

NORTHERN CALIFORNIA POWER AGENCY

Geothermal 2017 Proposed Budget

Sunrise Glow Over Plant 2 on 12/28/2015

January 13, 2017

Contents

- Assumptions
- FY2017 Proposed Budget
- Trend, Routine O&M with Labor
- Current Year Actuals
- FY2017 Proposed Projects
 - Overview and Cost Breakdown
 - O&M Projects
 - General and Plant Projects
 - Maintenance Reserve Projects
 - Description and Justification of Each Proposed Project
- 10-Year Project Forecast
 - Schedule and Cost
 - Trend, Project Expenditures Including Maintenance Reserve



Assumptions

All AFE Financials based on Power Management Forecast Prices Below

	FY20	16	FY2017	,	FY2018		FY2019		FY2020		FY2021	L	FY2022	2	FY2023	3	FY2024	Ļ	FY2025	5	FY2026	5	FY202	7
Average	\$	35.97	\$	36.88	\$ 3	37.57	\$ 3	9.20	\$	41.03	\$	42.81	\$	44.70	\$	46.62	\$	48.63	\$	50.72	\$	52.90	\$	55.17

- AFE Financials also included a \$30/MW value for RECs.
- Annual value of local Capacity \$2,850,000.
- As predicted, Steam Flows not adversely affected by one year injection flow curtailment due to drought.
 - Actual Generation for CY15 = 1,832,524kph (1% higher than predicted)
- Annual Steam Field Report Generation Forecast:
 - Actual Generation for CY15 = 837.4GWhrs (1% higher than predicted)
- Value of FY15 energy produced with RECs and Capacity \$57,000,000.

