

Geothermal 2018 Proposed Budget



Morning Glory over Plant 2 on 12/06/2016

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Project Assumptions

All AFE Financials based on Power Management Forecast Prices Below

Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18
\$ 34.50	\$ 33.29	\$ 34.60	\$ 35.29	\$ 36.10	\$ 36.83	\$ 37.67	\$ 38.59	\$ 39.84	\$ 40.74	\$ 41.91	\$ 43.44	\$ 44.73	\$ 46.01	\$ 47.14	\$ 48.08	\$ 48.85	\$ 49.44	\$ 51.59	\$ 52.54

- AFE Financials also included a \$15/MW value for RECs.

FY 18 Revenue

- FY 18 Annual value of local Capacity - \$2,800,000.
- Forecasted Generation for FY18 = 812 GWhr
- Value of RECs = \$12,545,775

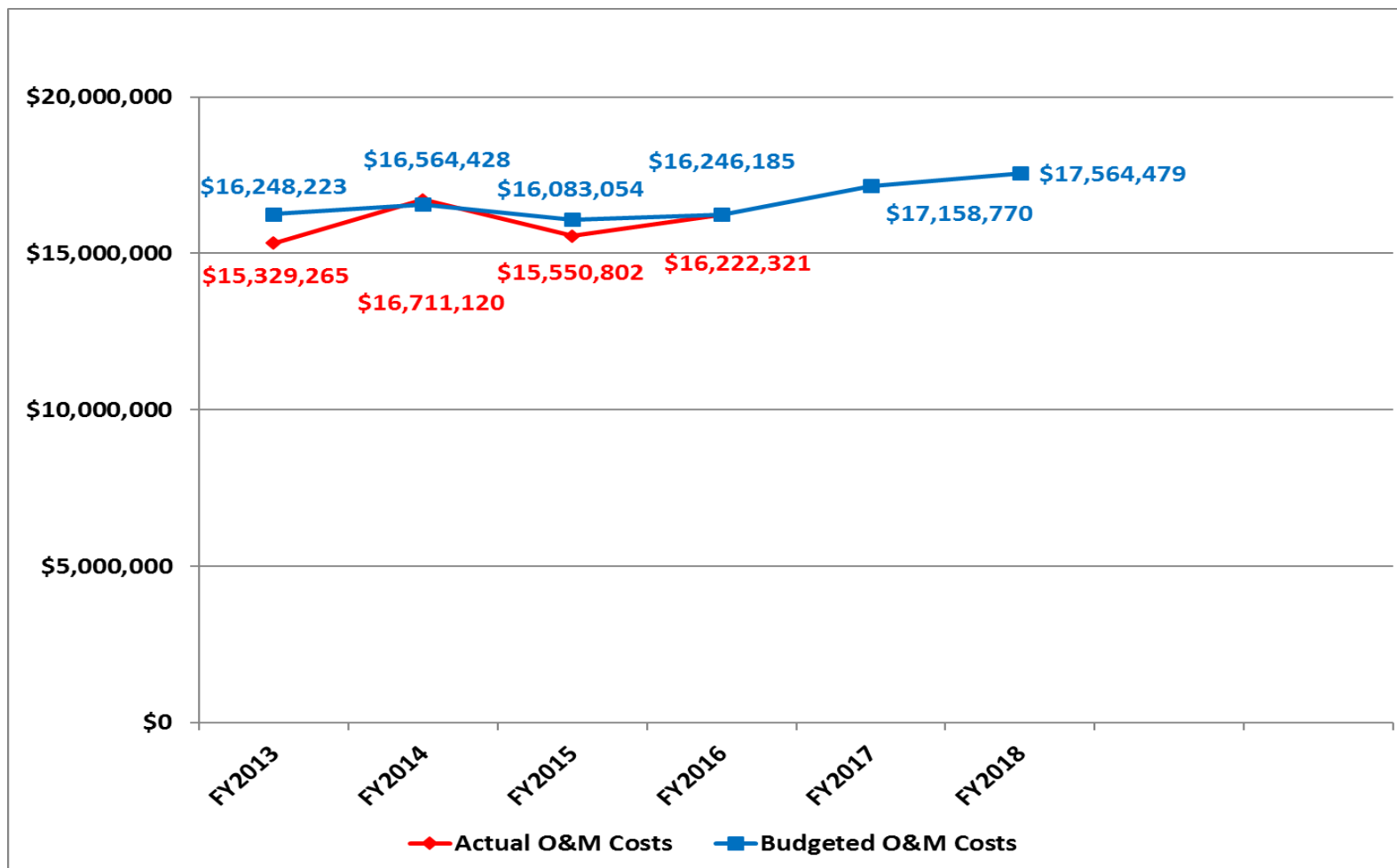
GEO FY 2018 Proposed Budget

	FY 2016 Budget	FY 2016 Actual	FY 2017 Budget	FY 2018 Budget	Increase/ (Decrease)
Routine O&M Costs					
Variable	925,000	729,471	940,000	912,000	(28,000)
Fixed	3,687,700	3,765,896	3,792,700	3,814,098	21,398
Steam Royalties (variable)	1,876,000	1,848,252	1,826,000	1,818,000	(8,000)
Administration	467,000	408,496	464,000	458,000	(6,000)
Mandatory Costs	368,500	270,644	373,500	328,500	(45,000)
Inventory	275,000	599,519	270,000	375,000	105,000
Transmission O & M	51,095	89,819	51,095	89,819	38,724
Routine O&M Costs w/o Labor	7,650,295	7,712,097	7,717,295	7,795,417	78,122
Labor	8,595,890	8,510,224	9,441,475	9,769,062	327,587
Total Routine O&M Costs	16,246,185	16,222,321	17,158,770	17,564,479	405,709
Other Costs					
