

**Coal Canyon Restore Generation Life Cycle Economics**

**Replace penstock and restore powerhouse**

**COST AND BENEFIT ASSUMPTIONS, in 2010 dollars and in \$1,000's unless otherwise noted.**

	Average O&M	Escalated Total Future Capital	Avg Annual Energy, GWh
1. Status Quo Do nothing - operate canal for water supply	\$175 /yr	\$4,083	0
2. Restore Generating Capability w/ Water Revenues	\$574 /yr	\$8,120	6.1

	Cash Flow Measures		
	NPV in 2010\$ (\$million's)	Going-forward COP in 2010\$, cents/kWh Including water revenues	Going-forward COP in 2010\$, cents/kWh Excluding water revenues
<b>ECONOMIC RESULTS - going forward in 2010 dollars with \$3.4 million powerhouse restoration plus \$152.4k/yr in negotiated water sale revenues</b>			
1. Status Quo Do nothing - operate canal for water supply	-\$3.2	n.a	n.a.
2. Restore Generating Capability w/ Water Revenues	\$2.0	8.1	20.2

**Economic Evaluation Over 20-Year Study Period (\$000)**  
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Study Period:    
 Discount Rate: 7.6%

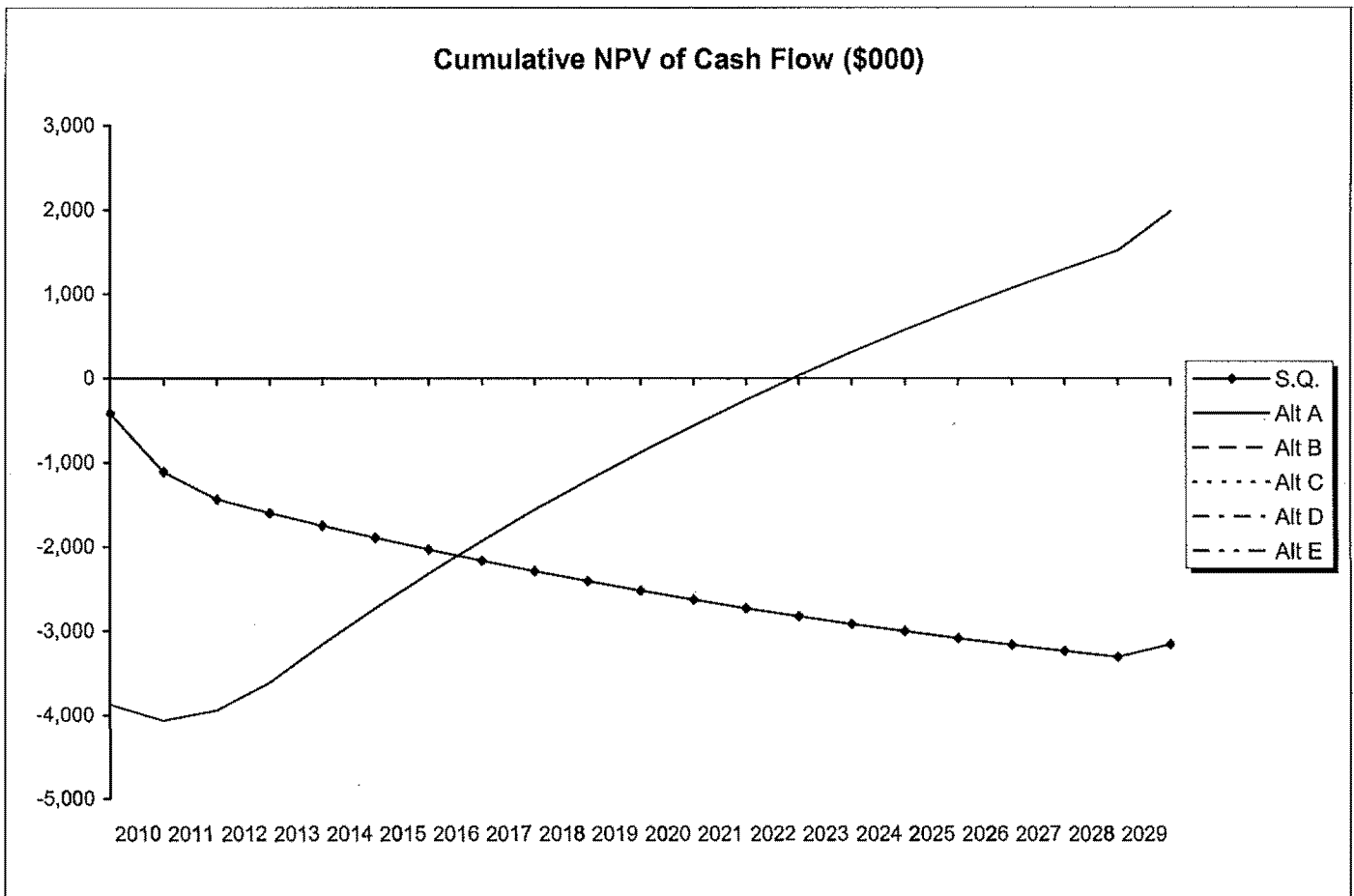
First Year of Study: 2010  
 Cost Estimate Year: 2010

