,000	80,300	126,700	22,900	12,700	20,000	0	0	56,700
	Public	0	400	400	2,500	0	0	0	0	0	0
Los Angeles	Private	22,400	251,100	14,900	5,300	21,800	1,300	500	17,100	0	5,300
	Public	0	300	1,600	600	0	0	0	0	0	0
Riverside	Private	41,000	4,500	6,100	94,000	1,800	2,400	37,100	0	0	42,700
	Public	0	1,300	100	37,900	0	0	0	0	0	0
San Bernardino	Private	120,700	145,500	32,600	621,400	22,500	5,000	96,200	0	0	137,100
	Public	0	1,200	200	155,800	0	0	0	0	0	0
San Diego	Private	11,500	1,300	0	4,400	1,300	0	4,400	1,300	0	4,400
	Public	0	0	0	100	0	0	0	0	0	0

Table I-10
Required Compensation, Potentially Available Lands, and Selected Compensation Acreage – Alternative 3

County / Owner		Compensation Land	Potentially Available Land			Proportional Compensation			Least-Cost Compensation		
		General	*Ag.*	*Rural*	*Open Space*	*Ag.*	*Rural*	*Open Space*	*Ag.*	*Rural*	*Open Space*
Imperial	Private	76,200	4,300	27,400	89,400	2,700	17,300	56,300	0	0	76,300
	Public	0	1,400	51,000	16,600	0	0	0	0	0	0
Inyo	Private	5,500	16,000	4,800	10,900	2,800	800	1,900	0	0	5,500
	Public	0	14,400	113,600	101,200	0	0	0	0	0	0
Kern	Private	22,000	190,700	90,500	164,700	9,800	4,600	8,400	0	0	22,500
	Public	0	400	400	2,500	0	0	0	0	0	0
Los Angeles	Private	9,000	288,400	15,100	5,400	9,000	500	200	3,600	0	5,400
	Public	0	300	1,600	600	0	0	0	0	0	0
Riverside	Private	20,400	4,500	6,100	94,200	900	1,200	18,500	0	0	20,700
	Public	0	1,300	100	37,900	0	0	0	0	0	0
San Bernardino	Private	51,400	178,800	38,900	653,000	10,900	2,400	39,700	0	0	53,700
	Public	0	1,700	200	161,800	0	0	0	0	0	0
San Diego	Private	9,000	1,300	0	4,400	1,300	0	4,400	1,300	0	4,400
	Public	0	0	0	100	0	0	0	0	0	0

Table I-11
Required Compensation, Potentially Available Lands, and Selected Compensation Acreage – Alternative 4

County / Owner		Compensation Land	Potentially Available Land			Proportional Compensation			Least-Cost Compensation		
		General	*Ag.*	*Rural.*	*Open Space*	*Ag.*	*Rural*	*Open Space*	*Ag.*	*Rural*	*Open Space*
Imperial	Private	64,700	4,300	27,400	90,300	2,300	14,500	47,900	0	0	64,700
	Public	0	1,400	51,000	16,400	0	0	0	0	0	0
Inyo	Private	5,300	16,000	3,000	7,900	3,200	600	1,600	0	0	5,300
	Public	0	14,400	113,600	101,200	0	0	0	0	0	0
Kern	Private	22,500	160,300	88,000	144,300	9,200	5,100	8,300	0	0	22,600
	Public	0	400	400	2,500	0	0	0	0	0	0
Los Angeles	Private	9,300	258,800	14,800	5,300	8,700	500	200	4,000	0	5,300
	Public	0	300	1,600	600	0	0	0	0	0	0
Riverside	Private	39,100	4,500	6,100	94,000	1,700	2,300	35,100	0	0	39,100
	Public	0	1,300	100	37,900	0	0	0	0	0	0
San Bernardino	Private	53,700	178,900	38,600	653,000	11,100	2,400	40,400	0	0	54,000
	Public	0	1,700	200	161,300	0	0	0	0	0	0
San Diego	Private	6,100	1,300	0	4,400	1,300	0	4,400	1,300	0	4,400
	Public	0	0	0	100	0	0	0	0	0	0

I.2 Land Value Estimation

There are many factors that affect the potential cost of land; however, all of the factors are essentially components of supply and demand. The list below summarizes the major factors affecting the cost of acquiring land for compensatory mitigation:

- General economic and real estate market conditions.
- Number of willing sellers and their price expectations.
- Property location and development potential (including zoning and proximity to utility infrastructure): Land with higher potential for residential and other development is likely to cost more. Conservation easements should be relatively less expensive on remote land with already limited development potential.
- Specificity of mitigation requirements: There may be more limited supply of available land in very limited geographic areas. For example, land in the I-10 corridor is limited and may be more expensive.
- Presence of relatively scarce habitat: For example, the presence of sand dune habitat for fringe-toed lizard or microphyll woodland habitat would likely increase the price.

It is difficult to comprehensively assess potential land acquisition costs because the DRECP covers such an enormous geographic area with a wide variety of settings and economic uses. In addition, each city and county within the DRECP area has somewhat unique environmental and market conditions. Costs are tied to supply and demand conditions that may change very quickly. A particular project with geographically-specific mitigation requirements may influence local market conditions during the relatively short period when a project proponent is acquiring land for mitigation purposes (although relatively scarce habitat may remain more valuable.) Assessing these transient local effects can be important for estimating program costs, but quite difficult without a rich data set of land and easement acquisitions. This study does not have access to or use such a data set. Anecdotal evidence indicates that, in general, land prices may have begun to decline again now that fewer new projects are being proposed.

There are extremely limited publicly-available data on the costs of mitigation land acquisition.[7] However, public agencies and private mitigation banks and conservancies have some data about mitigation land acquisitions for recent renewable energy projects in the DRECP area. Lead agencies also projected mitigation land costs during environmental review for

[7] See for example Mark Buckley, Alexandra Reese, and Tom Souhlas, "Review of Mitigation Costs in Western States," EcoNorthwest, May 18, 2012, https://www.wecc.biz/committees/BOD/TEPPC/External/Mitigation_Cost_Report_ECONW.pdf

these projects.[8] This report summarizes these estimated costs below based on interviews and reviews of program documents.

I.2.1 Mitigation Banks and Land Conservancies

Mitigation banks and land conservancies have been involved in acquiring mitigation lands in the DRECP area. One mitigation bank official summarized the following trends in their acquisitions (Confidential Interview 2012). The representative also stated that the mitigation banks costs should probably be treated as minimum costs because the company is extremely disciplined about the prices they are willing to accept.

Colorado Desert: For all parcels in the I-10 corridor, land costs have increased about 33% from a yearly average from approximately $980 in 2010 to $1,300 per acre in 2011. For parcels 40 acres in size (or less), the price increase has been a little more dramatic, increasing about 50% (yearly average from $1,000 to $1,500 per acre). The minimum price in this area was $700 per acre in June 2010, and the maximum price was $1,700 per acre in July 2011. The official noted that most remaining properties in this area are 40 acres or less and most remaining landowners want more than $1,500 per acre.