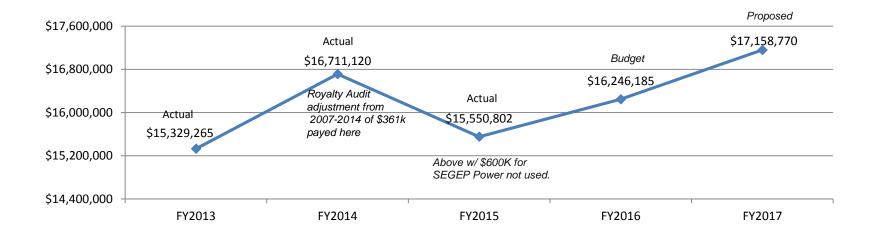


GEO FY 2016 Proposed Budget

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Steam Royalties (variable) 1,876,000 1,907,001 1,876,000 (\$50,000) \$1,826,000 Administration 409,000 388,591 467,000 (\$3,000) \$464,000 Mandatory Costs 348,500 390,169 386,500 \$5,000 \$373,500 Inventory 270,000 260,423 275,000 (\$5,000) \$270,000 returne O& Transmission 0 & M 51,095 7,760 51,095 \$0 \$\$51,095 soots due to returnement Routine O&M Costs 7,499,326 6,820,819 7,650,295 67,000 7,717,295 Labor Total Routine O&M Costs 16,083,054 14,950,802 16,246,185 912,585 17,158,770 Labor Other Costs 0 387,157 548,827 769,302 769,302 0 Other Costs 4,063,606 3,664,753 4,232,219 (146,863) *4,085,356 4,085,356 Generation Services Shared 2,882,295 2,600,309 2,892,134 (2,892,134) 0 could be altered yet ta accounting Colde Costs 29,335,514 28,988,758 29,552,627 (2,89	Variable	\$871,000	827,446	\$925,000	\$15,000	\$940,000	
Administration 409,000 368,591 467,000 (\$3,000) \$464,000 Mandatory Costs 348,500 390,169 368,500 \$\$7,3500 \$\$73,500 Inventory 270,000 260,423 275,000 (\$5,000) \$\$270,000 \$\$251,095 \$\$0 \$\$0 \$\$0	Fixed	3,673,731	3,059,429	3,687,700	\$105,000	\$3,792,700	
Administration 409,000 368,591 467,000 (\$3,000) \$464,000 in Audital of Costs Mandatory Costs 348,500 390,169 368,500 \$5,000 \$373,500 in Routine O& Inventory 270,000 260,423 275,000 (\$5,000) \$270,000 \$277,717,295 in Routine O& Routine O&M 6,820,819 7,650,295 67,000 7,717,295 in Routine O& Routine O&M Costs 8,583,728 8,129,983 8,595,890 845,585 9,441,475 in retirement Labor 8,583,728 8,129,983 8,595,890 845,585 9,441,475 in crease pr Total Routine O&M Costs 16,083,054 14,950,802 16,246,185 912,585 17,158,770 increase pr Other Costs 312,417 2,027,082 303,858 4,054 307,912 in souther of this number could be alterized with a souther of this number could be alterized with a souther of this number could be alterized with a souther of this number could be alterized with a could be alterized with a souther of this number could be alterized with a souther of this number could be alterized with a could be altered with a could be alterized with a could be alterided with a coul	Steam Royalties (variable)	1,876,000	1,907,001	1,876,000	(\$50,000)	\$1,826,000	
Mandatory Costs 349,300 350,109 350,000 \$373,300 additional laticosts (ue to retirement furgers) Inventory 270,000 260,423 275,000 (\$5,000) \$270,000 \$51,095 stote to retirement furgers Routine O&M Costs w/o Labor 7,499,326 6,820,819 7,650,295 67,000 7,717,295 Labor Labor 8,583,728 8,129,983 8,595,890 845,585 9,441,475 Labor Total Routine O&M Costs 16,083,054 14,950,802 16,246,185 912,585 17,158,770 Labor Other Costs 5,106,985 5,106,985 5,108,929 816 5,109,745 S,000 4,054 307,912 Other Costs 4,063,606 3,664,753 4,232,219 (146,863) *4,085,356 4,063,606 3,664,753 4,232,219 (146,863) *4,085,356 4,061,603,020 00 Could be altered yet to accounting Other Costs 4,063,806 3,664,753 4,232,219 (146,863) *4,085,356 4,061,603,020 00 Could be altered yet to accounting 4,061,661,783 4,232,219 (146,863) *4,085,356 4,061,7		409,000	368,591	467,000	(\$3,000)	\$464,000	0.88% increase
Inventory 270,000 280,423 279,000 (\$5,000) \$20,000 costs due to retirement Transmission 0 & M 51,095 7,760 51,095 \$0 \$51,095 costs due to retirement Routine 0&M Costs w/o Labor 7,499,326 6,820,819 7,650,295 67,000 7,717,295 Labor Labor 8,583,728 8,129,983 8,595,890 845,585 9,441,475 Labor Total Routine 0&M Costs 16,083,054 14,950,802 16,246,185 912,585 17,158,770 Labor Other Costs 0 5,106,985 5,106,985 5,108,929 816 5,109,745 Labor Other Costs 312,417 2,027,082 303,858 4,054 307,912 * Other Costs 4,063,606 3,664,753 4,232,219 (146,863) *4,085,356 * * Note that this number could be c	Mandatory Costs	348,500	390,169	368,500	\$5,000	\$373,500	
Transmission 0 & M 51,095 7,760 51,095 \$0 \$\$1,095 retirement Routine 0&M Costs w/o Labor 7,499,326 6,820,819 7,650,295 67,000 7,717,295 Labor Labor 8,583,728 8,129,983 8,595,890 845,585 9,441,475 Labor Total Routine 0&M Costs 16,083,054 14,950,802 16,246,185 912,585 17,158,770 Medical Other Costs 5,106,985 5,106,985 5,108,929 816 5,109,745 Medical Other Costs 4,063,606 3,664,753 4,232,219 (146,863) *4,085,356 * Note that is number could be could	Inventory	270,000	260,423	275,000	(\$5,000)	\$270,000	
Routine O&M Costs w/o Labor 7,499,326 6,820,819 7,650,295 67,000 7,717,295 Labor 8,583,728 8,129,983 8,595,890 845,585 9,441,475 Labor Total Routine O&M Costs 16,083,054 14,950,802 16,246,185 912,585 17,158,770 Labor Other Costs Debt Service 5,106,985 5,108,929 816 5,109,745 4,083,856 4,054 307,912 * Note that this number costs * Note that this number costs 4,063,606 3,664,753 4,232,219 (146,863) * 4,085,356 * Note that this number costs * Note that this number costs 2,882,295 2,600,309 2,892,134 26,661,783 attered yet that the accounting counting count	Transmission O & M	51,095	7,760	51,095	\$0	\$51,095	
Labor 8,583,728 8,129,983 8,595,890 845,585 9,441,475 Increase provint Model Total Routine O&M Costs 16,083,054 14,950,802 16,246,185 912,585 17,158,770 Wedical Other Costs Debt Service 5,106,985 5,106,985 5,108,929 816 5,109,745 CA.BO Charges (wratele): 565-023-060-200-070-00	Routine O&M Costs w/o Labor	7,499,326	6,820,819	7,650,295	67,000	7,717,295	retirement
