

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 \$25/MW value for RECs.

FY 18 Revenue

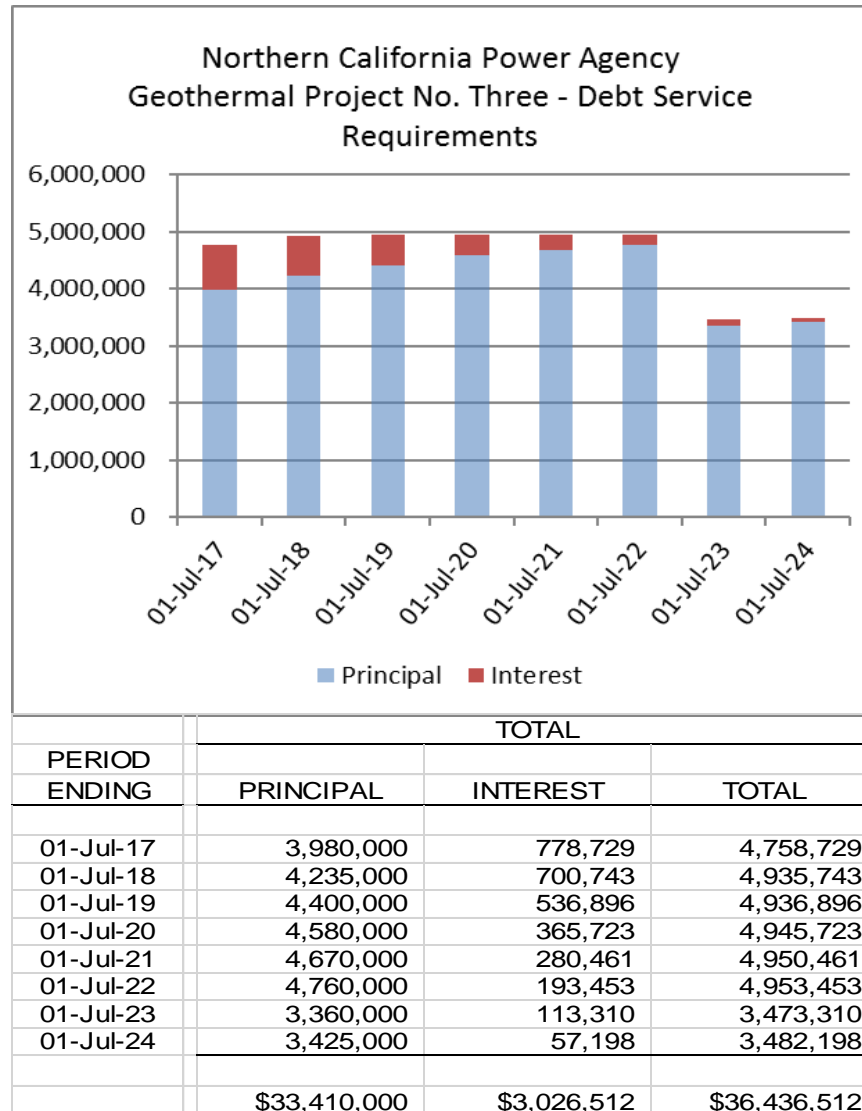
- FY 18 Annual value of local Capacity - \$2,800,000.
- Forecasted Generation for FY18 = 812 GWhr
- Value of RECs = \$20,300,000
- Value of FY18 energy produced with RECs (\$25)and Capacity - \$30 kw-yr

