

# NCPA Geothermal Facility 2016 Decommissioning Study



May 3, 2017

## **2016 Decommissioning Study – Geo Facility**

**Purpose – To provide an updated cost estimate and determine annual funding levels for the abandonment of the Geo Facility.**

- **2006 Study**
  - **Est. 2006 cost of abandonment - \$24.1 M**
  - **Escalation Rate – 2.5%**
  - **Abandonment date – Year 2034**
  - **Year 2034 abandonment cost - \$46 M**
  - **Currently \$14.2 M in reserve**
  - **FY18 - \$1.8 M to be collected from members**



Plant 1





Plant 2







# **Black & Veatch Decommissioning Study**

## **Geo Facility**

- **Estimated Abandonment Cost - \$59.3 M (Yr 2016)**
- **Changes from 2006 Study - \$27.7 M**
  - **Well Plug and Abandonment costs updated to reflect current actuals (increased Steam Field costs ~\$3.3 M)**
  - **Reflects cost of prevailing wage requirements ~\$10.9 M**
  - **Includes contingency - \$7.7m**
  - **Hazardous waste hauling and disposal - \$5.8 M**

## Geo Facility Decommissioning Estimates

	2006 Estimate Projected to 2016	B & V 2016 Estimate
Plant #1	\$7.5 M	\$12.9 M
Plant #2	\$7.5 M	\$11 M
Steam Field	\$13.44 M	\$24.1 M
Contingencies	\$3.2 M	\$11.3 M
Total	\$31.6 M	\$59.3 M

## **Black & Veatch 2016 Study**

- **Prevailing wages**
- **Additional infrastructure**
  - **SEGEP pipeline, pump stations, solar array, etc**
  - **Transmission line**
- **Construction Indirect Costs**
  - **Project Management & Engineering**
  - **Permitting & Legal fees**
  - **Overhead – management salaries, accounting**
  - **Utilities**
- **15% contingency (~ \$7.7 M)**



# Estimated Impact to Members

Abandonment Estimate	Retirement	Escalation Rate %	Future Abandonment Cost	Average Annual Contribution	Incremental Amount
\$24.1 M	Yr 2034	2.5%	\$46 M	\$1.15 M	
\$24.1 M	Yr 2044	2.5%	\$61.6 M	\$740 K	- \$410 K
\$59.3 M	Yr 2044	2.5%	\$100 M	\$2.1 M	\$967 K

## Impact of Interest Rate

Assume \$100 M for Abandonment Costs in Yr 2044

Interest Rate, %	Future Value of Current Reserve	Average Annual Member Contribution	Incremental Annual Cost to Members
1.2%	\$19.6 M	\$2.5 M	\$1.4 M
2%	\$24.2 M	\$2.1 M	\$ 990 K
3%	\$31.5 M	\$1.7 M	\$528 K
4%	\$41 M	\$1.25 M	\$101 K
4.25%	\$43.7 M	\$1.15 M	\$0



## Conclusions

- **Old Abandonment Estimate - \$46 M (2034 dollars)**
  - **Reserve - \$14.2 M**
  - **FY 18 - \$1.8 M**
  - **Retirement year 2034**
- **New Estimated Abandonment Costs**
  - **\$59.3 M (2016 dollars)**
  - **\$100 M (2044 dollars, 2.5% escalation)**
  - **Retirement year 2044**
  - **Average increase in annual cost to members - \$967 K**
- **NCPA Staff to develop options and analysis**
  - **Present back to members in Fall 2017**
  - **Incorporate any changes in 2019 budget**