TOPIC: System Capacity

REFERENCE:

Application, Attachment C-1

PREAMBLE:

YEC states:

The new IS, including committed projects noted above, will comprise approximately 132 MW of installed generation prior to the addition of Mayo B (approximately 82 MW YEC hydro, 1 MW YEC wind, 42 MW YEC diesel, 1MW YECL hydro, and 6 MW of YECL diesel).

QUESTION:

a) Please provide the capacity contribution in MW of each generating unit on the system at the winter peak under the current two grid system and for the system when integrated. For Hydro Units, please show the contribution at low, median and high water levels. Please include the capacity of diesel units that will be displaced by Mayo B but will not run at the system peak. How much of each unit's capacity can be dispatched?

b) Please provide the industrial, commercial and residential load at the winter peak. How much of this load is firm and how much is interruptible, i.e. what load can be shed to shave the peak?

c) Please describe YEC's current system control center. Is any additional investment and labour required in YEC's system control center in order to operate an integrated grid? If so, have these additional costs been incorporated in the $120 million cost of the Project?

ANSWER:

(a)

The capacity contribution of each unit does not change when the two systems are integrated. The winter capacity of the units (in MW) is as follows:

- Whitehorse Hydro (4 units) – combined firm capacity of 24 MW (at low winter flows – summer nameplate is 40 MW).
- Aishihik Hydro (3 units, once AH3 is commissioned) – combined firm capacity of 37 MW under LOLE analysis, but no contribution to firm load carrying capability under N-1 due to transmission constraints.
- Mayo Hydro A (2 units) – 5 MW.
- Whitehorse Diesel (7 units) – 25 MW. Two of these units (Mirrlees at 4 MW and 5 MW respectively) require recommissioning in the next few years to ensure their continued ability to be considered firm capacity.
- Faro Diesel (4 units) – 10 MW.
- Mayo Diesel (2 units) – 2 MW.
- Dawson Diesel (4 units) – 4 MW.
- YECL Diesel – 6 MW (4 WAF diesel backup units, plus 3 units at Pelly Crossing and 3 units at Stewart Crossing). One unit (Haines Junction) has no contribution to firm load carrying capability under N-1 due to Aishihik transmission line constraint.

To this complement Mayo B will be added at approximately 10 MW.

(b)

Firm load at peak without industrials is provided in response to YUB-YEC-11, and peak loads including industrials are provided in YUB-YEC-1-12. These loads include only firm loads and not interruptible or secondary loads.

YEC cannot readily provide peak loads by class, as its forecasts are prepared based on wholesales to YECL. YEC does not directly serve most retail customers in Yukon.

The coincident peak load of secondary customers is estimated at 4-5 MW, but is not directly metered as a class.

(c)

The Mayo B project does not involve creation of an integrated grid, i.e., CSTP Stage 2 is a separate project in this regard, and not the subject of the Application. To the extent there are costs related to that interconnection, they are part of the CSTP Stage 2 project. The system control center presently has visibility and control over generation at Mayo, and this will remain the case with Mayo B. Costs to implement this control and SCADA connection for Mayo B at the site are part of the project costs.