Debt Service	5,108,929	5,108,929	5,109,745	4,935,743	(174,002)
CA ISO Charges (variable)	303,858	1,087,586	307,912	317,188	9,276
Other Costs	4,232,219	3,824,294	4,084,356	3,783,170	(301,186)
Generation Services Shared	769,302	478,514	681,638	696,078	14,440
Administrative & General	2,892,134	2,692,419	3,227,884	3,383,348	155,464
Total O&M Costs	29,552,627	29,414,063	30,570,305	30,680,006	109,701
Projects					
Operations & Maintenance	1,500,000	989,912	400,000	800,000	400,000
Fire Related Repairs	0	1,682,598	0	0	0
Capital	425,000	524,540	2,175,000	640,000	(1,535,000)
Maintenance Reserve	1,000,000	1,000,000	0	0	0
Total Projects Costs	2,925,000	4,197,050	2,575,000	1,440,000	(1,135,000)
Annual Budget Cost	32,477,627	33,611,113	33,145,305	32,120,006	(1,025,299)
Less: Third Party Revenues					
ISO Energy Sales	31,701,861	23,742,345	30,112,592	28,349,215	(1,763,377)
Ancillary Services Sales	0	2,510	0	0	0
Interest Income	32,441	183,224	32,441	147,521	115,080
Transmission Sales	110,376	110,376	110,376	110,376	0
Effluent Revenue	750,000	1,242,721	700,000	700,000	0
Other Income	0	273,377	0	2,500	2,500
RECs, Capacity Value	32,594,678	14,850,000	16,513,000	12,545,775	-1,645,797
Net Budget Cost to Participants w/o RECs, Cap	32,594,678	25,554,553	30,955,409	41,855,387	-1,645,797
Net Budget Cost to Participants w/RECs, Cap				\$19,574,231	\$620,498

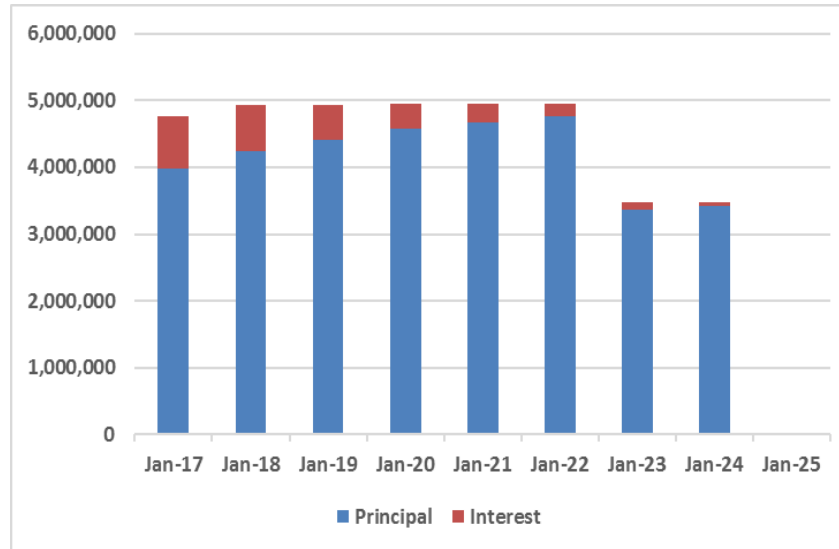
3.47% Increase
includes
reduction in
headcount of
one Lab
Supervisor