West Mojave: The trend in pricing is significantly higher than in the Colorado Desert. The mitigation bank's average option price is $2,250 and $2,500 per acre. The official also noted that properties close to Palm Springs were much more expensive (approximately $10,000 per acre), and that they have needed to reject a great deal of land in the West Mojave because of off-highway vehicle (OHV) trespass issues, which can drive up management cost significantly.

Land conservancy officials associated with Amargosa Conservancy and The Nature Conservancy noted that as a result of demand for project and mitigation sites, solar developers drove up prices in the West Mojave to as much as $10,000 per acre, though most land was optioned for $1,500-$3,000 per acre (Amargosa Conservancy 2012). According to these land conservancy staff, few of these options were exercised, and full fee prices for most desert land in the central and western Mojave may now have dropped to $500-$600 per acre.

The officials also noted that conservation easement values are much harder to predict. Conservation easement prices may range from 30% of the fee value for remote land to 75% for land with higher development potential. The Bay Delta Conservation Plan (BDCP) assumes

[8] The Northern and Eastern Mojave (NEMO) planning area covers 3.3 million acres in parts of San Bernardino and Inyo Counties (BLM 2002). The West Mojave Plan covers 9.3 million acres of land, and is the largest habitat conservation plan (HCP) ever put in place in the United States (BLM 2006). Under the NEMO and WEMO plans, BLM previously assumed that conservation lands would cost $500 per acre in the Northern and Eastern Mojave and $770 per acre in the Western Mojave. However, these costs have now changed as a result of market conditions, and the BLM does not have an agency-wide estimate for land acquisition in these areas (LaPre 2012).

BDCP assumes easements are 80% of fee title value for habitat land mitigation and 60% for agricultural land mitigation.

SB 34 Advance Mitigation Account

Mitigation lands acquired through the SB 34 Advance Mitigation Account (described above) have cost on average $363 to $1,100 per acre. These acquisitions are shown in Table I-12. Compensatory mitigation for the Ivanpah solar project is being addressed largely through the SB 34 Advanced Mitigation option.[9] Hidden Valley, Joshua Tree, and the Chuckwalla Valley are in Riverside County in the West Mojave Desert. FKSC are the Fremont-Kramer DWMA and Superior-Cronese DWMA located on the Kern-San Bernardino Counties border.

Table I-12
SB 34 Advanced Mitigation Account Acquisitions (June 2012)

	Acres	Total cost	Cost per acre
Hidden Valley	3,300	$2,290,000	$694
Chuckwalla 1	915	$345,624	$378
Chuckwalla 2	735	$267,050	$363
Chuckwalla 3	798	$306,464	$384
Chuckwalla 4	520	$195,093	$375
FKSC 1	1,932	$966,000	$500
FKSC 2	1,519	$738,349	$486
Joshua Tree	530	$583,341	$1,101

Coachella Valley Multiple Species Habitat Conservation Plan

The Coachella Valley Multiple Species HCP (CVMSHCP) is just outside the DRECP boundary. The Coachella Valley is located in Riverside County approximately 110 miles east of Los Angeles, 270 miles west of Phoenix and 75 miles north of the Mexican border. According to Coachella Valley Association of Governments, the agency has been focused on purchasing the most expensive and developable parcels, especially those that provide sand dune habitat for Coachella Valley fringe-toed lizard, at an estimated cost of $8,000 per acre.[10] Specific cost estimates for areas covered by the CVMSHCP are shown in Table I-13. The weighted average cost across the entire CVMSHCP is about $2,680 per acre, with the average for each area ranging from $419 to $15,700. Notably, the acquired acreage has tended to be towards the lower end of the price range as reflected by the average being less than the mid-range value of $5,250.

[9] York, CEC, Personal communication, 2012.
[10] Jim Sullivan, GIS, Planner, Coachella Valley MSHCP, Personal communication, March 1, 2012.

Table I-13
Summary Costs (per Acre) from Coachella Valley MSHCP 2010 Market Study

	CVMSHCP Designation	Total Acres	Low Price	Mid-Range	High Price	Average Price
1	Cabazon	2,806	$500	$2,750	$5,000	$1,175
2	Stubbe and Cottonwood Canyons	1,705	$500	5,250	10,000	5,250
3	Snow Creek/Windy Point	1,018	$450	$1,975	$3,500	$1,365
4	Whitewater Canyon	78	$450	$2,975	$5,500	$1,081
5	Highway 111/I-10	358	$3,000	$6,500	$10,000	$7,550
6	Whitewater Floodplain	2,082	$3,000	$6,500	$10,000	$5,450
7	Upper Mission Crk/Big Morongo Cyn	5,117	$500	$10,250	$20,000	$8,885
8	Willow Hole	2,392	$2,500	$13,750	$25,000	$9,813
9	Edom Hill	1,185	$1,250	$8,125	$15,000	$7,781
10	Thousand Pine	5,550	$1,000	$25,000	$50,000	$15,700
11	West Deception Canyon	557	$450	$1,725	$3,000	$1,343
12	Indio Hills/Joshua Tree NP Linkage	2,088	$1,000	$10,500	$20,000	$4,325
13	Indio Hills Palms	1,525	$750	$2,875	$5,000	$1,706
14	East Indio Hills	1,014	$1,000	$5,500	$10,000	$3,925
15	Joshua Tree National Park	12,140	$350	$625	$900	$419
16	Desert Tortoise and Linkage	39,283	$250	$1,125	$2,000	$906
17	Mecca Hills/Orocopia Mountains	20,151	$250	$1,125	$2,000	$644
18	Dos Palmas	10,456	$200	$1,350	$2,500	$603
19	CV Stormwater Channel and Delta	2,551	$3,500	$11,750	$20,000	$9,688
20	Santa Rosa and San Jacinto Mtns	33,052	500	$5,250	$10,000	$2,875
	CVMSHCP Summary	145,108	$200	$5,250	$50,000	$2,682

Source: CRA 2010.

I.2.2 Land Acquisition Costs

The following section details how the analytic team generated per acre cost estimates for residential, agricultural and open space lands in the DRECP area. The analytic team estimates that 85% of mitigation will be in the form of fee titles and the remaining 15% easements. The per-acre cost estimates discussed below are the weighted average of fee title and easement costs.

I.2.2.1 Residential Land

The analytic team used regression analysis to generate per acre cost estimates for DRECP residential lands. We did so using a dataset consisting of information on nearly 70 parcels for sale in the DRECP region. For each parcel, the dataset included the number of acres per parcel, asking price, price per acre, zoning code and county as well as information on the development status of each parcel. We performed a log-linear regression with the log of the

asking price per acre as the dependent variable and the number of acres per parcel and dummy variables indicating whether the parcel is located in San Bernardino and/or is prepared for development as independent variables. We did not include indicators for the other counties in the DRECP region because initial models indicated that they do not have a statistically significant impact on the per acre asking price. Though the model estimates the price for residential land that is prepared for development, we assumed all residential compensation land used for the DRECP is not prepared for development.

