

1 Q. **Reference Avalon Capacity Study, Section 6:**

2 Please provide the estimated annual (capital carrying costs, O&M, and other) costs:

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4 a. For keeping each existing generation plant on the Avalon Peninsula operational.

5 b. For each of the generators in each plant.

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8 A. a. The existing generation plants on the Avalon Peninsula are: the Holyrood Thermal

9 Generating Station (“Holyrood TGS”); the Hardwoods Gas Turbine; the Holyrood Gas

10 Turbine; and the Holyrood diesel generation. Of these, the Holyrood TGS and the

11 Hardwoods Gas Turbine are currently planned to cease generation operations in 2021. The

12 estimated capital and operating and maintenance (“O&M”) costs required for the

13 continued operation of the Holyrood TGS and the Hardwoods Gas Turbine until 2026 are

14 presented in Table 1 and Table 2.

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16 The estimates provided were developed with the following considerations:

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18 1. The assumption of continued operation at full availability until 2026.

19 2. Operation of the Holyrood TGS past 2026 will be dependent on the result of further  
20 condition assessments and system requirements and the costs of such  
21 contemplated operation are not included.

22 3. Due to limited remaining life in obsolete components as well as limited future  
23 overhaul availability as a result of declining replacement part inventory, extended  
24 operation of the Hardwoods Gas Turbine is contingent on the retirement of the  
25 Stephenville Gas Turbine.

26 4. Class 5 estimates are provided. Accuracy of these estimates range from +100% to  
27 -50%.

28 5. The O&M costs provided do not include fuel costs.

1           6. Capital estimates provided for both the Holyrood TGS and the Hardwoods Gas  
 2           Turbine are based on draft capital plans prepared for review of extended operation  
 3           only. Should a decision be taken to extend the life of these plants, further  
 4           evaluation would be required to formalize these capital plans.

**Table 1: Estimated Capital and O&M Costs for Holyrood TGS (\$000)**

<b>Cost</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Capital	19,847	35,167	28,257	23,210	13,474	12,816	11,450
O&M	25,735	26,378	27,037	27,713	28,406	29,116	29,844
<b>Total</b>	<b>45,582</b>	<b>61,545</b>	<b>55,294</b>	<b>50,923</b>	<b>41,880</b>	<b>41,932</b>	<b>41,294</b>

**Table 2: Estimated Capital and O&M Costs for Hardwoods Gas Turbine (\$000)**

<b>Cost</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Capital	-	3,005	2,900	1,600	-	1,600	-
O&M	1,700	1,743	1,786	1,830	1,876	1,923	1,972
<b>Total</b>	<b>1,700</b>	<b>4,748</b>	<b>4,686</b>	<b>3,430</b>	<b>1,876</b>	<b>3,523</b>	<b>1,972</b>

5           b. The estimated annual capital and O&M costs associated with continued operation of  
 6           the Holyrood TGS broken down by generating unit are presented in Table 3 to Table 5. In  
 7           addition to the unit costs, there are costs associated with the balance of plant equipment  
 8           that are required to extend the operational life of the plant. These balance of plant costs  
 9           assume that all three units remain operational and are presented in Table 6. If other  
 10          operational scenarios are considered, reduction in costs may be possible.

**Table 3: Estimated Annual Capital and O&M Costs for Holyrood Unit 1 (\$000)**

<b>Cost</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Capital	3,416	15,637	1,874	1,675	6,416	1,000	1,250
O&M	2,218	2,274	2,331	2,389	2,449	2,510	2,572
<b>Total</b>	<b>5,634</b>	<b>17,911</b>	<b>4,205</b>	<b>4,064</b>	<b>8,865</b>	<b>3,510</b>	<b>3,822</b>

**Table 4: Estimated Annual Capital and O&M Costs for Holyrood Unit 2 (\$000)**

<b>Cost</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Capital	6,966	1,363	9,050	8,525	1,717	1,200	6,250
O&M	2,124	2,177	2,231	2,287	2,344	2,403	2,463
<b>Total</b>	<b>9,090</b>	<b>3,540</b>	<b>11,281</b>	<b>10,812</b>	<b>4,061</b>	<b>3,603</b>	<b>8,713</b>

**Table 5: Estimated Annual Capital and O&M Costs for Holyrood Unit 3 (\$000)**

<b>Cost</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Capital	3,377	10,713	10,142	4,401	2,841	8,887	2,100
O&M	2,641	2,707	2,774	2,844	2,915	2,987	3,062
<b>Total</b>	<b>6,018</b>	<b>13,420</b>	<b>12,916</b>	<b>7,245</b>	<b>5,756</b>	<b>11,874</b>	<b>5,162</b>

**Table 6: Estimated Annual Capital and O&M Costs for  
Holyrood Thermal Generating Station Balance of Plant (\$000)**

<b>Cost</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Capital	6,088	7,454	7,191	8,609	2,500	1,729	1,850
O&M	18,752	19,220	19,701	20,193	20,698	21,216	21,747
<b>Total</b>	<b>24,840</b>	<b>26,674</b>	<b>26,892</b>	<b>28,802</b>	<b>23,198</b>	<b>22,945</b>	<b>23,597</b>