Q. Reference: *2024 Resource Adequacy Plan*; Technical Conference #2: Issue #4: Resource Supply Options, October 2, 2024, Slide 9.

> CDM as a supply option would not be effective during a prolonged Labrador-Island Link outage in winter.

Please elaborate on the above statement and explain why CDM initiatives would not be effective during a prolonged Labrador-Island Link outage. In the response, please consider specific CDM initiatives including direct load control, dynamic rate structures, insulation, energy efficient lighting, and other forms of CDM.

A. Newfoundland and Labrador Hydro ("Hydro") is fully supportive of cost-effective Conservation and Demand Management ("CDM") as a means to operate the electrical system more efficiently and provide benefits to customers. However, Hydro does not consider such programming to be an appropriate reliability measure in the context of a prolonged system outage.

For the purpose of this response, CDM programming will be discussed in the context of its primary system benefit, either capacity or energy.[1]

Demand Response Programming (Capacity)[2]

Under the Slow Decarbonization Case with no generation expansion resources,[3] a six-week Labrador-Island Link ("LIL") bipole outage would result in an estimated capacity shortfall of 494 MW. The joint 2019 CDM Potential Study undertaken by Newfoundland Power Inc. ("Newfoundland Power") and Hydro indicated that the upper achievable potential for demand

[1] In some cases, CDM programming can provide both capacity and energy benefits. For example, home insulation would provide an annual energy savings while also reducing heating requirements on peak, thereby providing capacity savings as well. For the purpose of this response, Hydro will focus on the primary benefit associated the referenced CDM program.
[2] Such programming is different from emergency customer requests made by utilities to aid in demand management in response to a particular system event or risk.
[3] *Combination 1* using the Average Case. Please refer to "2024 Resource Adequacy Plan – An Update to the Reliability and Resource Adequacy Study," Newfoundland and Labrador Hydro, rev. August 26, 2024 (originally filed July 9, 2024), app. C, sec. 7.2.1.

response on the Island Interconnected System was approximately 150 MW by 2034.[4] At a system level, the capacity requirements in an emergency situation exceed the achievable demand response potential on the Island Interconnected System.

At a customer level, demand response programming seeks to alter short-term customer behavior by shifting electricity consumption into off-peak hours. Doing so provides a capacity benefit to the system through lower electricity demand during the system peak. CDM programs such as direct load control of electric vehicles and dynamic rate structures are examples of demand response programming. Hydro's load forecast already assumes that 50% of light-duty vehicles are charging in off-peak hours.

In the case of dynamic rate structures, customers are given an incentive to undertake short-term shifts in behavior to lower their electricity consumption. One example is Hydro-Québec, which has established Rate Flex D, incentivizing customers to decrease their usage during peak demand events from December 1–March 31 when the price of electricity is higher. Alternatively, Hydro-Québec has also offered a direct load control program—Hilo—where customers can avail of financial incentives by reducing usage during peak events through control of devices utilizing smart technology. The Rate Flex D program identifies a maximum of 100 hours over 25 to 33 peak demand events,[5] while the Hilo program identifies seven hours as the maximum duration of peak demand events, and no more than 30 events per winter season.[6] Adopting similar programming on the Island Interconnected System would only provide for two weeks of peak demand events in an emergency shortfall situation[7] and would be insufficient to address a six-week generation shortfall situation.

Cost-effective demand response programming will continue to be a priority for Hydro,[8] as a means to provide a capacity benefit to the system through lower electricity demand during

[4] Reflecting Hydro's existing capacity assistance agreements with Island Industrial Customers.
[5] "How does Rate Flex D work?," Hydro- Québec, https://www.hydroquebec.com/residential/customer-space/rates/rate-flex-d.html.
[6] "How many challenges are planned every winter?," Hilo by Hydro-Québec, https://www.hiloenergie.com/en-ca/help-center/hilo-challenges/how-it-works/how-many-challenges-are-planned-every-winter/.
[7] Assuming two events per day in response to morning and evening peaks.
[8] Hydro and Newfoundland Power are undertaking an updated joint CDM Potential Study which will help inform future demand response programming on the Island Interconnected System.

system peak; however, Hydro does not consider it to be an effective solution in the event of a prolonged LIL outage due to the short duration of demand response programming.

Energy Efficiency Programming

Under the Slow Decarbonization Case with no generation expansion resources,[9] a six-week LIL bipole outage would result in estimated unserved energy in the amount of 109 GWh. The joint 2019 CDM Potential Study indicated that the upper achievable potential for energy efficiency on the Island Interconnected System was approximately 550 GWh by 2034.

At a system level, there is sufficient energy savings potential to address the energy shortfall in a prolonged LIL outage situation. However, without the required capacity to serve customers during peak hours, this represents an incomplete solution.

Hydro will continue to prioritize cost-effective energy efficiency programming as a means to optimize its system and meet the Reference Case. However, it is not a complete solution to customer reliability concerns in the event of a prolonged LIL outage.

[9] *Supra,* f.n. 3.