To compute a range of cost estimates, we estimated the coefficients for the 10th, 50th, and 90th percentiles of the price distribution and assigned these to the low, mid and high scenarios, respectively. The analytic team used these coefficients and the average number of acres per parcel in each country to construct high, medium and low fee title prices for both land unprepared and prepared for development in each county. We use the BCDP's assumption that the price of easements for habitat mitigation is 80% of the fee title price to compute the range of easement prices per acre. Assuming 15% of mitigation is in the form of easements, the model then computes the weighted average residential land price. See Table I-14 below for the range of residential land costs.

Table I-14
Residential Land Cost ($/Acre)

County	Ownership Type	Mid	High	Low
Imperial	Private	$3,167	$4,816	$2,083
Inyo	Private	$3,247	$4,891	$2,156
Kern	Private	$3,157	$4,806	$2,074
Los Angeles	Private	$3,157	$4,806	$2,074
Riverside	Private	$3,122	$4,773	$2,042
San Bernardino	Private	$5,713	$12,655	$2,579
San Diego	Private	$3,163	$4,812	$2,079

I.2.2.2 Agricultural Land

The analytic team developed a range of values for agricultural lands in the DRECP area using data from the National Agricultural Statistics Service (NASS), Bureau of Land Management (BLM), and American Society of Farm Managers and Rural Appraisers (ASFMRA).[11] NASS reports rent values for pastureland and irrigated and non-irrigated

[11] American Society of Farm Managers and Rural Appraisers (ASFMRA), 2012. 2012 Trends in Agricultural Land and Lease Values California and Nevada. National Agricultural Statistics Service (NASS), 2012. QuickStats. http://quickstats.nass.usda.gov/. Bureau of Land Management, 2009. Adjusted 2002 and 2007 NASS Census Per Acre Land and Building (L/B) Values and Rent Schedule Zones. http://www.blm.gov/pgdata/etc/medialib/ blm/wo/MINERALS_REALTY_AND_RESOURCE_PROTECTION_/cost_recovery.Par.81319.File.dat/2002to2007-per-acre-L-and-B-with-Cover.pdf.

cropland by county for many of the DRECP counties but only provides statewide data for agricultural land values. The analytic team used statewide NASS rent and value data to compute the inverse of the ratio of land value to rent by state for pastureland, cropland, and irrigated and non-irrigated cropland. The analytic team applied the median inverse ratio for each land type to the corresponding county-level rent values to estimate the value per acre for each available county and land type.

BLM provides per acre land and building (L/B) values from the 2002 and 2007 NASS Census. The data is broken out by county and includes all counties in the DRECP area. We included the 2007 values in our analysis, and they range from $951 per acre in Inyo County to $19,247 in San Diego County.

Finally, we included per acre pastureland and/or cropland values for Kern, Imperial and San Diego Counties from ASFMRA's *2012 Trends in Agricultural Land and Lease Value* report. Combining data from the three sources, the analytic team constructed high, mid and low estimates of per acre cropland value for each of the DRECP counties. Data for pastureland values was more limited, so we were unable to construct a range of costs for each county. Instead, the analytic team generated a range of per acre pastureland values for Kern County and single value estimates for San Diego and Inyo counties. The "Input" sheet of the model allows the analyst to select high, low or mid agricultural land cost case.

As with residential lands, the composition of agricultural mitigation lands in each county is largely uncertain. The model assumes that all agricultural lands are pastureland in San Bernardino, Inyo and Kern Counties and assumes a mix of the two land types for the remaining counties. Based on these proportions and the analyst-selected cost case, the model computes the weighted-average fee title price for public agricultural mitigation land for each county. We use the BCDP's assumption that the price of easements for agricultural mitigation is 60% of the fee title price to compute the range of easement prices per acre. The model then computes the weighted average agricultural land price. See Table I-15 for the range of agricultural land costs.

Table I-15
Agricultural Land Cost ($/Acre)

County	Ownership Type	Mid	High	Low
Imperial	Private	$3,874	$4,542	$3,028
Inyo	Private	$1,034	$1,034	$1,034
Kern	Private	$667	$1,128	$188
Los Angeles	Private	$7,353	$11,289	$2,077
Riverside	Private	$6,745	$9,373	$4,116
San Bernardino	Private	$461	$461	$461
San Diego	Private	$25,930	$56,400	$18,092

I.2.2.3 Open Space Land

Open space land costs do not vary by scenario in the model. The SB 34 Mitigation Cost Table contains total land acquisition costs and acreage counts for several projects located in San Bernardino and Imperial Counties.[12] We used these costs to estimate mid-case per acre costs for open space lands. Using the acre count of each project as a weight, we computed the weighted average fee title acquisition price per acre for land in San Bernardino and Imperial Counties, as well as the combined area covered by the projects. The analytic team used the latter value as the fee title cost in Inyo, Kern, Los Angeles, Riverside, and San Diego Counties. We computed the high and low fee title costs by multiplying the mid-case cost by the ratios of high-to-mid and low-to-mid fee title costs for agricultural land, respectively. We used the BCDP's assumption that the price of easements for habitat mitigation is 80% of the fee title price to estimate the range of easement prices per acre. Assuming 15% of mitigation is in the form of easements, the model then computes the weighted average residential land price. See Table I-16 for the range of open space land cost estimates.

Table I-16
Open Space Land Cost ($/Acre)

County	Ownership Type	Mid	High	Low
Imperial	Private	$454	$830	$286
Inyo	Private	$537	$982	$338
Kern	Private	$537	$982	$338
Los Angeles	Private	$537	$982	$338
Riverside	Private	$537	$982	$338
San Bernardino	Private	$757	$1,385	$477
San Diego	Private	$537	$982	$338

I.2.2.4 Parcel Size

The analytic team used data on thousands of parcels in the DRECP area to compute the average parcel size for small and large parcels by county, where small parcels are defined as those under 100 acres and large parcels are those with more than 100 acres.[13] The proportion of large and small parcels in potential mitigation lands for each county is unknown. Large parcels account for roughly 2% of the total number of parcels in the dataset, but this may not be the case for the potential DRECP mitigation lands. To account for this uncertainty, the model user can input the proportion of large and small parcels in each county. Based on the user input, the model computes the weighted average parcel size for

[12] SB 34 Advanced Mitigation Land Acquisition and Management Cost Table
[13] Data provide by DRECP analytic team from GIS data set; GoAreas_ownership_county_parcels_091112.xlsx

each of the seven counties in the DRECP area. For the purpose of this study, the model assumes 84% of parcels are small and 16% are large, reflective of the distribution in the SB 34 acquisitions. This results in estimated parcel sizes ranging from 19 to 48 acres.

I.2.3 DRECP-Area Environmental Review Cost Estimates

As many as 81 proposed renewable energy projects within the DRECP boundary have been reviewed by local, state, and federal agencies since the beginning of 2010.[14] Based on initial review of large wind and solar projects (at least 150 megawatts), environmental compliance documents (e.g., EIR or EIS) prepared by local lead agencies have not typically included mitigation cost estimates. Available cost estimates from recent environmental compliance documents prepared by the Energy Commission and BLM are shown in Table I-17. For land acquisition, cost estimates ranged from $500 to $3,000 per acre.

