

1 Q. **Reference: Schedule 6, Program 3 Replace Diesel Gensets (2024-2028), Page 5, line 13–15**

2 It is stated that the current criteria for the replacement of diesel gensets was determined based
3 on the OEM’s recommendations and historical experience.

4 a) Please explain the historical experience that influenced the establishment of this
5 criteria.

6 b) When was the criteria established and when was it last reviewed?

7 c) Is Hydro’s criteria for replacement consistent with Canadian standard utility practice? In
8 the response include how and when Hydro reviewed the practice of other Canadian
9 utilities on the criteria for the replacement of diesel gensets.

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12 A. a) The historical experience that influenced Newfoundland and Labrador Hydro’s (“Hydro”) current
13 criteria for the replacement of diesel gensets is vast. Hydro has been operating
14 diesel gensets for over 50 years in prime power applications. Hydro’s replacement criteria
15 manages an appropriate balance between reliability and cost and are consistent with other
16 utility practice in Canada.

17 The main driver behind the replacement criteria is that when a genset reaches
18 100,000 hours (1,800 rpm unit) or 120,000 hours (1,200 pm unit), it is generally at the end
19 of its service life. This timeframe creates a balance between premature replacement and
20 running the unit to failure. At that point, parts often become difficult to obtain, as most
21 manufacturers do not supply parts in excess of ten years after the date of sale. Gensets
22 generally become less reliable as they age; they require more unplanned maintenance and
23 can be difficult to keep in service. There is also continuous improvement in the fuel
24 efficiency and emissions impact of diesel gensets, meaning a genset that is in excess of
25 20 years old generally burns more fuel than a new modern genset. In addition, there are
26 components on a genset that are not replaced during overhauls, as they are designed to last
27 for the genset’s full in-service life. An example of this is the mounting skid, which is subject

1 to significant amounts of vibration and heat cycles during its life and will eventually
2 experience metal fatigue. This could result in the development of cracks and an eventual
3 failure, which would put the genset out of service. To prevent this, items of this nature are
4 typically addressed with a full genset replacement.

5 **b)** Hydro's current criteria for the replacement of diesel gensets dates back many decades and
6 has been adjusted over the years based on experience. During the 1990s up to 2008, the
7 replacement criterion was 90,000 hours. This was adjusted in 2008 to 100,000 hours, to
8 better align with the 20,000-hour overhaul schedule. This was revised again in 2018 as it had
9 become clear that overhauling 1,200 rpm gensets at 20,000 hours was too soon. In
10 consultation with original equipment manufacturers, Hydro updated this to 30,000 hours.
11 The genset replacement criterion for 1,200 rpm units was then changed to 120,000 hours to
12 align with this new overhaul frequency.

13 **c)** The replacement criterion for diesel gensets varies between utilities, ranging from 80,000 to
14 120,000 hours. Hydro's criterion fits into this range, using 100,000 hours for 1,800 rpm
15 gensets and 120,000 hours for 1,200 rpm gensets. This criterion was reviewed in a 2013
16 maintenance survey completed by Hydro, again in 2018 in a maintenance survey completed
17 by another Canadian off-grid utility, and most recently in 2022 at the Canadian Off-Grid
18 Utility Association Conference.