

- 1 Q. What is the load shape for Happy Valley-Goose Bay, prior to the existing data centre
2 contracts? More specifically:
- 3 a. Please provide a load distribution curve for Labrador East for the most recent
4 years available, showing the number of hours for which each level of capacity is
5 required.
- 6 b. Please indicate the number of hours for each of the last five years for which
7 Labrador East loads exceeded:
- 8 i. 70 MW,
9 ii. 69 MW,
10 iii. 68 MW,
11 iv. 67 MW,
12 v. 66 MW and
13 vi. 65 MW.
- 14 c. Please describe the typical duration of a peak event in Labrador East.
- 15 d. Please provide in Excel format the hourly loads in Labrador East for the last
16 three years for which data are available.
- 17
18
- 19 A.
- 20 a. Figures 1 through 5 show the load distribution curve for L1302 serving the
21 Labrador East system¹. This plot is generated using the available metering
22 records on L1302 and the Happy Valley Gas Turbine. Additional generation from

¹ Times with zero load indicate outages (planned or unplanned), or SCADA data drop-outs when data is not available. There was insufficient time to source other data, adjust for losses, and incorporate in the dataset, such as data recorded at Churchill Falls for L1301. Additional data to fill in the gaps would not change the information provided regarding actual Labrador East annual peak loads or forecasted peak loads.

1 the North Plant² diesel generators has not been included due to the lack of
2 electronic records. Inclusion of this data requires manually processing of
3 available information, which is a labour intensive task, and has not been
4 included given the limited time frame, and the fact that the provided data
5 shows the general distribution of a winter peaking load. It should be noted that
6 any information provided regarding actual Labrador East annual peak loads or
7 forecasted peak loads includes the applicable North Plant diesel generation
8 information.

9
10 The plot in Figure 6 is a load duration curve for the most recent time period
11 serving Labrador East based on load data from February 1, 2017 to February 1,
12 2018. A load duration curve indicates the percentage of time in which system
13 demand is greater than a particular value. For example; In the case of the
14 Labrador East system, Figure 6 shows that it is expected that the load will be
15 greater than 40MW for approximately 30 percent of the time. As stated before,
16 this curve does not include the highest loads in the dataset that would have
17 been augmented by diesel generation at the North Plant, given that planning
18 requirements necessitate planning for the forecasted peak load, regardless of
19 the duration of the load. The peak load forecasting process incorporated North
20 Plant diesel generation data, as applicable. The chart would be slightly different
21 if North Plant diesel generation was included. The annual peak load for the
22 winters of 2000/2001 through to 2017/2018 are provided in the response to
23 question 2, Table 1 in “Attachment 1 – Responses to PUB Questions” submitted
24 by Hydro on March 6, 2018. These annual peak loads provided in the noted

² Due to age and condition, the North Side Plant is not part of the long-term plan for the Happy Valley – Goose Bay electrical system, and was used to add additional generation capacity during time of heavy loading requirements on the transmission system.

2018 Capital Budget Application – Revised Information pursuant to Order P.U. 43(2017) –
Muskrat Falls to Happy Valley Interconnection Project

- 1 Attachment 1 (submitted by Hydro on March 6, 2018) have been processed to
- 2 include the North Plant diesel generation, as required, and are representative of
- 3 the true peaks.