Table I-17
DRECP Area Projects – Per Acre Costs of Land Acquisition for Compensatory Mitigation

Project	County	Lead Agencies	Land
Desert Sunlight	Riverside	BLM	$1,000
Beacon Solar	Kern	CEC	$3,000
Abengoa	San Bernardino	CEC	Not included
Imperial Valley*	Imperial	CEC and BLM	$500
Blythe	Riverside	CEC and BLM	$1,000
Palen	Riverside	CEC and BLM	$1,000
Genesis	Riverside	CEC and BLM	$500
Rice Solar	Riverside	CEC and BLM	$500
Calico	San Bernardino	CEC and BLM	$1,000
Ivanpah	San Bernardino	CEC and BLM	$1,000

* Project was withdrawn after being approved by the Energy Commission.

I.2.4 Escalation Factor

To account for the increase in real land prices[15] over the DRECP period, the analytic team developed forecasts of potential price increases for each of the three land types over the time horizon. The indices set 2013 as the base year and extend out to 2040.

First, we developed an index of real property value for each land type based on historic annual increases in price. The median annual increase in real residential prices between

[14] Dudek, Renewable Energy Policy Group, Briefing Book 2, 2012
[15] " Real" land prices refers to a change in price levels after adjusting for general economy-wide inflation. In other words, it is the price change that occurs beyond inflationary changes.

1890 and 2012 was 0.3%.[16] Upper and lower bounds on the escalation rates for residential property were drawn from averages over 25 year intervals within that historic 122-year period (the former being approximately equal to the DRECP planning horizon). These bounds were used to as scalers to estimate the high and low cases for agricultural and open space prices. The Federal Deposit Insurance Corporation (FDIC) reports that real farmland prices increased by 1.4% per year between 1910 and 2008, and rose by over 3% a year from 1987 to 2013.[17] In the absence of historical data on open space land prices, we projected a real escalation rate for open spaces lands of 0.9%, the average of the real annual increases for residential and agricultural properties.

The analytic team then developed forecasts of the average annual price escalation for each land type as the geometric mean of the respective property value indices projected over the DRECP planning period. The model applies the escalation factors to the land acquisition cost estimates detailed above to ensure that the values used reflect real prices over the life of the program.

I.3 Long-term Management and Maintenance Costs

Projects permitted under the DRECP will also be required to fund long-term management and maintenance (LTMM) of lands acquired for compensatory mitigation purposes. Mitigation measures from the Energy Commission and BLM have included a requirement that applicants provide funds for long-term management and maintenance of mitigation lands. LTMM funds would cover ongoing monitoring and enforcement of conservation easement terms and the ongoing creation and implementation of management plans.

The Renewable Energy Action Team (REAT) Agency Mitigation Cost Estimate from July 23, 2010 estimated that LTMM funds should equal $1,450 per acre.[18] REAT agency LTMM cost estimates were conservative (i.e., biased higher than expectations), and assumed extra costs associated with agency implementation (including ongoing preparation of NEPA documents and biological opinions for management and restoration work).[19] Agency staff advocated for this conservative approach because desert habitats can be especially susceptible to disturbance, and many parts of the DRECP-area are vulnerable to unauthorized OHV use. If unauthorized trails are created within mitigation areas (even if they are used

16 Robert Schiller, Yale University, Supporting data from http://www.econ.yale.edu/~shiller/data/Fig2-1.xls, 2009, retrieved 2012.

17 FDIC, "Do Record Farmland Prices Portend Another Steep Downturn for Agriculture and Farm Banks?" FDIC Quarterly, v2 no. 4, 2008, https://www.fdic.gov/bank/analytical/quarterly/2008_vol2_4/farmland.html; and Prosperity Saskatchewan, "Is farmland the next bubble? – No," September 11, 2013, http://prosperitysaskatchewan.wordpress.com/2013/09/11/is-farmland-the-next-bubble-no/.

18 California Energy Commission (CEC), 2010, "Desert Renewable Energy REAT Biological Resource Compensation/Mitigation Cost Estimate Breakdown."

19 Amy Fesnock, BLM, Personal communication, March 2012.

only very minimally), restoration could be very costly.[20] Most recent environmental assessments included the $1,450 figure for LTMM (see Table I-18).

Table I-18
DRECP Area Projects – Costs of Long-term Management and Maintenance for Mitigation Land from Environmental Assessments (per Acre)

Project	Lead Agencies	LTMM
Desert Sunlight	BLM	$1,450
Beacon Solar	CEC	$1,300
Abengoa	CEC	$1,300
Imperial Valley	CEC and BLM	$692
Blythe	CEC and BLM	$1,450
Palen	CEC and BLM	$1,450
Genesis	CEC and BLM	$1,450
Rice Solar	CEC and BLM	$1,450
Calico	CEC and BLM	$1,450
Ivanpah	CEC and BLM	$1,450

Actual costs were drawn for two solar projects in the DRECP area. Wildlands, Inc. reports that LTMM costs for NextEra's Genesis Solar Energy Project were $469 per acre.[21] The Genesis Application for Certification (AFC) was approved by the CEC in 2010. California Department of Fish and Wildlife (CDFW) provided LTMM cost estimates for the Ivanpah Solar Electric Generating System (ISEGS) project ranging from $818 to $3,755 per acre.[22] The Ivanpah AFC also was approved in 2010.

In analyzing the potential costs of the Plan, the spreadsheet model uses $818 for the low case, $1,450 for the mid case and $3,755 for the high case based on the range from Ivanpah. Discussions with officials indicated that it was not clear if the costs achieved by Genesis could be achieved under the permitting conditions foreseen under the Plan.

I.4 Property Acquisition Transaction Costs

I.4.1 Short-term

Transaction costs are associated with land purchased both at the time of initial acquisition and over time (part of LTMM costs). Most land acquired for compensatory mitigation must be encumbered by conservation easements, even if it is acquired in full fee by an applicant,

[20] Ibid.
[21] Wildlands 2011. p. 993.
[22] CDFW 2013

agency, or mitigation bank. Transaction costs at the time of initial acquisition include negotiation over easement terms, appraisal, biological surveys, boundary surveys, recordation of the deed, and any legal fees associated with the real estate transaction. There may also be substantial transaction costs for contacting landowners to determine if they are willing to sell, conducting surveys, and preparing baseline documentation.

This analysis relied on transaction and initial site cost estimates from REAT, the BDCP, and actual costs for SB 34 projects. Table I-19 presents the values from each source. Actual costs for SB 34 projects are typically lower than the estimated REAT and BDCP costs and were thus used in the model's low-cost case.

Table I-19
Transaction Costs by Source

	BDCP (April 2013)		REAT (July 23, 2010)		SB 34	
	Value	*Unit*	*Value*	*Unit*	*Value*	*Unit*
Appraisal	$5,500	Parcel	$5,000	Parcel	$311	Parcel
Closing and Escrow			$5,000	Parcel	$745	Parcel
Title Report	$550	Parcel				
Legal Description	$4,500	Parcel				
Boundary Survey	$0.50	Linear Ft.				
Monumentation	$0.38	Linear Ft.				
Phase 1 Site Assessment	$7,200	Parcel	$3,000	Parcel	$1,081	Parcel
Biological Surveys	$120	Acre	$5,000	Parcel	$630	Parcel
Initial Site Work			$250	Acre	$75	Acre

I.4.2 Long-term Transaction Costs and Activities

Transaction costs over the long-term include record-keeping, landowner correspondence and outreach, monitoring (and coordinating monitoring with landowners), negotiating management plans if applicable, and addressing violations of management plans and easement terms.