Total Routine O&M Costs 16,083,054 14,950,802 16,246,185 912,585 17,158,770 Retiremen Medical Other Costs Debt Service 5,106,985 5,106,985 5,108,929 816 5,109,745 CA ISO Charges (variable): 565 402-060-070-000 ISO GMC Charges 312,417 2,027,082 303,858 4,054 307,912 Other Costs 4,063,606 3,664,753 4,232,219 (146,863) *4,085,356 Generation Services Shared 887,157 548,827 769,302 0 0 Administrative & General 2,882,295 2,600,309 2,892,134 0 0 Total O&M Costs 29,335,514 28,898,758 29,552,627 (2,890,844) 26,661,783 O&M Projects 369,400 367,513 425,000 1,750,000 2,175,000 Capital Projects 369,400 367,513 425,000 1,750,000 2,175,000 Capital Development Reserve 1,650,000 1,650,000 1,000,000 2,175,000 11,97% Capital Development Reserve 2,991,400 3,024,558 2,925,000 (350,000) 2,575,000 11,97%	Labor	8,583,728	8,129,983	8,595,890	845,585	9,441,475	increase per
Debt Service 5,106,985 5,106,985 5,108,929 816 5,109,745 CA ISO Charges (variable): 565-023-060-200-070-000	Total Routine O&M Costs	16,083,054	14,950,802	16,246,185	912,585	17,158,770	Retirement
CA ISO Charges (variable): 565-023-060-200-070-00 ISO GMC Charges 312,417 2,027,082 303,858 4,054 307,912 Other Costs 4,063,606 3,664,753 4,232,219 (146,863) *4,085,356 Generation Services Shared 887,157 548,827 769,302 (769,302) 0 Administrative & General 2,882,295 2,600,309 2,892,134 (2,892,134) 0 Total O&M Costs 29,335,514 28,898,758 29,552,627 (2,890,844) 26,661,783 attered yet baccounting Capital Projects 972,000 1,007,045 1,500,000 (1,100,000) 400,000 Capital Projects 972,000 1,007,045 1,500,000 1,750,000 2,175,000 Capital Projects 29,91,400 3,024,558 2,925,000 (350,000) 2,575,000 Total Capital Budget 2,991,400 3,024,558 2,925,000 (350,000) 2,575,000	Other Costs						
Other Costs 4,063,606 3,664,753 4,232,219 (146,863) *4,085,356 Generation Services Shared 887,157 548,827 769,302 (769,302) 0 Administrative & General 2,882,295 2,600,309 2,892,134 (2,892,134) 0 Total O&M Costs 29,335,514 28,898,758 29,552,627 (2,890,844) 26,661,783 altered yet b Capital Projects 972,000 1,007,045 1,500,000 (1,100,000) 400,000 Capital Projects 972,000 1,007,045 1,500,000 (1,000,000) 2,175,000 Capital Projects 972,000 1,650,000 1,000,000 (1,000,000) 2,175,000 Capital Development Reserve 1,650,000 1,650,000 1,000,000 (1,000,000) 0 Total Capital Budget 2,991,400 3,024,558 2,925,000 (350,000) 2,575,000	Debt Service	5,106,985	5,106,985	5,108,929	816	5,109,745	
Generation Services Shared 887,157 548,827 769,302 (769,302) 0 this number could be altered yet	CA ISO Charges (variable): 565-023-060-200-070-000 ISO GMC Charges	312,417	2,027,082	303,858	4,054	307,912	
Generation Services Shared 887,157 548,827 769,302 (769,302) 0 this number Administrative & General 2,882,295 2,600,309 2,892,134 (2,892,134) 0 Total O&M Costs 29,335,514 28,898,758 29,552,627 (2,890,844) 26,661,783 altered yet h accounting Capital Projects 972,000 1,007,045 1,500,000 (1,100,000) 400,000 Capital Projects 972,000 1,007,045 1,500,000 (1,000,000) 2,175,000 Capital Projects 369,400 367,513 425,000 1,750,000 2,175,000 11.97% Capital Development Reserve 1,650,000 1,650,000 1,000,000 (1.000,000) 0 11.97% Total Capital Budget 2,991,400 3,024,558 2,925,000 (350,000) 2,575,000 11.97%	Other Costs	4,063,606	3,664,753	4,232,219	(146,863)	*4,085,356	* Note that
Administrative & General 2,882,295 2,600,309 2,892,134 (2,892,134) 0 Total O&M Costs 29,335,514 28,898,758 29,552,627 (2,890,844) 26,661,783 altered yet b Capital Projects 0 972,000 1,007,045 1,500,000 (1,100,000) 400,000 Capital Projects 972,000 1,007,045 1,500,000 (1,000,000) 2,175,000 Capital Projects 369,400 367,513 425,000 1,750,000 2,175,000 Capital Development Reserve 1,650,000 1,650,000 1,000,000 (1,000,000) 0 Total Capital Budget 2,991,400 3,024,558 2,925,000 (350,000) 2,575,000	Generation Services Shared	887,157	548,827	769,302	(769,302)	0	
Capital Projects 0&M Projects 972,000 1,007,045 1,500,000 (1,100,000) 400,000 Capital Projects 369,400 367,513 425,000 1,750,000 2,175,000 Capital Development Reserve 1,650,000 1,650,000 1,000,000 (1,000,000) 0 Total Capital Budget 2,991,400 3,024,558 2.925,000 (350,000) 2,575,000	Administrative & General	2,882,295	2,600,309	2,892,134	(2,892,134)	0	
O&M Projects 972,000 1,007,045 1,500,000 (1,100,000) 400,000 Capital Projects 369,400 367,513 425,000 1,750,000 2,175,000 11.97% Capital Development Reserve 1,650,000 1,650,000 1,000,000 (1,000,000) 0 11.97% Total Capital Budget 2,991,400 3,024,558 2.925,000 (350,000) 2,575,000 Projects	Total O&M Costs	29,335,514	28,898,758	29,552,627	(2,890,844)	26,661,783	altered yet by accounting
Capital Projects 369,400 367,513 425,000 1,750,000 2,175,000 Capital Development Reserve 1,650,000 1,000,000 (1,000,000) 0 11.97% Total Capital Budget 2,991,400 3,024,558 2.925,000 (350,000) 2,575,000 Projects	Capital Projects						
Capital Development Reserve 1,650,000 1,650,000 1,000,000 (1,000,000) 0 11.97% Total Capital Budget 2,991,400 3,024,558 2.925,000 (350,000) 2,575,000 Projects	O&M Projects	972,000	1,007,045	1,500,000	(1,100,000)	400,000	
Capital Development Reserve 1,650,000 1,650,000 1,000,000 (1,000,000) 0 decrease in Total Capital Budget 2,991,400 3,024,558 2,925,000 (350,000) 2,575,000 Projects	Capital Projects	369,400	367,513	425,000	1,750,000	2,175,000	44.070/
Total Capital Budget 2,991,400 3,024,558 2,925,000 (350,000) 2,575,000 Projects	Capital Development Reserve	1,650,000	1,650,000		(1,000,000)	0	
Annual Budget Cost 32,326,914 31,923,316 32,477,627 (3,240,844) 29,236,783 4	Total Capital Budget	2,991,400	3,024,558	2.925.000	(350,000)	2,575,000	
	Annual Budget Cost	32,326,914	31,923,316	32,477,627	(3,240,844)	29,236,783	4



