Combustion Turbine Options

Presented on July 12 2021

Update on Replacement Generation

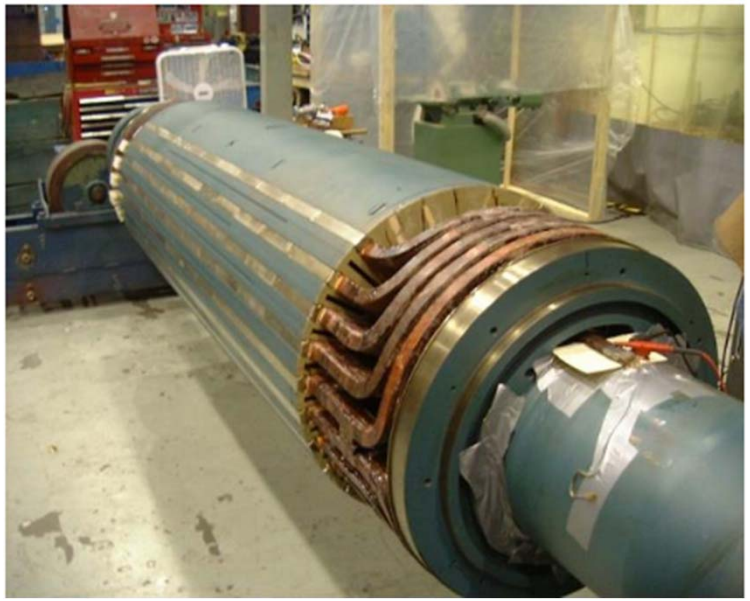
- Staff research on potential technologies
- Staff discussions with SPP on Generation Replacement Process
- Siting study to determine limitations, locations and suitable technologies for replacement generation, July 2021
- Filed Generation Replacement request with SPP, June 2021
- Filed waiver request with FERC, June 2021
- RFP development planned for release Sept 2021

CT H5 Generator Fault

- One of our two gas fired turbines, most frequently called on by SPP
- A fault has occurred in the generator section, preventing the generator from producing electricity
- Manufactured and serviced by General Electric (GE)
- Proposal provided by GE to repair the unit and return it to service.

GE 5000 Series Combustion Turbine

GE 5000 Series Generator Rotor



Options

- Repair the generator
  - Maintain ability to participate in generation opportunities in the SPP Integrated Market
  - Continue to meet the capacity obligation to SPP
- Replace the unit
  - Multiple options currently being studied, multi-year path
- Retire the unit
  - IPL has no excess capacity. Capacity contracts would be required to meet our obligation to SPP.

Retire H5

- H5 supplies 17 MW of obligated generating capacity
- Additional Capacity from Oneta would cost approximately $500,000 per year for the remaining life of the contract (2030)
- Current market prices for Capacity-only contracts would cost approximately $600,000* per year plus transmission costs
- Current market prices for Capacity + Energy would cost approximately $2.7M* per year plus transmission costs.
- No longer qualifies for SPP fast-track approval

*source Tenaska Power Services

Replace H5

- SPP Generation Connection Request
  - H5 In service: 12-18 Month Replacement request timeline
  - H5 out of service/retired: 4-5 year SPP request backlog plus unknown transmission upgrade costs
- EIA estimated capital costs for new generation $1.1M per MW and higher depending on type of technology (lower cost options for Gray market equipment)
- Timeframe: SPP and Environmental permit approval plus 3 years from decision to operation
- Capacity requirements must still be met.

Repair H5

- Purchase Order request for $1.9M including multiple contingencies depending on scope of work required.
- GE representatives are here tonight to provide technical expertise on GE Frame 5 Combustion Turbines and additional insight into the proposed repairs.

GE 5000 Series: Robust Workhorse

- Life extension inspections: 5000 fired startups or 200,000 fired hours.
- For comparison, H5 (2825 starts and 23,654 hours) H6 (2615 starts and 19,528 hours)
- Approximately 3000 Frame 5 and Frame 3 turbines still in operation.
- Approximately 60% of all Frame 5 turbines produced, still in operation

Summary

- Repair: $1.9M or less and maintain asset benefits (Staff recommendation)
- Retire: additional $500,000 per year for the remainder of the Oneta contract ($3.5M), or $600,000 per year plus unknown transmission costs based on current market prices for capacity.
- Replace: multiple scenarios are being studied, but would still require the capacity costs until the new generation is in operation, estimated timeline 3 years or longer.

Questions ?