

1 **Q. With reference to Application, Schedule 3, Schedule C:**

2 Please explain why addition of an air source heat pump to an oil heated home would result in
3 resistance electric heat use, if the primary system for heat remains oil? Please provide the
4 scenario for an incentivized heat pump program to supplement but not replace oil fired heat
5 systems, with demand controllers on the heat pump.

6 Also please provide all data behind Figure 5-11 and Figure 5-12, and the revised scenarios noted
7 above (min split heat pump as supplement to oil fired heating system) indicating the assumed
8 adoption, the hours of energy use and the assumptions re: use during peak times, load factor,
9 and off-peak usage.

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12 **A. The Conservation Potential Study**

13 Newfoundland and Labrador Hydro (“Hydro”) notes that the Conservation Potential Study
14 undertaken by Dunsky Energy Consulting (“Dunsky”) examined the potential associated with oil-
15 heated customers adopting air source heat pumps while maintaining their oil heating equipment
16 in place and operational. In that scenario, adoption of ductless mini-split heat pumps (“DMSHP”)
17 was most prevalent. It should be noted that Dunsky modeled the scenario to have the existing
18 oil-fired equipment only operate during periods when the output of DMSHPs could not meet the
19 full heating demand of the building, as opposed to operating in a utility demand response
20 strategy. The modeled negative impacts associated with peak demand from DMSHPs operating
21 during peak periods outweighed the benefits from the increased energy sales.¹

¹ “Application for Approvals Required to Execute Programming Identified in the Electrification, Conservation and Demand Management Plan 2021–2025,” Newfoundland and Labrador Hydro, rev. 1, July 8, 2021 (originally filed June 16, 2021), sch. 3, sch. C, p. 128 of 325.

1 **Residential Dual Fuel**

2 Further to Dunsky’s findings referenced above, the economic, practical, and technical
3 considerations of such a residential dual fuel program (i.e. incentivized heat pumps, combined
4 with a requirement to maintain oil fired systems with utility control) are material.

5 From an economic perspective, the potential for incentivizing oil customers to switch to electric
6 space heating is limited. This is due to poor customer economics.² Requiring customers to
7 maintain a secondary heating system would increase customer costs (i.e., potentially requiring
8 the customer to use more expensive oil heating during peak events, furnace maintenance, tank
9 replacements, and insurance costs), further eroding the customer economics of such a program.
10 This requirement would also disqualify customers from availing from the Government of
11 Newfoundland and Labrador’s Oil to Electric Rebate Program, which requires the removal of
12 existing oil fired systems to achieve environmental targets, missing an opportunity to further
13 reduce up-front customer costs by another \$5,000.

14 From a practical perspective, Hydro would be concerned with a ratepayer funded space heating
15 electrification program which lacked certainty that the primary source of heat would be
16 electricity. In the scenario listed above, a customer could easily switch between oil and
17 electricity for the primary source of heating for a variety of potential reasons including a drop in
18 oil prices, and increase in electricity prices, or an inefficient installation of mini split heat pumps
19 which do not effectively offset oil space heating requirements.³ The ease in which a program
20 participant could return to use of existing oil heating equipment as a primary heat source, after
21 receiving a ratepayer funded rebate intended to promote use of electric heating, is a concern for
22 Hydro.

23 From a technical perspective, the implementation and monitoring of such a residential program
24 could require a significant investment in metering and billing infrastructure to ensure customers
25 are not using electric space heating during peak hours. While technically feasible, the utility

² “Application for Approvals Required to Execute Programming Identified in the Electrification, Conservation and Demand Management Plan 2021–2025,” Newfoundland and Labrador Hydro, rev. 1, July 8, 2021 (originally filed June 16, 2021), sch. 3, p. 7.

³ Oil heated homes are often designed as a single heating zone, which runs the risk that the oil heating equipment will remain the primary source of heating energy in a scenario where a DMSHP was only installed in one or two zones of a home, even if they were large areas of the home; a simple intentional or unintentional modification of control set points which no longer prioritizes the heat pump as the primary source of heating.

1 related costs, combined with a large required incentive, and poor customer economics make
2 this scenario challenging on several fronts.

3 **Commercial Dual Fuel**

4 Hydro would support incentivizing projects that involved the installation of heat pumps at
5 commercial sites that maintained existing oil fired heating equipment as part of a demand
6 management strategy, if the project passed the modified total resource cost test that is
7 currently being proposed in the Electrification, Conservation and Demand Management Plan
8 2021–2025 (“2021 Plan”) for evaluation of electrification programs. In many cases, electricity
9 rates for commercial customers make electric heating lower cost than oil heating, even in a low
10 oil price scenario, which reduces the risk a customer would return to use of oil heating as a
11 primary heating source. Each potential project would have to be evaluated based on the details
12 of the site to ensure other risks associated with allowing a dual heating approach were
13 mitigated or eliminated. Within the 2021 Plan, the Custom Electrification Program will offer
14 incentives for commercial customers to replace fossil-fueled technologies with equivalent
15 electric technologies that are more efficient.⁴

16 **Scenario Data**

17 Please refer to Hydro’s response to TC-IC-NLH-013 for data regarding Figure 5-11 and Figure 5-
18 12.

⁴ “Application for Approvals Required to Execute Programming Identified in the Electrification, Conservation and Demand Management Plan 2021–2025,” Newfoundland and Labrador Hydro, rev. 1, July 8, 2021 (originally filed June 16, 2021), sch. 3, p. 17.