Routine O & M With Labor - Actual





GEO - FY 2017 Proposed Projects

0 & M Projects	Notes	\$400,000
Plant, Yard and Road Repair Maintenance	М	250,000
Plant 1 Cooling Tower Structure Work	M/S	150,000
Capital Projects	Notes	\$2,175,000
Vehicle Replacements	D	100,000
Plant 1 HVAC	Μ	1,000,000
Access Platforms	D	150,000
Plant 1 Auxiliary Steam Pipeline Modification	D	100,000
Boom Truck	D	175,000
Unit 4 Main Steam Pipeline	D	650,000
Capital Development Reserve Projects	\$6,123,658 IN ACCOUNT	\$-0-
Annual Fund Requirement		\$0



Plant, Yard and Road Repair Maintenance

Project	Notes	Total Cost	
Plant, Yard & Road Repairs	М	250,000	250,000
Notes: D Discretionary M Mandatory Annual deposit to the Capital CR Development Reserve			Financial Evaluation: Mandatory

- Steam field roads and plant yards require periodic maintenance to allow safe access and comply with permit conditions. Maintenance may include asphalt repair, crack sealing, re-coating of asphalt, chip sealing of roads, and road striping.
- Asphalt repairs were completed at Plant #2 in FY 2015 along with some road patching and sealing outside the plant area.
- Plans are to continue road maintenance work in FY 2017 on the main road to both Plants #1 and #2. Roads to F, H, P and Q sites will need some work.
- The main easement through the Calpine Facility should be chip sealed in FY 2017, with NCPA paying for 60% and Calpine paying 40%, per our road maintenance agreement.



