Q. With reference to Application, Schedule C, page 117 of 325:

Please provide a detailed assessment of the loads of supplemental DMSHPs and the energy and peak profile in relation to system load. In particular, if IIS system loads peak primarily in concert with low temperatures, at times when the heat pumps are least efficient and the COP (Coefficient of Performance) is low or approaching 1, why would there be "a greater proportional impact on demand due to the larger contribution of residential heating load to system-wide peak demand relative to its contribution to system-wide electricity consumption". Specifically, if the DMSHP is only slightly more efficient than resistance heating (COP of 1) at system peak times, how is this a material peak demand savings?

A. Newfoundland Power Inc. is currently completing a heat pump load research study which will permit a better understanding of the energy and demand impacts of heat pump technology during peak system conditions in the province. It should be noted that the statement from the Conservation Potential Study ("Study") that is referenced in the question "a greater proportional impact on demand due to the larger contribution of residential heating load to system-wide peak demand relative to its contribution to system-wide electricity consumption"[1] is made in the lower scenario, which does not involve any utility incentives for heat pumps. The Study shows that the residential sector is the largest component of the standard peak day for the Island Interconnected System,[2] and, of that, heating is the largest end-use contributing to the standard peak day.[3] The Study also noted "Since peak demand hours tend to occur when minimum outside temperatures are between -10°C and -15°C, heat pumps are assumed to have

[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. 117 of 325.
[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, sch. C, p. 255 of 325, fig. E-4.
[3] "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. 256 of 325, fig. E-5.

a coefficient of performance ("COP") of 1.75 during peak hours."[4] Where the residential sector is the largest contributor to system peak, and that the measure was modeled as ductless mini-split heat pumps ("DMSHP") operating at a higher efficiency than electric resistance heating during system peak, it is reasonable to expect that a scenario where "41,000 households (approximately 16% of all households) are expected to add DMSHPs to their baseboard heating systems between 2020 and 2034"[5] would result in a greater proportional impact on system demand.

[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, sch. C, p. 267 of 325.

[5] "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. 117 of 325.