FY16/17 No credits for
RECs/Capacity.
FY18-No credit for ISO Energy
Sales, only RECs/Capacity

Trend, Routine O&M with Labor VS Current Year Actuals



GEO Debt



Period Ending	Principal	Interest	Total
7/1/2017	3,980,000	778,729	4,758,729
7/1/2018	4,235,000	700,743	4,935,743
7/1/2019	4,400,000	536,896	4,936,896
7/1/2020	4,580,000	365,723	4,945,723
7/1/2021	4,670,000	280,461	4,950,461
7/1/2022	4,760,000	193,453	4,953,453
7/1/2023	3,360,000	113,310	3,473,310
7/1/2024	3,425,000	57,198	3,482,198
7/1/2025	0	0	0
	\$33,410,000	\$3,026,513	\$36,436,513

GEO - FY 2018

Proposed Projects

Overview with Cost Breakdown

O & M Projects	Notes	\$800,000
Plant, Yard & Road Repairs	D	250,000
Wellhead Valve Replacements and Rebuilds	D	200,000
Chem Lab Building Maint	M	150,000
Main Steam Piping Modifications	D	200,000
Capital Projects	Notes	\$640,000
Vehicle Replacements	D	90,000
Stretford Sulfur Processing Platform	M	550,000
Capital Development Reserve Projects	\$6,232,719 IN ACCOUNT	\$-0-
Annual Fund Requirement		\$0

Plant, Yard & Road Repairs and Maintenance

Project	Notes	Total Cost	FY 2018
Plant, Yard & Road Repairs	D	250,000	250,000

Notes:

- D Discretionary
- M Mandatory
- Annual deposit to the Capital
- CR Development Reserve

Financial Evaluation:

Discretionary

N/A



- 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.
- We plan on working on the NCPA easement through the Calpine lease with NCPA paying 60% (\$90,000) and Calpine at (\$60,000) per the easement agreement, which will show up as revenue
- In FY17, asphalt repairs were completed throughout the field and at Plant 1at Plant #2 along with some road patching and sealing outside the plant area.

Wellhead Valve Replacements and Rebuilds

Project
Wellhead Valve
Replacement

Notes

FY 2018

D

200,000



Financial Evaluation:

Discretionary

N/A

Notes:

D Discretionary

M Mandatory

Annual deposit to Capital

CR Development Reserve

Useful Life (Years):

30 yrs

- There are approximately 160 Wellhead Valves at the facility
- They are on a 30 Year Rebuild Overhaul Cycle
- Average cost to rebuild is \$40,000
- We are proposing to do 5 valves this year

Chemistry Lab Building Maintenance

Project	Notes	Total Cost	FY 2018
Chemistry Lab Maint	M	150,000	150,000

Notes:

- D Discretionary
- M Mandatory
- Annual deposit to the Capital
- CR Development Reserve

Financial Evaluation:

Mandatory

N/A



- Chemistry Lab is over 30 years old.
- Roof & siding have deteriorated allowing water leakage to occur during the winter.
- Temporary caulking has prevented safety hazards and equipment damage from occurring.
- Funds are requested to repair the roof and siding.



March 14, 2017

Main Steam Piping Modifications

Project	Notes	Total Cost	FY 2018	FY 2019
Steam Piping Modifications	D	600,000-1,200,000	200,000	400,000-1,000,000

Notes:

- D Discretionary
- M Mandatory
- Annual deposit to the Capital
- CR Development Reserve

Financial Evaluation:

Useful Life (Years):	15
IRR:	30.5%
Payback (years):	4.0
NPV @ 5%:	\$654,482
Est. Annual Benefits:	\$71,030

- Propose to remove unnecessary expansion loops and steam separators
- Estimated 0.25 MW gain in generation
- After completing the FY18 modifications, we will review the steam flow gains
- If gains are as predicted, we will complete the project during the FY19 Plant Overhaul
- Economics Based on Phase 1 of the project only
- REC Value \$15



Vehicle Replacement

**Total
Cost to
Complete**

FY 2018

Project	Notes	Cost to Complete	
Vehicle Replacements	D	90,000	90,000

Notes:

- D Discretionary
- M Mandatory
- Annual deposit to the Capital
- CR Development Reserve

Financial Evaluation:

N/A

- **There GEO has 32 vehicles for 40 employees.**
- **Due to the conditions at the Facility, the average life of vehicles is about 15 years.**
- **The vehicle that we are proposing to replace has over 15 years of operation and has numerous mechanical issues.**

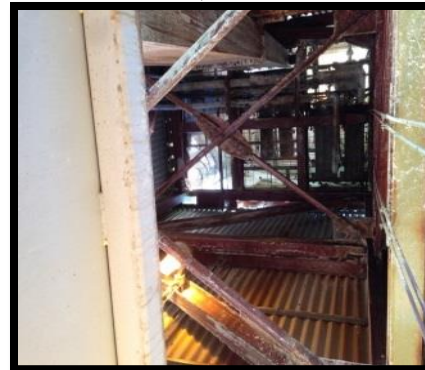


Stretford Sulfur Processing Platform

Project	Notes	Total Cost	FY 2015	FY 2018
Stretford Sulfur Processing Platform	M	550,000	250,000	550,000

Financial Evaluation:
Mandatory

N/A



- The Stretford Filter House is presently 4 stories high
- During the 4 hours a day that operations is processing, a dust mask is often necessary due to the additional dust created by this unnecessary height.
- Significant time is spent climbing the four flights a dozen times during processing
- \$250,000 budgeted in FY15 to lower the existing structure (220k was encumbered)
- During the engineering process, numerous issues were found in the existing tower requiring Significant work to be done on the structure
- Based on that, building a new, 1 story structure would be preferred
- The structure went out to bid and the lowest bid was \$606,000
- CEC, TRB and GHD (for our engineering) should be between 75,000 - \$100,000
- Removing existing Structure estimated at \$70,000

