

**Q. (Response to CA-NP-15) The response indicates that Newfoundland Power believes that the 100 MW combustion turbine will not fully address the increased near term vulnerabilities on the Island, and goes on to say what it believes needs to be done. The response to CA-NP-4 indicates that with the exception of 2013 (and possibly 2014), Hydro's reliability performance has been considerably better than that of Newfoundland Power. Why has Newfoundland Power's reliability performance been poorer than Hydro's and what is Newfoundland Power proposing to address the near term vulnerabilities on its own system?**

**A. A. Introductory**

Newfoundland Power's reliability performance has not been poorer than Newfoundland and Labrador Hydro's ("Hydro") as this question assumes.

The statistics provided in the response to Request for Information CA-NP-004 detail Newfoundland Power's distribution and transmission system<sup>1</sup> (together, "Newfoundland Power's distribution system") performance and Hydro's bulk electrical system performance.

It is accepted that distribution systems typically make the largest contribution to outages experienced by customers.<sup>2</sup> This is principally due to the level of automation and backup associated with the bulk system and the fact that distribution systems are comprised of substantially more and varied components. Because of these essential attributes of electrical systems, the comparison drawn in this question is inappropriate.

What follows is an assessment of Hydro's bulk system reliability performance and Newfoundland Power's distribution system performance. This assessment indicates significant degradation in Hydro's bulk system reliability performance over the past 2 years. It also indicates continual improvement in Newfoundland Power's distribution system performance.

<sup>1</sup> This includes sub-transmission lines, distribution substations, primary feeders, distribution transformers, secondary and customers' services.

<sup>2</sup> See, for example, *Reliability Evaluation of Power Systems* (2<sup>nd</sup> Ed.), Billinton and Allan, Plenum Press, NY, 1996, where it is indicated that "...analysis of the customer failure statistics of most utilities shows that distribution system makes the greatest individual contribution to the unavailability of supply to a customer." (page 220).

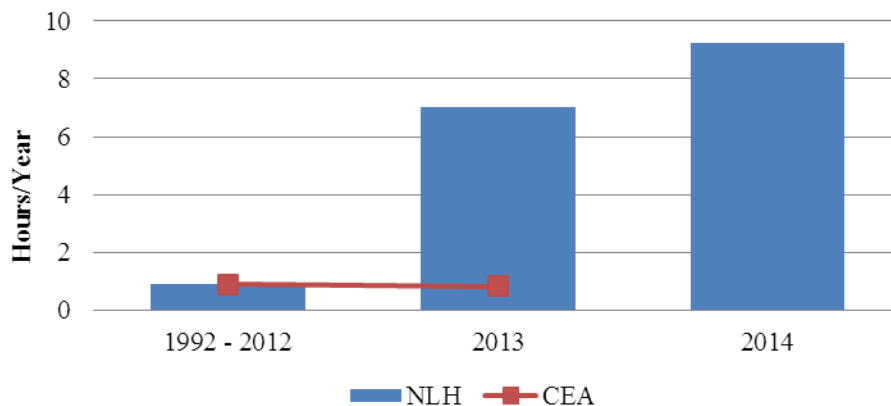
**B. The Bulk System**

The Canadian Electricity Association (“CEA”) reports that, in Canada, bulk systems annually contribute approximately 15% of the total duration of outages seen by customers of utilities.

Between 1992 and 2012, the bulk electrical system similarly contributed approximately 15% of the outage duration experienced by Newfoundland Power’s customers. Since 2012, however, the contribution of bulk system failure to customer outages has increased dramatically.

Figure 1 shows the system average interruption duration index (“SAIDI”)<sup>3</sup> associated with Hydro’s bulk system for the periods (i) 1992-2012, (ii) 2013, and (iii) 2014 to date. In addition, Figure 1 shows the comparative CEA data for (i) 1992-2012, and (ii) 2013.

**Figure 1**  
**SAIDI: Hydro Bulk System**  
**1992 to 2014**



For the 20 years ending in 2012, Hydro’s reliability performance was consistent with bulk system operations in the rest of Canada. However, over the past 2 years, Hydro’s reliability performance has significantly degraded. It now contributes to overall customer outages on the Island Interconnected System at a rate many times the CEA average.

<sup>3</sup> SAIDI is the average interruption duration in hours per year per customer. It is calculated by dividing the number of customer-outage-hours (e.g., a two hour outage affecting 50 customers equals 100 customer-outage hours) by the total number of customers.

Hydro's deteriorating reliability performance has had a very significant impact on Newfoundland Power's customers. Hydro's contribution to the outages seen by Newfoundland Power's customers has grown by approximately 10 since 2012.

### C. The Distribution System

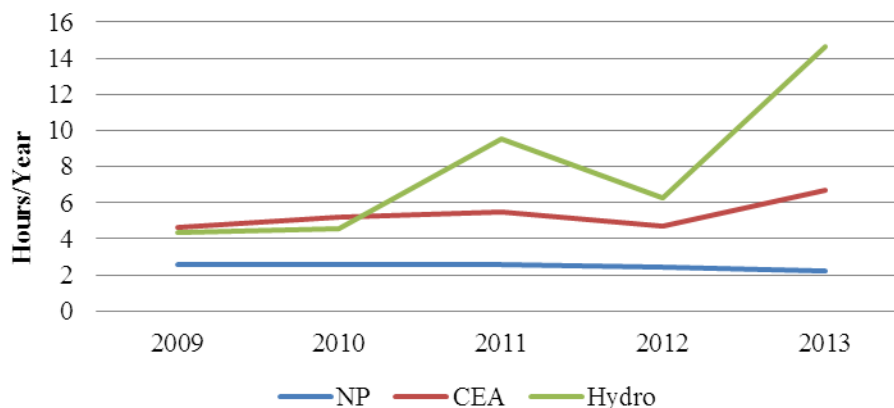
Newfoundland Power's distribution system performance can be compared to the average CEA performance and Hydro distribution system performance.<sup>4</sup>

Newfoundland Power's distribution system performance has been improving. In the 1990s, Newfoundland Power's SAIDI was approximately 50% above average CEA performance. In each of the past 5 years, Newfoundland Power's distribution system SAIDI is significantly less than the average CEA performance.

Hydro's distribution system reliability performance has gone from approximately the CEA average in 2009 and 2010 to more than the CEA average in each of 2011, 2012 and 2013.

Figure 2 shows 2009-2013 distribution system SAIDI for each of (i) Newfoundland Power, (ii) CEA, and (iii) Hydro.

**Figure 2**  
**SAIDI: Distribution Systems**  
**2009 to 2013**



<sup>4</sup> This comparison of relative distribution system reliability performance excludes significant events and loss of supply in accordance with CEA definitions. Similar comparisons are made in the response to Request for Information PUB-NP-308.

1 Newfoundland Power's distribution reliability performance is better than either  
2 Hydro's or the average of utilities reporting to CEA.

3  
4 Newfoundland Power has not undertaken any assessment of Hydro's distribution  
5 system reliability performance. However, Hydro distribution systems tend to  
6 serve more remote rural areas with lower customer concentrations. These factors  
7 tend to adversely affect distribution system performance.

8  
9 Newfoundland Power's approach to reliability as detailed in the response to  
10 Request for Information PUB-NP-080 has proven to be an effective means of  
11 dealing with both short-term and long-term vulnerabilities on Newfoundland  
12 Power's system. Given this, Newfoundland Power has no plans to change its  
13 approach to ensuring reliability performance.