Many of these transaction costs depend largely on the number of landowners involved and not on the size of the parcels that are encumbered with conservation easements. A recent article by Cameron et al. (2012) noted that the average parcel size for private lands in California Mojave Desert that meet conservation suitability criteria is 5.9 acres with a median of 2.5 acres.[23] Such small lots means that assembling mitigation lands for large projects that

[23] Richard Cameron, Brian S. Cohen, Scott A. Morrison, "An Approach to Enhance the Conservation-Compatibility of Solar Energy Development," PLOS ONE, June 7, 2012, http://plosone.org/article/fetchObject.action?uri=info%3Adoi%2F10.1371%2Fjournal.pone.0038437&representation=PDF.

require thousands of acres of compensatory mitigation may well require acquiring full or partial interests in hundreds of separate parcels. Over the long-term, conservation easement holders (both land trusts or public agencies) need to maintain relationships with landowners in order to monitor property and help avoid violations of easement agreements. Maintaining these relationships (and associated record-keeping and correspondence) is more time-consuming (and therefore involves higher transaction costs) when a larger number of landowners is involved (LTA Alliance 2008, 2011).

Successor landowners (those who were not involved in negotiating easement terms) are more likely to violate easements, so maintaining landowner relationships is more important (and potentially more difficult) over time (LTA 2011). Conservation easement holders need to keep careful track of whether encumbered land is transferred to another landowner. Ideally, landowners notify conservation easement holders when they transfer the land, but holders also need to periodically review county property records and real estate listing services to independently verify landownership changes.

I.5 National Fish and Wildlife Foundation Fees

The model includes several fixed cost inputs that are not altered by analyst inputs or scenario selections. They include the National Fish and Wildlife Foundation (NFWF) fees and are derived from the REAT Mitigation Cost Estimate.[24] The costs to establish a project specific sub-account and of pre-proposal Modified RFP or RFP processing are equal to $12,000 and $30,000 per project, respectively. The latter fee is required infrequently, so we have set this at zero for the cost calculations. The costs to establish a project specific sub-account and of pre-proposal Modified RFP or RFP processing are estimated per project. The NFWF management fee for acquisition and initial site work is equal to 3% of the acquisition and initial site work fees, and the NFWF management fee for LTMM is equal to 1% of the LTMM costs.

I.6 Initial Site Work Costs

The Plan cost model uses data from eight previous SB 34 mitigation projects discussed above as the basis for initial site work cost ranges for future DRECP mitigation projects.[25] This is supplemented with discussions with firms providing habitat mitigation. For each SB 34 project, the data includes the number of acres and parcels, transaction fees and the cost of the biological report, Phase I site assessment, appraisal, initial site work, and escrow/closing.[26] Transaction fees are calculated as a percentage of total costs for each project and

[24] CEC, 2010.
[25] Armand Gonzales, CDFW 2012, SB 34 Advanced Mitigation Land Acquisition and Management Cost Table (Actual).pdf, Email Communication.
[26] Transaction fees include overhead costs, and escrow/closing costs include title costs.

for the combined projects. Further, the model distinguishes between per parcel and per acre costs, with only initial site work costs falling into the latter category.

Agency costs to review and determine accepting land donations are set equal to the transaction cost percentage. The mid-level cost scenario uses transaction fees as a percentage of total costs for the combined projects, whereas the high and low scenarios use the maximum and minimum transaction cost percentages for the individual projects, respectively.

REAT estimates that third-party administrative costs are equal to 10% of land costs.[27] The analytic team could not locate additional estimates of this cost from reliable sources. As a result, the model uses ten% for the range of cost case scenarios.

I.7 Restoration Costs

Restoration or enhancement of habitat can cover a huge range of activities and could occur on habitat that has been acquired in full, is protected by a conservation easement, is held by a public agency, or is part of a privately-held preserve. Restoration and enhancement activities may include:

- Trash removal;
- Installation of fencing and signage;
- Exclusion of OHV vehicles or grazing;
- Invasive species removal;
- Reseeding/replanting native vegetation;
- Reintroducing native wildlife;
- Restoring natural contours;
- Restoring lost or degraded hydrologic or geomorphic functions;
- Removing obstructions to the wind sand transport corridor; and
- Increasing groundwater availability for dependent species.

These activities have been carried out under a variety of plans including habitat restoration/revegetation plans; raven management plans; weed management plans; and decommissioning plans. The cost estimates from recent environmental assessments for DRECP area solar projects include a line item for "initial site work," which would cover very basic restoration activities such as trash removal and installation of signs. Table I-20 shows esti-

[27] CEC, 2010. Desert Renewable Energy REAT Biological Resource Compensation/Mitigation Cost Estimate Breakdown for use with the REAT-NFWF Mitigation Account. http://www.energy.ca.gov/sitingcases/solar_millennium_palen/documents/2010-07-23_REAT_Cost_Estimate_Table_TN-57775.PDF.

mated costs for initial site work have varied between $27 and $330 per acre, with $250 per acre as the most common estimate.

Table I-20
Estimates for Initial Site Work in DRECP Area Environmental Assessments

Project	Lead Agencies	Initial Site Work
Desert Sunlight	BLM	$330
Beacon Solar	CEC	$250
Abengoa	CEC	$250
Imperial Valley	CEC and BLM	$27
Blythe	CEC and BLM	$250
Palen	CEC and BLM	$250
Genesis	CEC and BLM	$330
Rice Solar	CEC and BLM	$250
Calico	CEC and BLM	$250
Ivanpah	CEC and BLM	$250

In general, environmental compliance documents for past solar projects within the DRECP plan area have required acquisition of relatively high-quality habitat that would not require extensive restoration. Performance standards in the Energy Commission's conditions of certification have generally required that mitigation land meet one or more criteria: in particular habitat and geographic areas, near other protected land, and in areas with no history of intensive use and no extensive invasive species. Table I-21 shows the compensatory habitat requirements for renewable projects in the DRECP area to date.