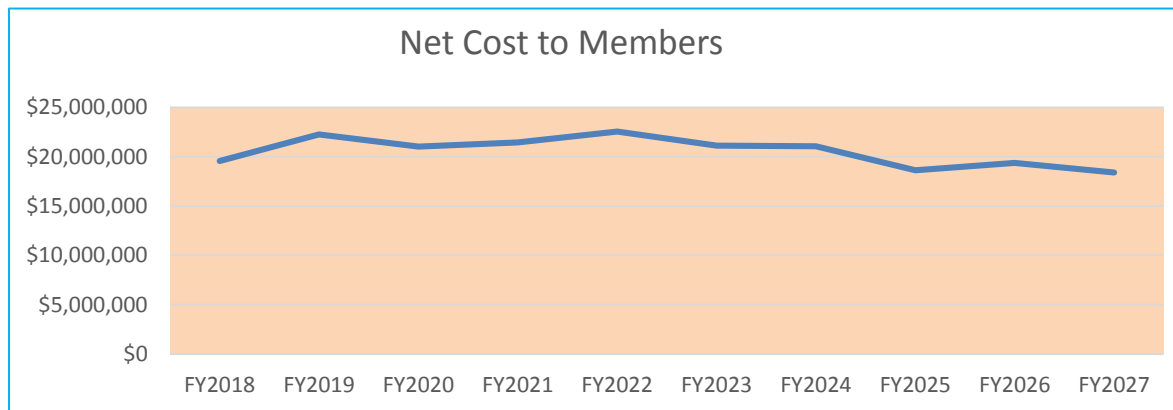
March 14, 2017

GEO – 10 Year Project Forecast

		FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
O & M PROJECTS	Total											
Plant, Yard & Road Repairs	2,500,000	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	200,000		200,000	-	-	-	-	-	-	-	-	-
Undefined Projects	5,950,000	-	-	750,000	600,000	600,000	1,000,000	600,000	600,000	1,200,000	600,000	-
Chem Lab Building Maint	150,000	-	150,000	-	-	-	-	-	-	-	-	-
Main Steam Piping Modifications	600,000	-	200,000	400,000	-	-	-	-	-	-	-	-
Plant 1 Cooling Tower Structure Work	150,000	150,000	-	-	-	-	-	-	-	-	-	-
TOTAL O & M PROJECT COSTS	\$ 9,550,000	\$ 400,000	\$ 800,000	\$ 1,400,000	\$ 850,000	\$ 850,000	\$ 1,250,000	\$ 850,000	\$ 850,000	\$ 1,450,000	\$ 850,000	\$ -
CAPITAL PROJECTS	Total	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Vehicle Replacements	290,000	100,000	90,000	25,000	-	25,000	-	25,000	-	25,000	-	-
Plant 1 HVAC	1,000,000	1,000,000	-	-	-	-	-	-	-	-	-	-
Access Platforms	150,000	150,000	-	-	-	-	-	-	-	-	-	-
Unit 4 Maint Steam Pipeline	650,000	650,000	-	-	-	-	-	-	-	-	-	-
Stretford Sulfur Processing Platform	550,000	-	550,000	-	-	-	-	-	-	-	-	-
Plant 1 Auxiliary Steam Pipeline Modification	100,000	100,000	-	-	-	-	-	-	-	-	-	-
Boom Truck	175,000	175,000	-	-	-	-	-	-	-	-	-	-
Admin Building Repair and Upgrade	175,000	-	-	175,000	-	-	-	-	-	-	-	-
TOTAL CAPITAL PROJECT COSTS	\$ 3,090,000	\$ 2,175,000	\$ 640,000	\$ 200,000	\$ -	\$ 25,000	\$ -	\$ 25,000	\$ -	\$ 25,000	\$ -	\$ -
RESERVE FUND SPENDING	Beginning Balance	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Unit One Overhaul				(1,300,000)						(1,300,000)		
Unit Two Overhaul				(1,600,000)						(1,600,000)		
Unit Four Overhaul		-					(1,500,000)					
Well Replacement /Workover	3,982,719			(3,100,000)				(3,900,000)				(3,900,000)
Contingent maintenance	2,250,000											
Projected Requirements		-	-	(6,000,000)	-	-	(1,500,000)	(3,900,000)	-	(2,900,000)	-	(3,900,000)
Annual Funding Req*		-	-	2,100,000	1,200,000	1,200,000	1,500,000	1,500,000	1,000,000	1,000,000	1,900,000	1,300,000
Balance	\$ 6,232,719	\$ 6,232,719	\$ 6,232,719	\$ 2,332,719	\$ 3,532,719	\$ 4,732,719	\$ 4,732,719	\$ 2,332,719	\$ 3,332,719	\$ 1,432,719	\$ 3,332,719	\$ 732,719
Minimum Emergency 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	2,250,000

10 Year Net Cost to Members

	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027
O&M Projects	800,000	1,400,000	850,000	850,000	1,250,000	850,000	850,000	1,450,000	850,000	0
Capital Projects	640,000	200,000	0	25,000	0	25,000	0	25,000	0	0
Maintenance Reserve Funding	0	2,100,000	1,200,000	1,200,000	1,500,000	1,500,000	1,000,000	1,000,000	1,900,000	1,300,000
O&M w/Labor	17,564,479	18,091,413	18,634,156	19,193,180	19,768,976	20,362,045	20,972,906	21,602,094	22,250,156	22,917,661
Debt Service	4,935,743	4,936,896	4,945,723	4,950,461	4,953,453	3,473,310	3,482,198			
A&G	3,383,348	3,467,390	3,553,520	3,641,790	3,732,252	3,824,961	3,919,973	4,017,345	4,117,136	4,219,406
Other Costs	4,796,436	4,940,329	5,088,539	5,241,195	5,398,431	5,560,384	5,727,195	5,899,011	6,075,982	6,258,261
Sub Total	32,120,006	35,136,029	34,271,938	35,101,626	36,603,112	35,595,700	35,952,273	33,993,450	35,193,274	34,695,328
Total net generation, GWhrs	817.4	799.9	749.0	766.4	751.1	736.2	723.3	675.0	693.4	680.2
Cost per MWhr w/o REC Value	39.30	43.93	45.76	45.80	48.73	48.35	49.71	50.36	50.75	51.01
Revenue (REC+CAP)	12,545,775	12,859,419	13,245,202	13,642,558	14,051,835	14,473,390	14,907,591	15,354,819	15,815,464	16,289,928
Cost per MWhr w/REC value	23.95	27.85	28.07	28.00	30.02	28.69	29.10	27.61	27.95	27.06
Net Cost to Members	\$19,574,231	\$22,276,609	\$21,026,736	\$21,459,068	\$22,551,277	\$21,122,310	\$21,044,681	\$18,638,631	\$19,377,810	\$18,405,400



Geothermal 2018 Proposed Budget



Morning Glory over Plant 2 on 12/06/2016