FY 2017



January 13, 2017



Plant 1 Cooling Tower Structure Work

			Total	
	Project	Notes	Cost	
Plant	1 Cooling Tower	M/S	150,000	150,000
Notes	5:			
D	Discretionary			Financial Evaluation:
Μ	Mandatory			
	Annual deposit to the Capital			Mandatory
CR	Development Reserve		_	

The Plant 1 Cooling Tower has been in mostly continuous service for over 30 years and requires the below major maintenance:

- 1. The Deck on the top of the tower where the employees occasionally have to do work is in need of major maintenance.
- 2. Some railing work and the trays need to be overlaid for safety.
- 3. Plant 1 CT Distribution boxes need to be replaced.



FY 2017



Vehicle Replacements

			Total Cost to	FY 2017
	Project	Notes	Complete	
Ve	ehicle Replacements	D	100,000	100,000
Notes				Financial Evaluation:
D	Discretionary			
М	Mandatory			N/A
	Annual deposit to the Capital			H DANSEL THE REPAIR
CR	Development Reserve			The second

- Replace a 2000 Operations Truck with well over 110,000 Geysers miles on it.
- Estimated Cost \$40,000.
- Replace a 1985 Ford 2WD F250 Maintenance Vehicle that has 142,746 miles with a 1 Ton 4WD vehicle, which will allow safer access to the entire wellfield in the winter.
- Estimated cost \$60,000.
- The older, Operations and Maintenance vehicles will be sent out for sale following NCPA Policy.

January 13, 2017

10



Plant 1 HVAC System

			Total Cost to	FY 2017
	Project	Notes	Complete	
Plant	1 HVAC	М	1,000,000	1,000,000
Notes				
D	Discretionary			Financial Evolution
М	Mandatory			Financial Evaluation:
	Annual deposit to the Capital			Mandatory
CR	Development Reserve			

- The HVAC at Plant 1 is not working correctly.
- Efforts to adequately repair have been unsuccessful.
- During hot days, the doors to electronic rooms have to be open for cooling, which could be a NERC issue.
- Leaving the doors open exposes sensitive devices to a corrosive atmosphere.
- Based on engineers estimates, the replacement cost was going to be \$500,000.
- Went out to bid, lowest bid was \$1.5M.
- We plan on completing a portion of the project in FY16 and identified over \$300,000 in cost savings for the project.
- Will still need \$1,000,000 to finish.





Access Platforms

			Total Cost to	FY 2017	
	Project	Notes	Complete		
Plan Note	1 Access Platforms	D	150,000	150,000	
D M	Discretionary Mandatory			Financial E	valuation:
CR	Annual deposit to the Capital Development Reserve			AFE Financial Measurements NPV @ Discount Rate	Value 35,868

- The total cost of installing the access platforms is estimated to be \$150K. This total cost includes:
 - \$30K for design of the platform structures.
 - \$120K to install the platforms.

In order to properly check Plant 1 Unit Performance, a Man Lift needs to be rented to access both metering devices to get a more accurate reading.

- Rental of the Man lift is costly and when performance issues are suspected there is a delay between the time it is discovered and the delivery of a man lift. This delay can result in additional MW losses.
- A recent Safety evaluation identified improvements for the access to the devices that are necessary for the performance checks for Units 1 & 2.
- The installation of the platforms will enhance the safety of the personnel that need to access the equipment.