Table I-21
DRECP Area Renewable Energy Projects –
Requirements of Compensatory Habitat Mitigation

Project	Lead Agencies	Location Specific	Near Protected Land	Connected to Habitat	No Intensive Use	No Extensive Invasives
Desert Sunlight	BLM	yes	yes	yes	yes	yes
Beacon Solar	CEC	yes	yes	yes	yes	yes
Abengoa	CEC	no	yes	yes	no	no
Imperial Valley	CEC and BLM	yes	yes	yes	no	yes
Blythe	CEC and BLM	yes	yes	yes	yes	yes
Palen	CEC and BLM	yes	yes	yes	yes	yes
Genesis	CEC and BLM	yes	yes	yes	yes	yes
Rice Solar	CEC and BLM	yes	yes	yes	yes	yes
Calico	CEC and BLM	yes	yes	yes	yes	yes

Table I-21
DRECP Area Renewable Energy Projects –
Requirements of Compensatory Habitat Mitigation

Project	Lead Agencies	Location Specific	Near Protected Land	Connected to Habitat	No Intensive Use	No Extensive Invasives
Ivanpah	CEC and BLM	yes	yes	yes	yes	yes
Imperial Solar Energy South	Imperial and BLM	no	no	no	no	no
Centinela	Imperial and BLM	no	no	no	no	no
Imperial Solar Energy West	Imperial and BLM	no	no	no	no	no
Catalina Renewable Energy	Kern County	no	no	no	no	no
Pacific Wind	Kern County	no	no	yes	yes	no
Antelope Valley	Kern/Los Angeles	no	no	no	no	no
AV Solar Ranch One	Los Angeles County	yes	yes	yes	no	no

The mitigation requirements for the Ivanpah project allowed for some funding of restoration efforts on unauthorized OHV land in lieu of mitigation land acquisition. Restoration of OHV trails could be a primary compensatory restoration strategy for projects covered by the DRECP. Restoration of OHV trails involves camouflaging trails, vertical mulching ("planting" dead vegetation upright in the soil), creating microdivets, and dispersing balls or discs of seeds (Fesnock 2012; Bainbridge 1995; Bainbridge 2007). One estimate provided by BLM (2008) included a cost estimate of $87,755 per acre for this type of restoration in the Shaeffer Trespass area. This cost estimate included housing and meals for interns and costs associated with BLM staff support and administration. Unfortunately, there are extremely limited data on the potential costs of these restoration efforts.

Other possibilities related to compensatory restoration include requiring project applicants to fund installation of desert tortoise fencing or having applicants purchase public lands grazing permits. Grazing allotments can be voluntarily relinquished and BLM can automatically retire allotments within critical habitat areas and Desert Wildlife Management Areas (Brink 2012).

I.7.1 Assumptions for Non-Acquisition Measure Costs

There are four non-acquisition measures: habitat enhancement; fencing and signage; roost habitat creation, enhancement, and protection; and predator, cowbird or startling control. The proportions for the non-acquisition measures are 40%, 40%, 10% and 10%, respectively. We applied these ratios to the non-acquisition acreage to compute the acres for each measure by county. The estimated non-acquisition compensation acreages represent "acquisition-calibrated" compensation and were developed using "acquisition-calibrated" compensation ratios that represent the number of habitat acquisition acres that are equivalent to a unit of a given non-acquisition compensation action. This is discussed further in Appendix H. We converted the acquisition-calibrated non-acquisition compensation acreages to equivalent non-acquisition compensation units using the following compensation ratio assumptions:

- 3 acres of habitat enhancement is equivalent to 1 acre of habitat acquisition;
- 5 miles of fencing and signage installation is equivalent to 100 acre of habitat acquisition;
- 3 acres of roost habitat creation, enhancement, and protection is equivalent to 1 acre of habitat acquisition; and
- 3 acres of predator, cowbird, or starling control is equivalent to 1 acre of habitat acquisition.

The unit cost of each non-acquisition compensation action was estimated using existing Property Analysis Record (PAR) estimates and best professional judgment, and these unit cost estimates include:

- For habitat enhancement, the unit cost was assumed to be $10,000 per acre;
- For fencing and signage, the unit cost was assumed to be $10 per linear foot installed;
- For roost and roost habitat creation, enhancement, and protection, the unit cost was assumed to be $1,000 per acre; and

For predator, cowbird, or starling control, the unit cost was assumed to be $1,000 per acre.

We combined applied these cost estimates to the non-acquisition compensation units to determine the non-acquisition mitigation costs for each county. Table I-22 shows the costs associated with non-acquisition mitigation. Total non-acquisition mitigation costs are over $1.3 billion, with the majority of those costs occurring in Riverside County.

Table I-22
NPV of Non-Acquisition Mitigation Cost Estimates ($ Millions)

County	Habitat Enhancement	Fencing and Signage	Roost Habitat Creation, Enhancement, and Protection	Predator, Cowbird, or Starling Control	Total Estimated Cost
Imperial	$184.7	$16.3	$4.6	$4.6	$210.2
Inyo	$20.0	$1.8	$0.5	$0.5	$22.8
Kern	$61.2	$5.4	$1.5	$1.5	$69.7
Los Angeles	$25.3	$2.2	$0.6	$0.6	$28.8
Riverside	$211.0	$18.6	$5.3	$5.3	$240.1
San Bernardino	$284.9	$25.1	$7.1	$7.1	$324.3
San Diego	$15.1	$1.3	$0.4	$0.4	$17.1
TOTAL	**$802.3**	**$70.6**	**$20.1**	**$20.1**	**$913.0**

I.8 Summary of the Range of Cost Category Parameters

Table I-23 presents high, mid and low values for the inputs that can be selected in the model.

Table I-23
Input Assumptions

	Level 1 Environmental Site Assessment (per parcel)	Appraisal (per parcel)	Initial Site Work – Clean-Up, Enhancement, Restoration (per acre)	Closing and Escrow Costs (per parcel)	Biological Survey for Determining Mitigation Value (per acre)	LTMM (per acre)	Boundary Survey and Monumentation (per acre)
Mid	$7,200	$5,000	$575	$5,050	$120	$1,450	$6
Low	$1,081	$311	$75	$3,577	$120	$818	$3
High	$13,500	$5,500	$850	$6,000	$120	$3,755	$18

I.9 Program Administrative Costs

Estimated administrative costs are based on the following cost estimation methods and assumptions.

I.9.1 Staff and Related Costs

The Plan implementation and management staff costs are based on a staffing plan developed for the DRECP and the salary and benefit assumptions. Staffing costs include allowances for benefits, travel, and training. Staffing levels assumed for the cost estimate vary over the Plan term.

I.9.2 Office Space and Related Costs

Office space and related costs include the office rental costs, utilities, general and staff-assigned office equipment, geographic information system (GIS) hardware and software, environmental review if necessary, and public outreach materials. Cost assumptions for each of these items are as follows.

Office Space and Utilities

An office space requirement of 250 square feet per FTE is assumed. Unfurnished office space is estimated to cost $2.50 per square foot per month, including utilities.

General Office Equipment

This category includes copy machines, telephone systems, printers, fax machines, and specialized equipment such as digital cameras, trunked radio systems, and publications and subscriptions. It also includes common area office furniture. Annual costs are estimated by amortizing the purchase cost of each type of equipment or furniture over its useful life. Some items are assumed to include annual service contract costs.

Staff -Assigned Office Equipment

This category includes cubicle office furniture, computers, cell phones, and office supplies. Annual costs are estimated by multiplying the number of FTE staff positions by the amortized cost of equipment. Some items are assumed to include annual service contract costs.

