Project Goals:
- Reduce fuel consumption for Alcatraz’s islanded power system

Existing System:
- Isolated power system with no interconnection to the California grid
- Located on Alcatraz Island in San Francisco Bay
- Owned by National Park Service (NPS)
- Construction completed in 2012
- Two 220-kW diesel engine generators
- 305-kW DC of solar photovoltaics (PV)
- 400 kW / 1,920 kWh of lead acid batteries

Findings:
- “Cycle charging” strategy results in significant curtailing of PV, requiring excessive diesel use
- Strategy also incurs high wear on batteries without benefit of improved efficiency
- A simple “load following” strategy results in near optimal operating cost reduction

Impact
Improved operations strategy will:
- Reduce fuel consumption by 15,000 gallons per year, a savings of nearly 50%
- Reduce battery wear by about 1/3 per year
- Save $115,000 per year on diesel + battery wear

Next Steps
Work with NPS Alcatraz and system designer to:
- Implement revised control strategy
- Verify improved operations
- Develop battery replacement plan that specifies battery type, configuration, and size

Key Stakeholders:
- U.S. National Park Service
- DOE Federal Energy Management Program

Contacts:
- Dan Olis
dan.olis@nrel.gov
- Andy Walker, PhD
andy.walker@nrel.gov

For more information, visit https://reopt.nrel.gov/