AFE Financial Measurements	Value
NPV @ Discount Rate	35,868
IRR	7.5%
Average Annual Benefits	7,197
Payback	12.0
Useful Life	25.0
B/C Ratio	1.25



January 13, 2017



Plant 1 Auxiliary Steam Pipeline Modification

		Total Cost to	FY 2017	
Project	Notes	Complete		
Plant 1 Aux Steam	D	100,000	100,000	
D Discretionary M Mandatory			Financial Evalu	lation:
Annual deposit to the Capital CR Development Reserve			Useful Life (Years): IRR:	10 47%

- At present there is one well dedicated to the Auxiliary Steam Supply for the Gas Removal System (GRS).
- That well is experiencing a 1-2% decline.
- If the well drops below the necessary minimum pressure to run the GRS, the Unit will have to take a 5 MW Curtailment until another well is piped in to the system.
- This project will pipe another D Pad well in for a standby steam supply to the GRS if it is needed.



Payback (years):

Est. Annual Benefits:

NPV @ 5%:

2.00

\$486,004

\$77,272



Boom Truck

		Total Cost to	FY 2017	
Project	Notes	Complete		
Boom Truck	D	175,000	175,000	
Notes: D Discretionary			Financial Evaluation	12
M Mandatory Annual deposit to the Capital			Useful Life (Years): 10	-
CR Development Reserve			IRR: 45 Payback (years): 2.	
			NPV @ 5%: \$359 Est. Annual Benefits: \$49	
The GEO purchased a 1996	Boom True	ck over 10 years ag		

- The GEO purchased a 1996 Boom Truck over 10 years ago and the continued maintenance of that vehicle has become problematic.
- Increasingly, the existing NCPA Boom Truck is in for repairs which forces staff to either rent a truck or call one of the boom truck operators for assistance.
- Two sets of economics were run for this AFE:
 - Hiring a Truck and Operator.
 - Renting a Truck and having an NCPA Employee Operate it.
- The above economics is based on Hiring a Truck and Operator vs. buying a truck.

January 13, 2017

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Unit 4 Main Steam Pipeline

		Total Cost to	FY 2016 FY 2017
Project	Notes	Complete	
Remove/Improve Plant 2			
Piping	D	950,000	300,000 650,000
Notes:			
D Discretionary			Financial Evaluation:
M Mandatory			FINANCIAL EVALUATION SUMMARY
Annual deposit to the Capital			Useful Life (Years): 15.00

IRR:

Payback (years):

Est. Annual Benefits:

NPV @ 5%:

- CR Development Reserve
- FY16 budget has \$300,000 to eliminate some piping issues.
- Presently, steam delivered to Unit #4 turbine drops 3.2 psig from outside the plant fence line to the turbine building.
- Numerical modeling/in-house calculations show that approximately half of this pressure drop can be eliminated by directly routing the steam into the turbine building.
- Approximately 1 MW of generation recovered if Unit #4 main steam pipeline uses proposed route.
- If approved, additional funds of \$650,000 will be required in FY 2017 to accomplish the re-route to minimize pressure losses and improve steam deliverability to the turbine.

January 13, 2017

15

38.5%

4,104,163

365,455

3.0



GEO - FY 2017 Proposed Projects

0 & M Projects	Notes	\$400,000
Plant, Yard and Road Repair Maintenance	М	250,000
Plant 1 Cooling Tower Structure Work	M/S	150,000
Capital Projects	Notes	\$2,175,000
Vehicle Replacements	D	100,000
Plant 1 HVAC	Μ	1,000,000
Access Platforms	D	150,000
Plant 1 Auxiliary Steam Pipeline Modification	D	100,000
Boom Truck	D	175,000
Unit 4 Main Steam Pipeline	D	650,000
Capital Development Reserve Projects	\$6,123,658 IN ACCOUNT	\$-0-
Annual Fund Requirement		\$0



GEO – FY 2017 Reserve Fund Proposed Projects

Funding/(Expenditures)	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
<u> </u>											
Reserve Activity											
Unit One Overhaul				(1,500,000)							
Unit Two Overhaul				(1,500,000)							
Unit Four Overhaul	(1,871,000)						(1,500,000)				
Well Replacement /Workover			(3,900,000)			(3,900,000)			(3,900,000)		
Contingent maintenance											
Projected Requirements	(1,871,000)	-	(3,900,000)	(3,000,000)	-	(3,900,000)	(1,500,000)	-	(3,900,000)	-	
	4 000 000		4 000 000	4 000 000	4 000 000	0.000.000	4 000 000	4 000 000	4 000 000	1 000 000	4 0 0 0 0 0 0
Annual Funding Req*	1,000,000	-	1,300,000	1,800,000	1,800,000	2,000,000	1,300,000	1,300,000	1,300,000	1,300,000	1,300,000
Balance	6,123,658	6,123,658	3,523,658	2,323,658	4,123,658	2,223,658	2,023,658	3,323,658	723,658	2,023,658	3,323,658
Minimum Contingency Balance	2,250,000	2,250,000	2,250,000	2,250,000	2,250,000	2,250,000	2,250,000	2,250,000	2,250,000	2,250,000	2,250,000
*Estimated											