GIS Hardware and Software

This category includes a dedicated GIS/database server, tablet personal computer, plotter, global positioning system (GPS) unit, GIS software, and related computer software. Annual costs are based on the estimated purchase cost for each item amortized over its useful life. Some items are assumed to include annual service contract costs.

Public Outreach Costs

This category includes an annual allowance for printed material, public meetings, and focus groups, including costs for design, layout, printing, postage, web services, and facilities rental. Annual public outreach costs could vary over the term of the DRECP.

Vehicle and Related Costs

Vehicle costs include the costs for owned and rented vehicles as well as allowances for fuel, maintenance, and insurance. Owned vehicle annual costs are based on the vehicle's estimated purchase cost amortized over its useful life plus an annual allowance for fuel, maintenance, and insurance.

Legal, Accounting, and Insurance Costs

Insurance requirements for the Plan management office are assumed to include directors' and officers' insurance, general liability insurance, and professional liability insurance. The office is assumed to require outside legal and accounting assistance throughout the term of the DRECP. The amount of outside legal assistance needed by the office could vary over the term of the DRECP. Accounting assistance costs are based on an annual lump sum allowance for auditing and other financial services.

I.9.3 Monitoring and Adaptive Management

Planning and monitoring that are the responsibility of the Coordination Group and need to be funded. Detailed descriptions of these plans/monitoring requirements are included in the MAMP and CMAs in Volume II, Sections II.3.1.3 and II.3.1.2.5. The following planning and monitoring requirements are included in this analysis:[28]

- **Landscape and Ecological Processes Effectiveness Monitoring:** This includes Aeolian transport, hydrologic processes, and wildlife movement and habitat linkage functioning. Monitoring is assumed to occur annually in BLM LUPA conservation designation lands and acquired lands in appropriate locations. To estimate funding requirements, we assumed that monitoring initially occurs in 20 locations with five additional locations added every five years until the end of the permit term. Each location is estimated to cost $10,000.
- **Natural Community Effectiveness:** We assumed that this occurs once every five years at a cost of $100,000 each time.
- **Covered Species Effectiveness Monitoring:** We do not have cost estimates for this plan/monitoring requirement.

[28] Plans and Monitoring that are the responsibility of the Coordination Gro .docx

- **Desert Tortoise Range-wide population monitoring:** We estimate that this will cost $150,000 per year for each year of the program.
- **Mohave Ground Squirrel Data Gap Baseline Studies:** These studies will cover 90,000 acres at a one-time cost of $250,000.
- **Bird and Bat Covered Species Plan-wide Monitoring of Operation Effects:** This consists of plan-wide synthesis and analysis. It augments project-specific mortality documentation and monitoring that is applicant funded. We assumed costs of $50,000 per year with an additional upfront cost of $250,000 to establish monitoring and reporting protocol.
- **Agriculture-dependent Covered Species Monitoring:** This consists of effectiveness monitoring and the determination of population trends every five years in Imperial Valley, Palo Verde Valley, and Antelope Valley. The estimated cost is $200,000 every five years.
- **GOEA Population Monitoring:** The estimated contribution to the Agency-funded monitoring fund is $100,000 per year.

Table I-24 below summarizes the plans/monitoring requirement costs. Restoration activities are not listed in this table since it is anticipated restoration activities would be associated with compensation and would be applicant-funded.

Table I-24
NPV of Mitigation Cost Estimates Using Preferred Alternative Acreage and Lowest Cost First Compensation Acreage Selection Criteria

Plan/Monitoring Requirement	High	Low
Landscape and ecological processes effectiveness monitoring	$1,334,353	$1,500,000
Natural community effectiveness monitoring	$450,102	$500,000
Covered species effectiveness monitoring including items listed below:		
Desert tortoise range-wide population monitoring	$2,381,164	$3,600,000
Mohave ground squirrel range-wide population monitoring	$1,780,474	$2,600,000
Mohave ground squirrel data gap baseline studies	$241,289	$250,000
Bird and bat Covered Species plan-wide monitoring of operational effects	$1,035,011	$1,450,000
Agriculture-dependent Covered Species monitoring	$900,204	$1,000,000
GOEA population monitoring	$1,587,443	$2,400,000
Total	**$9,710,041**	**$13,300,000**

I.10 Property Taxes

The analysis assumes that the property tax rate is 1% in 2013 and the assessed value increases by the projected rates with a cap at the allowable 2% each year. Additionally, we assume that the counties reassess land values each year. To account for this, we escalated the cost of all previously acquired land to the current year when computing property value costs for each year. Table I-25 summarizes the NPV of property tax costs (and revenues to the state and local jurisdictions) over the 25 year period from 2016 to 2040.

Table I-25
NPV of Property Tax Cost Estimates ($ Millions)

County	Rural	Agricultural	Open Space	Total
Imperial	$0.0	$0.0	$4.3	$4.3
Inyo	$0.0	$0.0	$0.3	$0.3
Kern	$0.0	$0.0	$1.8	$1.8
Los Angeles	$0.0	$4.9	$0.4	$5.3
Riverside	$0.0	$0.0	$2.5	$2.5
San Bernardino	$0.0	$0.0	$5.8	$5.8
San Diego	$0.0	$5.3	$0.3	$5.7
Total	**$0.0**	**$10.3**	**$15.4**	**$25.7**

I.11 Time Value of Money and Fiscal Assumptions

Costs estimates are reported in undiscounted 2013 dollars where appropriate, and total lifetime program costs as discounted present value 2013 dollars.[29] The model relies on a nominal discount rate of 3.6% and a real discount rate of 1.3%. The projected rate of inflation is the difference between the two, or 2.3%.

The nominal discount rate was selected to match the fiscal year 2014 rate that the U.S. Army Corps of Engineers and the U.S. Department of the Interior's Bureau of Reclamation are required to use for developing and evaluating proposed plans for water project plan formulation and evaluation.[30] The recently-released BDCP uses the same approach for discounting a large-scale joint federal-state program with activities over the same time

[29] This means the costs presented in this chapter have been adjusted to reflect 2013 price levels and dollar purchasing power. Adjusting costs for inflation in this way allows for a more accurate comparison of costs over time. These estimates, however, are not indicative of nominal dollar outlays that will be required over the permit period and should not be used directly for financial planning, where use of nominal values would be most appropriate.

[30] U.S. Army Corps of Engineers, "Economic Guidance Memorandum, 14-01, Federal Interest Rates for Corps of Engineers Projects for Fiscal Year 2014."

scale.[31] (In using this method, the DRECP and BDCP costs can be presented in a comparable manner.)

The model includes economy-wide inflation when estimating costs throughout the life of the Plan, so present values were calculated using the nominal discount rate. Historical costs have been converted to 2013 dollars using various price indices. All costs are reported in terms of capital, one-time outlays, as well as ongoing operational costs.

I.12 Cost Contingency

The American Association of Cost Engineers defines "contingency" as a specific provision for unforeseeable elements of cost within the defined project scope.[32] Cost uncertainties may result from incomplete design, unforeseen and unpredictable conditions, or uncertainties within the defined project scope. The amount of contingency will depend on the status of design, procurement, and construction; and the complexity and uncertainties of the component parts of the project. For planning studies, standard contingencies typically range between 20% and 30%, but may be as high as 50% for experimental or special conditions.