sc15  
 EASOP 2009 MaxCap Edition

Alternatives (enter titles to see financial results)	Cash Flow Measures			B/C Ratio	PVRR
	NPV	ROE	Payback		
Status Quo Do nothing - operate canal for water supply	-3,151	-	-	-	5,318
A. Restore Generating Capability w/ Water Revenues	1,982	37%	7	2.6	-3,345
B.					#REF!
C.					#REF!
D.					#REF!
E.					

Net present value and present value of revenue requirements are the primary financial measures.

Return on equity, payback period, and benefit-cost ratio are measured relative to status quo.



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**Annual Cash Flow (\$000)**

<u>End of Year *</u>	<u>S.Q.</u>	<u>Alt A</u>	<u>Alt B</u>	<u>Alt C</u>	<u>Alt D</u>	<u>Alt E</u>
Initial Expenditures	-420	-3,870	0	0	0	0
2010	-744	-205	0	0	0	0
2011	-374	141	0	0	0	0
2012	-198	409	0	0	0	0
2013	-204	608	0	0	0	0
2014	-209	625	0	0	0	0
2015	-214	636	0	0	0	0
2016	-219	649	0	0	0	0
2017	-225	663	0	0	0	0
2018	-230	671	0	0	0	0
2019	-234	691	0	0	0	0
2020	-239	710	0	0	0	0
2021	-244	730	0	0	0	0
2022	-249	751	0	0	0	0
2023	-254	772	0	0	0	0
2024	-259	793	0	0	0	0
2025	-264	815	0	0	0	0
2026	-269	838	0	0	0	0
2027	-275	861	0	0	0	0
2028	-281	885	0	0	0	0
2029	643	2,010	0	0	0	0

\* Project expenditures are assumed to occur beginning of year, so shown at end of the previous year.  
Annual operating expenses and revenues are assumed to occur at the end of the year.

**Earnings Available for Common Stock (\$000) \***

<u>Calendar Year</u>	<u>S.Q.</u>	<u>Alt A</u>	<u>Alt B</u>	<u>Alt C</u>	<u>Alt D</u>	<u>Alt E</u>
2010	-107	359	0	0	0	0
2011	-252	221	0	0	0	0
2012	-131	292	0	0	0	0
2013	-139	494	0	0	0	0
2014	-145	516	0	0	0	0

\* Earnings are estimated using simplified accounting assumptions and no cost recovery.  
Earnings estimates for projects over \$100 million should be reviewed by Economic and Project Analysis.

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**Status Quo Do nothing - operate canal for water supply**

**Project Expenditures Over 20 Years (2010-2029) in \$000 \***

Year	Description	Cost	Esc%	Type	Life	Salvage%		Escalated Cost	NPV
						Input	Calcd		
2010	Waterway cap adds	\$420	0.0	hyd	30	0		420	-363
2011	Waterway cap adds	\$656	0.0	hyd	31	0		656	-525
2012	Waterway cap adds	\$175	0.0	hyd	32	0		175	-130
2013	Waterway cap adds	126	2.5	hyd	33	0		136	-93
2014	Waterway cap adds	126	2.5	hyd	34	0		139	-88
2015	Waterway cap adds	126	2.5	hyd	35	0		143	-84
2016	Waterway cap adds	126	2.5	hyd	36	0		146	-79
2017	Waterway cap adds	126	2.5	hyd	37	0		150	-75
2018	Waterway cap adds	126	2.5	hyd	38	0		154	-71
2019	Waterway cap adds	126	2.5	hyd	39	0		157	-67
2020	Waterway cap adds	126	2.5	hyd	40	0		161	-63
2021	Waterway cap adds	126	2.5	hyd	41	0		165	-59
2022	Waterway cap adds	126	2.5	hyd	42	0		169	-55
2023	Waterway cap adds	126	2.5	hyd	43	0		174	-52
2024	Waterway cap adds	126	2.5	hyd	44	0		178	-48
2025	Waterway cap adds	126	2.5	hyd	45	0		183	-45
2026	Waterway cap adds	126	2.5	hyd	46	0		187	-41
2027	Waterway cap adds	126	2.5	hyd	47	0		192	-38
2028	Waterway cap adds	126	2.5	hyd	48	0		197	-35
2029	Waterway cap adds	126	2.5	hyd	49	0		201	-31
								<b>4,083</b>	<b>-2,042</b>

\* Life and salvage fields ignored when expenditure is an expense (type exp or atx).

