

1 Q. **Reference: Program 6: Renew Diesel Units (2027), page 1**

2 Hydro states that the program to Renew Diesel Units will consider the alternative of overhaul or
3 replacement for each required renewal activity at the estimate stage, and confirm the approach
4 during program execution.

- 5 a) Provide all research and analysis completed by Hydro that supports this change,
6 including cost benefit analysis, least cost analysis supported by NPV analysis,
7 jurisdiction review of other Canadian utilities service prime power diesel communities,
8 etc.
- 9 b) Provide examples of how renewal of a unit under the 2027 program will differ from the
10 overhaul of a unit under the 2026 overhaul program.
- 11 c) Describe and quantify the reliability gains obtained through a renewal in the 2027
12 program versus the reliability gains obtained through an overhaul under the 2026
13 program.
- 14 d) Provide a cost comparison of the individual genset renewals proposed in the 2027
15 program with the overhaul approach performed in the manner contemplated in the
16 2026 project.

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19 A. a) When a unit reaches its major maintenance interval of 20,000 hours for 1800 rpm units or
20 30,000 hours for 1200 rpm, a quote is obtained for a new engine if it is available from the
21 original equipment manufacturer ("OEM"). For some older equipment, new engines are no
22 longer available. If a new engine is available, this quote is then compared to the cost of
23 overhauling the engine using new parts with the existing block. An engine swap with a new
24 engine takes five to seven days, an overhaul using parts takes two to three 12-day shifts. A
25 new engine from the OEM is generally the preferred option, as in Newfoundland and
26 Labrador Hydro's ("Hydro") experience, new engines are more reliable, take significantly
27 less time to complete, and provide warranty. When considering the high failure rate of
28 overhauled engines, a new engine is the least cost option when accounting for rework,

troubleshooting or complete replacement. Approximately 60% of Hydro's diesel gensets have new engines available from the factory. The other 40% must be overhauled using after-market components.

Hydro has completed a least cost evaluation on both the averages presented in the proposal and using actuals from a recent overhaul and replacement at the same site. The results are provided in Tables 1 and 2 respectively.

Table 1: Alternative Comparison: Actuals

Alternatives	Cumulative Present Worth ("CPW")	CPW Difference between Alternative and Least Cost Alternative
Unit Replacement	252,390	
Unit Overhaul	413,238	160,849

Table 2: Alternative Comparison: Averages

Alternatives	CPW	CPW Difference between Alternative and Least Cost Alternative
Average Unit Replacement	407,051	
Average Unit Overhaul	595,951	188,900

- b)** There is no difference between the two iterations of the program. The name was changed to provide greater transparency on the execution strategy.
- c)** Please see part b). While the reliability benefits cannot be specifically quantified as this is dependant on many factors, engine replacements have, in Hydro's experience, resulted in a much lower failure rate than engine overhauls and can be performed much faster.
- d)** Please refer to part b).