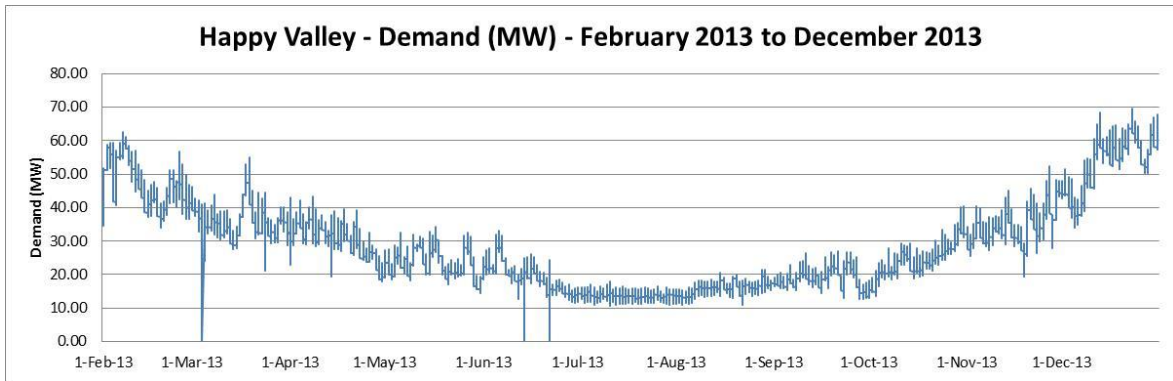


Figure 1: Load Distribution Curve – February 2013 to December 2013

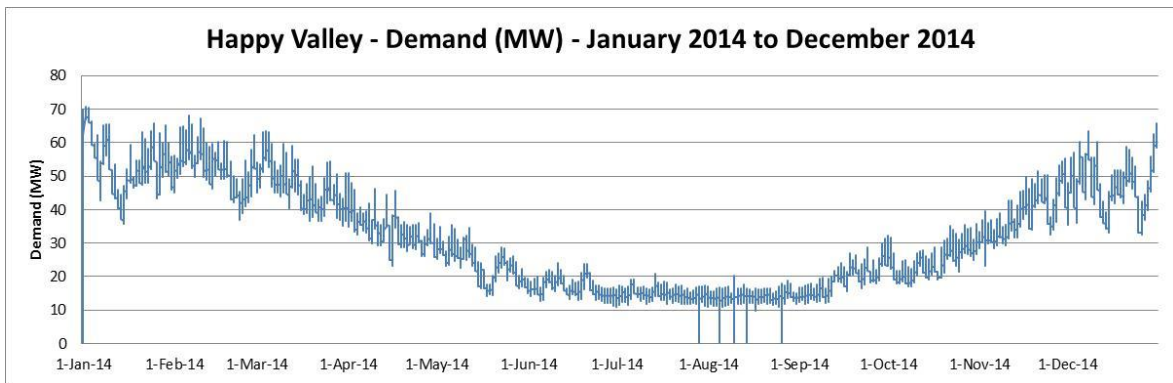


Figure 2: Load Distribution Curve – December 2014 to December 2014

2018 Capital Budget Application – Revised Information pursuant to Order P.U. 43(2017) –
Muskrat Falls to Happy Valley Interconnection Project

