Re: Page B-14, Replace 40 kW Diesel Generator; $157,200

Q. Please provide a cost benefit analysis showing the benefit of replacing this diesel generator with one of the same size and with a 50kW unit over performing another overhaul including the replacement of the crank shaft and block.

A. A detailed cost benefit analysis was not performed.

This budget proposal combines several necessary jobs into one, including replacement of engine, generator, switchgear, radiator and exhaust stack.

The cost of rebuilding the existing engine is greater than purchasing a new engine at $11,000 for rebuild parts vs. approximately $9000 for a new engine (with similar installation costs).

A simple replacement of engine was not considered in detail due to the fact that both engine and generator require replacement. The generator requires replacement due to regulator and voltage stability problems, likely a result of two past lightning strikes, which repairs have not been able to correct.

The control panel has been burned out by lightning strikes, experiences chronic relay failures, has had makeshift repairs to keep it in service, and does not meet Hydro's current control panel standard. Due to its age and condition, replacement has been recommended with a panel which meets the current standard which includes high voltage and low voltage segregation, draw-out breaker, arc flash protection and modern controls and communications.

Deterioration of the radiator and carbon steel exhaust stack has brought them almost to the end of their useful lives and requires replacement.

The difference in cost between a 40kW genset and a 50kW genset is approximately $5000. During the proposal stage, the replacement genset size was considered. Due to the load profile at the Burnt Dam structure it was determined that by this increase in capacity of the replacement unit, all power requirements could be met with the two smallest units in service. Presently, winter gate operations require approximately 40kW plus inrush current during a gate operation and domestic load is approximately 30kW. The total load cannot presently be met by the two smallest gensets (65 kW combined capacity). The ability to meet peak load with the largest genset out of service is the same criteria used for prime power diesel sites. Due to the critical nature of the Burnt Dam structure and the advantage of this change, no further analysis was performed.