GEO FY 2018 Proposed Budget

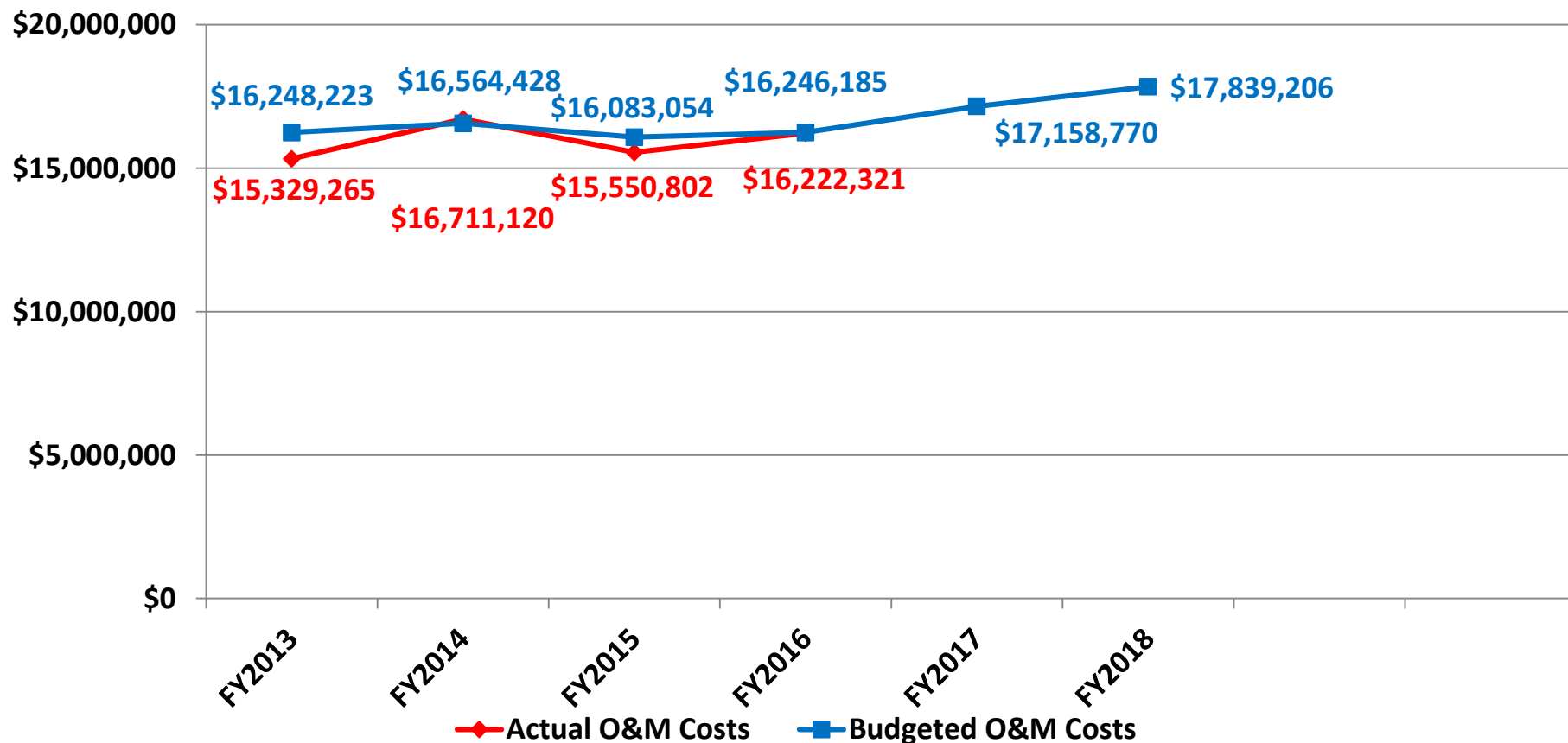
| | FY 2016 Budget | FY 2016 Actual | FY 2017 Budget | FY 2018 Budget | Increase/ (Decrease) |
|--|-------------------|---------------------|----------------------|----------------------|-------------------------|
| Routine O&M Costs | | | | | |
| Variable | 925,000 | 729,471 | 940,000 | 912,000 | (28,000) |
| 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 | 9,761,859 | 320,384 |
| Total Routine O&M Costs | 16,246,185 | 16,222,321 | 17,158,770 | 17,557,276 | 398,506 |
| 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 | 711,051 | 29,413 |
| Administrative & General | 2,892,134 | 2,692,419 | 3,227,884 | 3,324,475 | 96,591 |
| Total O&M Costs | 29,552,627 | 29,414,063 | 30,570,305 | 30,628,903 | 58,598 |
| 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 | 815,000 | (1,360,000) |
| Maintenance Reserve | 1,000,000 | 1,000,000 | 0 | 0 | 0 |
| Total Projects Costs | 2,925,000 | 4,197,050 | 2,575,000 | 1,615,000 | (960,000) |
| Annual Budget Cost | 32,477,627 | 33,611,113 | 33,145,305 | 32,243,903 | (901,402) |
| 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 | | 14,850,000 | 16,513,000 | 20,500,000 | |
| | 32,594,678 | 40,404,553 | 47,468,409 | 49,809,612 | -1,645,797 |
| Net Budget Cost to Participants w/o RECs, Cap | 32,594,678 | 25,554,553 | 30,955,409 | 29,309,612 | -1,645,797 |
| Net Budget Cost to Participants w/RECs, Cap | -\$117,051 | -\$6,793,440 | -\$14,323,104 | -\$17,565,709 | \$744,395 |