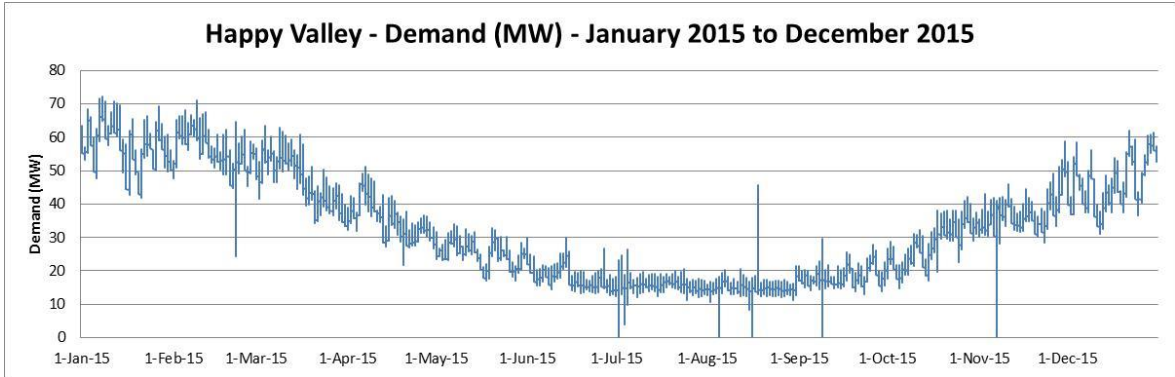


Figure 3: Load Distribution Curve – December 2015 to December 2015

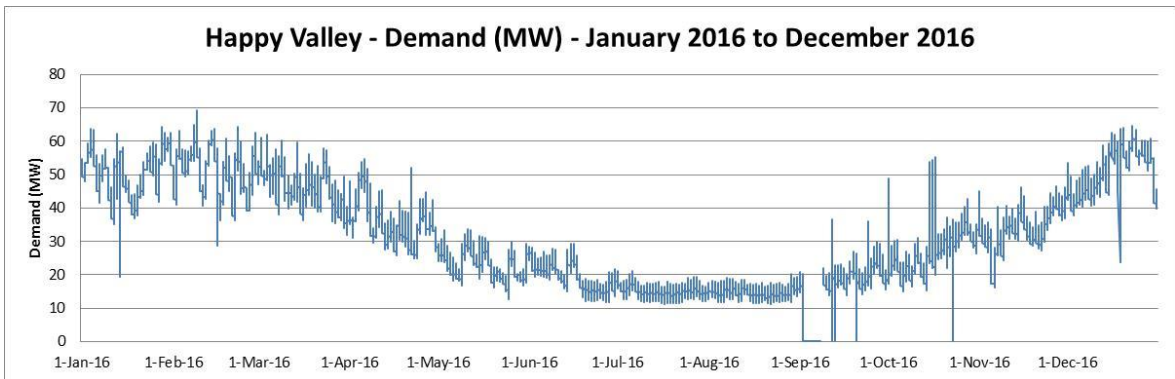


Figure 4: Load Distribution Curve – December 2016 to December 2016

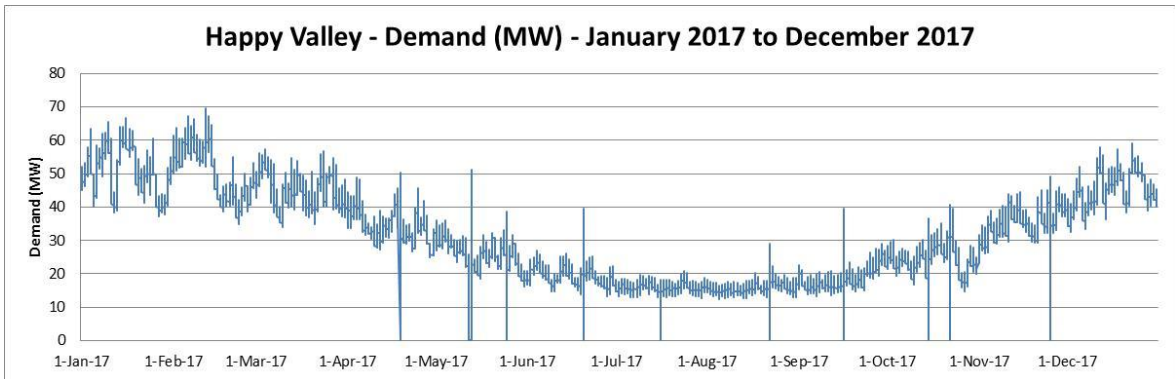


Figure 5: Load Distribution Curve – December 2017 to December 2017

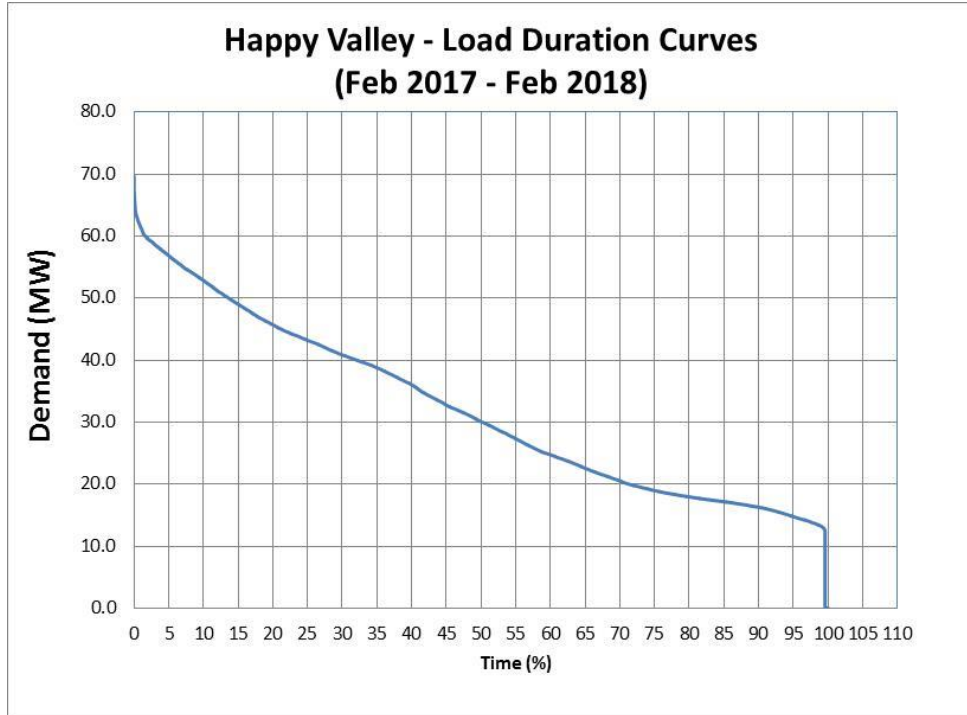


Figure 6: Load Duration Curve

- 1 b. Table 1 provides a summary of the number of hours the Labrador East load exceeded
- 2 the specified demand levels requested for the past five years. As noted above, this data
- 3 does not capture the entirety of the peak load for the area given that the North Plant
- 4 diesel generation has not been processed and included in the load cases. Peak loads
- 5 and duration can be up to 5 MW higher when the North Plant diesel generation was
- 6 required. Peak loads were provided in Attachment 1 (submitted by Hydro on March 6,
- 7 2018) noted previously.

Table 1: Time Exceeding Specific Demand Levels

Load Level (MW)	Hours				
	2013	2014	2015	2016	2017
>70MW	0	2.75	10.75	0	0.25
>69MW	0.25	20.75	21.25	0.25	0.5
>68MW	3.25	43.25	39.25	1	0.5
>67MW	7.75	58.5	64	1.5	1.5
>66MW	17.75	66	93	2.25	5.75
>65MW	32.5	87.5	143	3	9.5

- 1 c. The typical peak event for the Labrador East system occurs on a weekday morning
2 during the coldest winter conditions between 8:00am and 11:00am. The actual
3 moment a transmission system is exposed to peak demand will occur at an instant in
4 time. It is common industry practice for a utility to ensure its transmission systems can
5 support the maximum forecast peak demand, regardless of its duration.
6
- 7 d. Please see attached excel spreadsheet ("**L1302 Load (Feb 2013 to Feb 2018).xls**") for
8 hourly load data (MW) on L1302 to serve the Labrador East system over the past five
9 years (Feb 2013 to Feb 2018). Data is recorded in 15 minute intervals. As noted
10 previously, this data does not include North Plant diesel generation.