	<u>Project</u> Well Workovers	<u>Notes</u>	<u>Cost</u>	<u>FY 2017</u>	<u>FY 2018</u>	
	& Drilling - 2018	D/CR	3,900,000	0	\$676,000	
Notes:						
D	Discretionary					
М	Mandatory			FINANCIAL	EVALUATION SUMMARY	
	Annual deposit to Capital					
CR	Development Reserve					

- In order to maximize Steam Field Production, occasional drilling and well workover activities need to take place in the field.
- Originally planned to occur every three years, the drilling schedule has recently been extended due to a combination of lack of injection water in 2015 (allowing injection wells to dry out and heat up) and the success of the recent conversions of several wells to 'huff and puff' status.
- The delay of those drilling projects have allowed for sufficient funds in Maintenance Reserve to not request any collection in FY17.



	<u>Project</u> Unit 1 Overhaul	<u>Notes</u>	<u>Cost</u>	<u>FY 2017</u>	<u>FY 2018</u>
	- 2019	D/CR	1,500,000	0	\$208,000
Notes:					
D	Discretionary				
М	Mandatory Annual deposit to Capital			FINANCIAL	EVALUATION SUMMARY

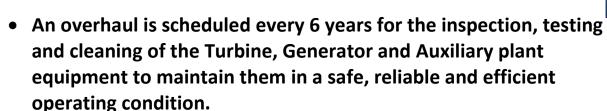
CR Development Reserve



- An overhaul is scheduled every 6 years for the inspection, testing and cleaning of the Turbine, Generator and Auxiliary plant equipment to maintain them in a safe, reliable and efficient operating condition.
- There is sufficient funds in the Maintenance Reserve to date to not ask for a FY2017 contribution due to the delaying of drilling work for another year.
- The extension of the drilling schedule is primarily due to a combination of lack of injection water in 2015 (injection wells drying out and heating up) and the success of the recent conversions of several wells to 'huff and puff' status.



<u>Project</u> Unit 2 Overhaul	<u>Notes</u>	<u>Cost</u>	<u>FY 2017</u>	<u>FY 2018</u>	
	- 2019	D/CR	1,500,000	0	\$208,000
Notes:					
D	Discretionary				
М	Mandatory			FINANCIAL	EVALUATION SUMMARY
	Annual deposit to Capital				



- There is sufficient funds in the Maintenance Reserve to date to not ask for a FY2017 contribution due to the delaying of drilling work for another year.
- The extension of the drilling schedule is primarily due to a combination of lack of injection water in 2015 (injection wells drying out and heating up) and the success of the recent conversions of several wells to 'huff and puff' status.



CR Development Reserve



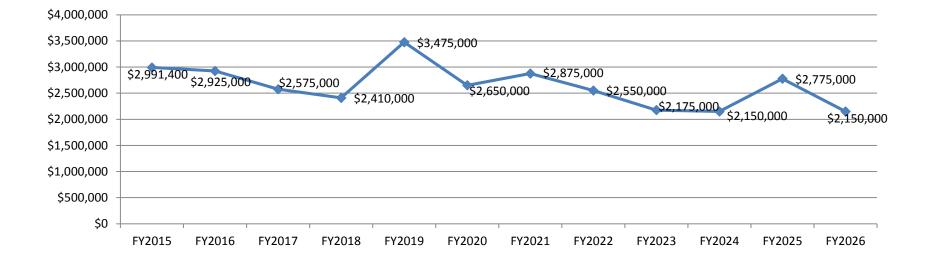
	<u>Project</u> Unit 4 Overhaul	<u>Notes</u>	<u>Cost</u>	<u>FY 2017</u>	<u>FY 2018</u>
	- 2022	D/CR	1,500,000	0	\$208,000
Notes:					
D	Discretionary				
М	Mandatory			FINANCIAL	EVALUATION SUMMARY
	Annual deposit to Capital				
CR	Development Reserve				



- An overhaul is scheduled every 6 years for the inspection, testing and cleaning of the Turbine, Generator and Auxiliary plant equipment to maintain them in a safe, reliable and efficient operating condition.
- There is sufficient funds in the Maintenance Reserve to date to not ask for a FY2017 contribution due to the delaying of drilling work for another year.
- The extension of the drilling schedule is primarily due to a combination of lack of injection water in 2015 (injection wells drying out and heating up) and the success of the recent conversions of several wells to 'huff and puff' status.