**Operating Expenses (+) and Revenues (-) Over 20 Years (2010-2029) in \$000**

Year	a	b	c	d	Description	Esc%	
2010	\$150				a. O&M	2.5	-1,109
2011	\$340				b. Gen Bene's	2.5	0
2012	\$132				c. Water revenues	2.5	0
2013	\$134				d.	2.5	0
2014	\$134						-1,109
2015	\$134						
2016	\$134						
2017	\$134						
2018	\$134						
2019	\$134						
2020	\$134						
2021	\$134						
2022	\$134						
2023	\$134						
2024	\$134						
2025	\$134						
2026	\$134						
2027	\$134						
2028	\$134						
2029	\$134						
2030							
2031							
2032							
2033							
2034							
2035							
2036							
2037							
2038							
2039							

<b>Total NPV (\$000)</b>	<b>-3,151</b>
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**Alternative A - Restore Generating Capability w/ Water Revenues**

**Project Expenditures Over 20 Years (2010-2029) in \$000 \***

Year	Description	Cost	Esc%	Type	Life	Salvage%		Escalated Cost	NPV
						Input	Calcd		
2010	restore ph cap adds	\$3,870	0.0	hyd	50	0		3,870	-3,341
2011	cap adds	\$736	0.0	hyd	30	0		736	-589
2012	cap adds	\$335	0.0	hyd	30	0		335	-248
2013	cap adds	\$141	2.5	hyd	30	0		152	-105
2014	cap adds	\$141	2.5	hyd	30	0		156	-99
2015	cap adds	\$141	2.5	hyd	30	0		160	-94
2016	cap adds	\$141	2.5	hyd	30	0		164	-89
2017	cap adds	\$141	2.5	hyd	30	0		168	-84
2018	cap adds	\$141	2.5	hyd	30	0		172	-79
2019	cap adds	\$141	2.5	hyd	30	0		177	-75
2020	cap adds	\$141	2.5	hyd	30	0		181	-70
2021	cap adds	\$141	2.5	hyd	30	0		186	-66
2022	cap adds	\$141	2.5	hyd	30	0		190	-62
2023	cap adds	\$141	2.5	hyd	30	0		195	-58
2024	cap adds	\$141	2.5	hyd	30	0		200	-54
2025	cap adds	\$141	2.5	hyd	30	0		205	-50
2026	cap adds	\$141	2.5	hyd	30	0		210	-46
2027	cap adds	\$141	2.5	hyd	30	0		215	-43
2028	cap adds	\$141	2.5	hyd	30	0		221	-39
2029	cap adds	\$141	2.5	hyd	30	0		226	-35
								<b>8,120</b>	<b>-5,328</b>

\* Life and salvage fields ignored when expenditure is an expense (type exp or atx).

**Operating Expenses (+) and Revenues (-) Over 20 Years (2010-2029) in \$000**

Year	a	b	c	d	Description	Esc%	
2010	\$431		-652		a. O&M	2.5	-2,717
2011	\$668		-652		b. Gen Bene's	0.0	
2012	\$574		-652		c. Water revenues	2.5	4,815
2013	\$315		-652		d.	2.5	0
2014	\$315		-652				<b>7,310</b>
2015	\$315		-652				
2016	\$315		-652				
2017	\$315		-652				
2018	\$315		-652				
2019	\$315		-652				
2020	\$315		-652				
2021	\$315		-652				
2022	\$315		-652				
2023	\$315		-652				
2024	\$315		-652				
2025	\$315		-652				
2026	\$315		-652				
2027	\$315		-652				
2028	\$315		-652				
2029	\$315		-600				
2030							
2031							
2032							
2033							
2034							
2035							
2036							
2037							
2038							
2039							

<b>Total NPV (\$000)</b>	<b>1,982</b>
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**Comments** (press alt+enter to skip to new line)  
c. PG&E and CalWater negotiated water price of \$152.4k/yr