



## **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

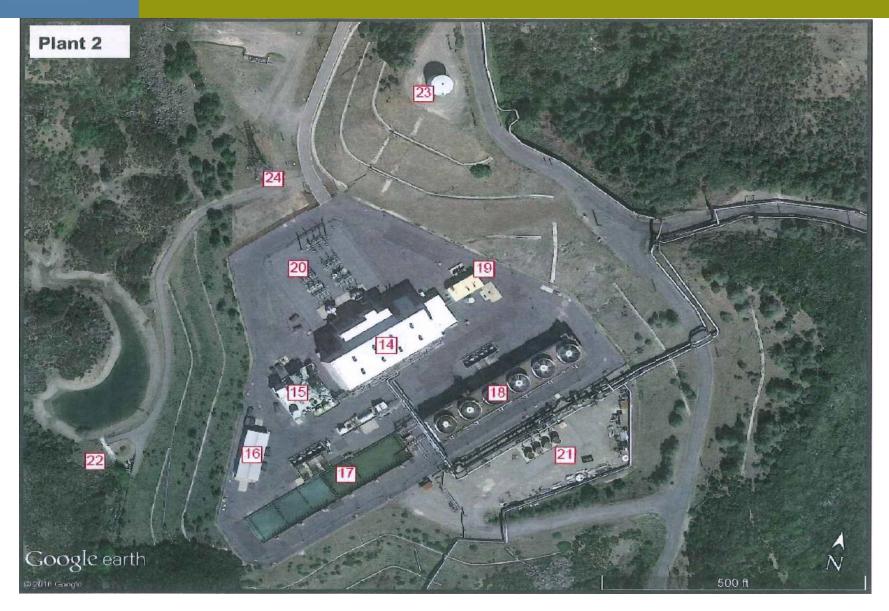


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# Black & Veatch Decommissioning Study Geo Facility

- 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**

Abandon- ment 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