3.39% Inc
includes re
in headco
one Lab Su

GEO Debt



Total Routine O & M Costs-Budgeted vs Actual



GEO - FY 2018 Proposed Projects

| | | |
|---|-----------------------------------|------------------|
| 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 | \$815,000 |
| Vehicle Replacements | D | 90,000 |
| Stretford Sulfur Processing Platform | M | 550,000 |
| Admin Building Repair and Upgrade | D | 175,000 |
| Capital Development Reserve Projects | \$6,994,658 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

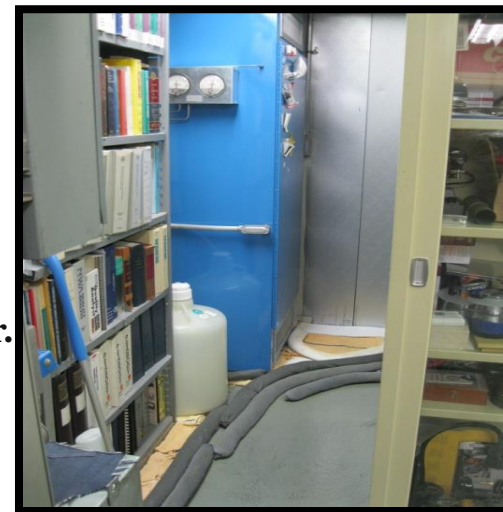
Chemistry Lab Building Maintenance

| 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.



February 9, 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):

IRR:

Payback (years):

NPV @ 5%:

Est. Annual Benefits:

| |
|-----------|
| 15 |
| 44.1% |
| 3.0 |
| \$942,925 |
| \$90,260 |

- **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**



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.



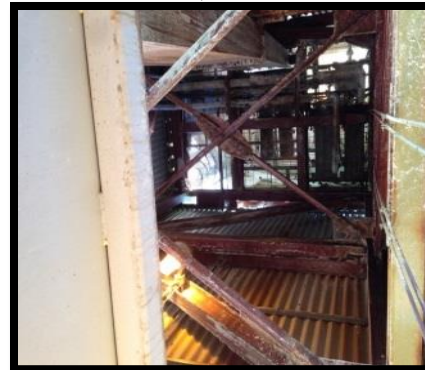
Stretford Sulfur Processing Platform

| 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

February 9, 2017

Administration Repair and Upgrade

| Project | Notes | Total Cost | FY 2018 |
|-----------------------|-------|------------|---------|
| Admin. Office Remodel | D | 175,000 | 175,000 |

Financial Evaluation:

Discretionary

N/A

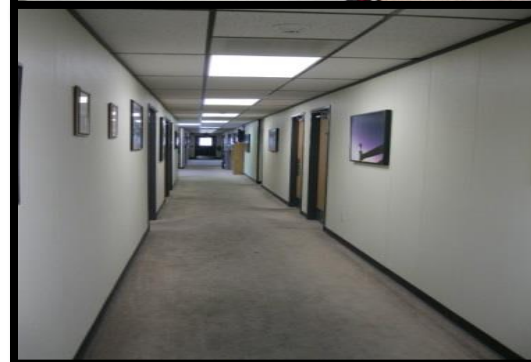
Notes:

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

To improve working conditions in the Geothermal administration office. Specific items are:

- **The existing conference room will not house all of the employees of the GEO**
- **We would like to remove the hallway to expand the size of the room to accommodate all of the employees**
- **With assistance of architectural input, the proposed improvements would include conversion of two vacant offices for use as an additional smaller conference room.**
- **Replace the stove and sink (which are at least 25 years old if not original)**
- **Install new flooring and some new office furniture**

February 9, 2017



GEO - FY 2018 Proposed Projects

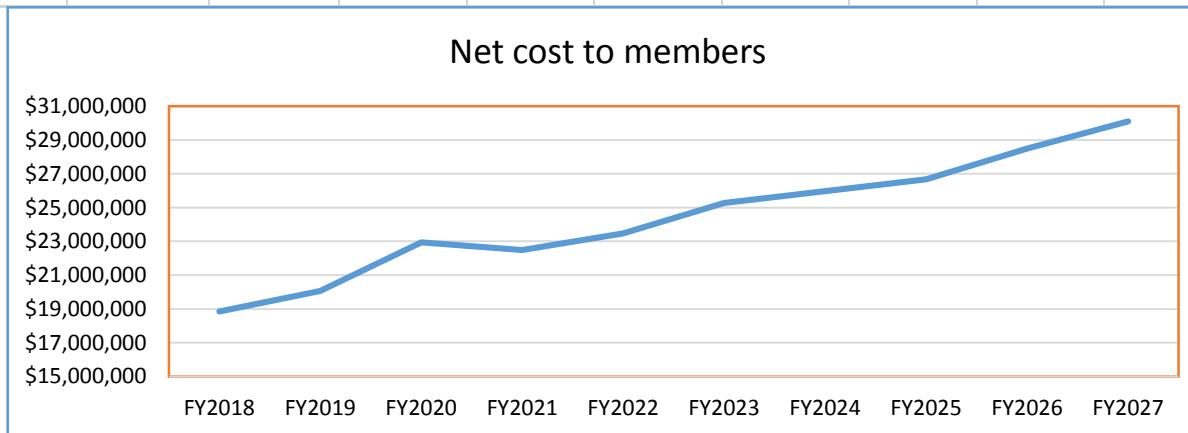
| | | |
|---|-----------------------------------|------------------|
| O & M Projects | Notes | \$800,000 |
| Plant, Yard & Road Repairs | D | 250,000 |
| Wellhead Valve Replacements and Rebuilds | D | 200,000 |
| Chem Lab Building Maint | M | 150,000 |
| Main Steam Piping Modifications | D | 200,000 |
| Capital Projects | Notes | \$815,000 |
| Vehicle Replacements | D | 90,000 |
| Stretford Sulfur Processing Platform | M | 550,000 |
| Admin Building Repair and Upgrade | D | 175,000 |
| Capital Development Reserve Projects | \$6,994,658 IN ACCOUNT | \$-0- |
| Annual Fund Requirement | | \$0 |

GEO – 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 | - | - | - | - | - | - | - | - | - |
| Physical Security | - | - | - | - | - | - | - | - | - | - | - | - |
| 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 | \$ 815,000 | \$ 25,000 | \$ - | \$ 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 | \$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 | \$815,000 | \$25,000 | \$0 | \$25,000 | \$0 | \$25,000 | \$0 | \$25,000 | \$0 | \$0 |
| Maint Reserve Funding | \$0 | \$720,000 | \$2,100,000 | \$1,200,000 | \$1,200,000 | \$1,500,000 | \$1,500,000 | \$1,000,000 | \$1,000,000 | \$1,900,000 |
| O&M w/labor | \$17,630,546 | \$18,512,073 | \$19,437,677 | \$20,409,561 | \$21,430,039 | \$22,501,541 | \$23,626,618 | \$24,807,949 | \$26,048,346 | \$27,350,763 |
| A&G | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Revenue | \$0 | | | | | | | | | |
| Net cost to members | \$18,845,546 | \$20,057,073 | \$22,937,677 | \$22,484,561 | \$23,480,039 | \$25,276,541 | \$25,976,618 | \$26,682,949 | \$28,498,346 | \$30,100,763 |
| Capacity cost | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |



Geothermal 2018 Proposed Budget



Morning Glory over Plant 2 on 12/06/2016