Contingencies are typically applied to individual projects; for a large portfolio of projects, as is the case here in the Plan, the overall contingency of the Plan is less than the sum of the contingencies for each project. This is because contingencies represent the worst case cost scenario for each project, and on average not only will some projects not require the maximum contingency, some will come in under budget. To reflect the portfolio status of the total program costs, 20% may be added to the overall Plan costs.

I.13 Summary of Acquisition Costs

Tables I-26 and I-27 summarize the NPV of the mitigation acquisition cost estimates for each cost scenario and land type with the lowest cost first criterion. Total open space acquisition costs range from $267 million to $1.4 billion. Total agricultural acquisition costs range from $24 to $268 million. Total open space acquisition costs per acre range from $2,100 in the low case to $11,400 in the high case. Agricultural acreage costs range from $10,000 to $76,000 per acre.

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31 ICF International, "Chapter 8: Implementation Costs and Funding Sources," *Bay Delta Conservation Plan*, Public Draft, November 2013, http://baydeltaconservationplan.com/PublicReview/PublicReviewDraftBDCP.aspx

32 AACE International Recommended Practice No. 10S-90.

Table I-26
Open Space—NPV of Mitigation Acquisition Cost Estimates Using Preferred Alternative Acreage and Lowest Cost First Compensation Acreage Selection Criteria ($ Millions)

County		Acquisition and Initial Site Work	LTMM	NFWF Fees	Property Taxes	Total Estimated Cost	Total NPV Cost per Acre ($)
Imperial	Mid	117.6	96.5	4.4	$4.3	222.7	$4,800
Inyo		6.8	4.8	0.2	$0.3	12.1	$5,300
Kern		40.3	30.4	1.5	$1.8	74	$5,100
Los Angeles		9.1	6.9	0.3	$0.4	16.7	$5,100
Riverside		55.6	42	2	$2.5	102.1	$5,100
San Bernardino		115	78.3	4.1	$5.8	203.3	$5,400
San Diego		7.6	5.7	0.3	$0.3	13.9	$5,100
Total		**352**	**264.5**	**12.9**	**$15.4**	**644.8**	**$5,100**
Imperial	High	224.5	249.8	8.3	$13.6	496.2	$10,800
Inyo		11.9	12.4	0.4	$0.7	25.4	$11,200
Kern		71.8	78.6	2.6	$4.5	157.6	$10,900
Los Angeles		16.2	17.8	0.6	$1.0	35.7	$10,900
Riverside		99	108.9	3.6	$6.2	217.8	$10,900
San Bernardino		241	202.8	8	$18.4	470.1	$12,600
San Diego		13.6	14.7	0.5	$0.8	29.6	$10,900
Total		**678.1**	**685**	**24**	**$45.4**	**1,432.5**	**$11,400**
Imperial	Low	34	54.4	1.7	$1.0	91.1	$2,000
Inyo		2.3	2.7	0.1	$0.1	5.2	$2,300
Kern		14	17.1	0.7	$0.6	32.4	$2,200
Los Angeles		3.2	3.9	0.2	$0.1	7.3	$2,200
Riverside		19.2	23.7	0.9	$0.9	44.8	$2,200
San Bernardino		33.4	44.2	1.6	$1.4	80.6	$2,200
San Diego		2.6	3.2	0.1	$0.1	6.1	$2,200
Total		**108.7**	**149.2**	**5.4**	**$4.3**	**267.6**	**$2,100**

Table I-27
Agriculture—NPV of Mitigation Acquisition Cost Estimates Using Preferred Alternative Acreage and Lowest Cost First Compensation Acreage Selection Criteria ($ Millions)

County		Acquisition and Initial Site Work	LTMM	NFWF Fees	Property Taxes	Total Estimated Cost	Total NPV Cost per Acre ($)
Imperial	Mid	0	0	0	$0.00	0	$0
Inyo		0.5	0.3	0	$0.00	0.8	$6,300
Kern		0	0	0	$0.00	0	$0
Los Angeles		47.9	5.5	1.2	$4.90	59.5	$22,800
Riverside		0	0	0	$0.00	0	$0
San Bernardino		0	0	0	$0.00	0	$0
San Diego		48.1	1.7	1.2	$5.30	56.4	$70,500
Total		**96.5**	**7.4**	**2.5**	**$10.30**	**116.7**	**$32,900**
Imperial	High	0	0	0	$0.00	0	$0
Inyo		0.7	0.7	0	$0.00	1.4	$11,000
Kern		0	0	0	$0.00	0	$0
Los Angeles		89.4	14.2	2	$10.30	115.9	$44,300
Riverside		0	0	0	$0.00	0	$0
San Bernardino		0	0	0	$0.00	0	$0
San Diego		128.9	4.3	2.6	$15.70	151.5	$189,500
Total		**218.9**	**19.3**	**4.6**	**$26.10**	**268.8**	**$75,800**
Imperial	Low	0	0	0	$0.00	0	$0
Inyo		0.2	0.2	0	$0.00	0.4	$3,300
Kern		0	0	0	$0.00	0	$0
Los Angeles		8.9	3.1	0.4	$0.70	13	$5,000
Riverside		0	0	0	$0.00	0	$0
San Bernardino		0	0	0	$0.00	0	$0
San Diego		20.7	0.9	0.8	$1.80	24.2	$30,300
Total		**29.8**	**4.2**	**1.2**	**$2.50**	**37.6**	**$10,600**

I.14 Summary of Total Mitigation Costs

Table I-28 includes the total estimated cost for the Preferred Alternative under the least-cost acquisition strategy. This includes both acquisition and non-acquisition costs. Total program costs are $1.2 billion, $1.7 billion, and $2.6 billion for the low, mid, and high cases, respectively. Table I-29 summarizes the NPV of the total estimated cost for deposit in project-specific sub-account per acre of impact. Costs range from $5,600 to $12,000 per acre of impact (i.e., project "footprint").

Table I-28
NPV Total Estimated Cost for Biological Objectives Mitigation in the Preferred Alternative with the Least-Cost Strategy ($ Millions)

County	Mid	High	Low
Imperial	$433.0	$706.4	$301.4
Inyo	$35.7	$49.7	$28.4
Kern	$143.7	$227.3	$102.1
Los Angeles	$105.1	$180.3	$49.1
Riverside	$342.2	$457.9	$284.8
San Bernardino	$527.5	$794.4	$404.9
San Diego	$87.4	$198.3	$47.5
Total	**$1,674.5**	**$2,614.3**	**$1,218.2**

Table I-29
NPV Total Cost per Acre Impacted for the Preferred Alternative

County	Mid	High	Low
Imperial	$6,100	$9,950	$4,240
Inyo	$7,140	$9,930	$5,690
Kern	$4,630	$7,330	$3,290
Los Angeles	$10,500	$18,010	$4,910
Riverside	$6,110	$8,180	$5,090
San Bernardino	$11,990	$18,050	$9,200
San Diego	$0	$0	$0
Total	**$7,720**	**$12,050**	**$5,610**