GEO Projects Expenditures Including Maintenance Reserve





GEO – Project Forecast

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
O&M Projects											
Plant 2 Fire System	\$ 300,000	\$ -	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-
Plant, Yard & Road Repairs	175,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000
Wellhead Valve Replacements and Rebuilds	-	-	60,000	-	-	-	-	-	-	-	-
Undefined Projects	-	-	600,000	1,200,000	600,000	600,000	1,000,000	600,000	600,000	1,200,000	600,000
Plant 1 Bridge Crane Overhaul	100,000	-	-	-	-	-	-	-	-	-	-
SED Basin Concrete Maintenance & Coating	300,000	-	-	-	-	-	-	-	-	-	-
Chem Lab Up to Code	150,000	-	-	-	-	-	-	-	-	-	-
Q Site Condensate Tank	100,000	-	-	-	-	-	-	-	-	-	-
Physical Security	175,000	-	-	-	-	-	-	-	-	-	-
Main Steam Piping Modifications	-	-	200,000	200,000	-	-	-	-	-	-	-
Plant 1 Cooling Tower Structure Work	-	150,000	-	-	-	-	-	-	-	-	-
D-5 Abandonment	200,000	-	-	-	-	-	-	-	-	-	-
TOTAL O & M PROJECT Costs	1,500,000	400,000	1,110,000	1,650,000	850,000	850,000	1,250,000	850,000	850,000	850,000	850,000
CAPITAL PROJECTS											
Vehicle Replacements	-	100,000	-	25,000	-	25,000	-	25,000	-	25,000	-
Plant 1 HVAC	-	1,000,000	-	-	-	-	-	-	-	-	-
Access Platforms	-	150,000	-	-	-	-	-	-	-	-	-
Remove/Improve Plant 2 Piping	300,000	650,000	-	-	-	-	-	-	-	-	-
Concrete Pad for Large Truck Bins	125,000	-	-	-	-	-	-	-	-	-	-
Add Dedicated D Line Steam Wells	-	100,000	-	-	-	-	-	-	-	_	-
		,									
Boom Truck	-	175,000	-	-	-	-	-	-	-	-	-
TOTAL CAPITAL PROJECT COSTS	425,000	2,175,000	0	25,000	0	25,000	0	25,000	0	25,000	0
RESERVE FUND SPENDING											
BEGINNING YEAR BALANCE	6,994,658	6,123,658	7,423,658	5,323,658	4,123,658	6,123,658	3,523,658	3,323,658	4,623,658	2,023,658	3,323,658
Unit One Overhaul	0,994,000	0,123,030	7,423,030	1,500,000	4,123,030	0,123,030	3,323,030	3,323,030	4,023,030	2,023,030	3,323,030
Unit Two Overhaul	-	-	-	1,500,000	-	-	-	-	-	-	
Unit Four Overhaul	1,871,000	-	-	1,300,000	-	-	1,500,000	-	-	-	-
Well Replacement /Workover	1,071,000	-	3.900.000	-	-	3,900,000	1,300,000	-	3,900,000	-	-
	4 074 000	-		-	-		4 500 000			-	-
	1,871,000	0	3,900,000	3,000,000	0	3,900,000	1,500,000	0	3,900,000	0	0
ADDITIONAL FUNDING	1,000,000	-	1,300,000	1,800,000	1,800,000	2,000,000	1,300,000	1,300,000	1,300,000	1,300,000	1,300,000
END OF YEAR BALANCE	6,123,658	6,123,658	3,523,658	2,323,658	4,123,658	2,223,658	2,023,658	3,323,658	723,658	2,023,658	3,323,658
ALL PROJECTS COSTS WITH RESERVE FUNDING	2,925,000	2,575,000	2,410,000	3,475,000	2,650,000	2,875,000	2,550,000	2,175,000	2,150,000	2,775,000	2,150,000



NORTHERN CALIFORNIA POWER AGENCY

Geothermal 2017 Proposed Budget

Sunrise Glow Over Plant 2 on 12/28/2015

January 13, 2017