MANITOBA HYDRO
Major New Facilities Application

PTC RESPONSES TO MIPUG INFORMATION REQUESTS

July 9, 2026

The abbreviations/acronyms appearing in these responses are identified in the PTC report dated June 10, 2026.

MIPUG/PTC I-1

Part and Chapter:	Section 7.1.2 Operational States Driving Brandon Generation	**Page #:**	PDF p. 26
Topic:	Brandon Generation Operational Role		
Subtopic:	Winter Capacity and Wind Firming		

Preamble (if any):

Under the operational state "Capacity During Winter Cold Snaps," PTC notes that Brandon will act as "dispatchable generation to meet peak demand requirements during extreme cold winter conditions." PTC also states that "At such times, wind can be low, necessitating more reliance on gas-powered generation."

Under the operational state "Back Stop Variable Wind Generation," PTC states that "Brandon is anticipated to provide firming capacity to enable wind generation."

Question:

Please explain how Power Team Consulting would determine the appropriate level of new firm dispatchable capacity to backstop 600 MW of new variable wind generation.

Rationale for Question:

Evaluate whether the proposed generation resources are appropriately sized and justified.

Response:

This is a good question, but the evaluation of the existing generation and load profile and how the proposed resources play into the Manitoba grid is outside of the scope assigned to PTC. In the PTC report, section 7.1.2, the summary of anticipated operational scenarios for the Brandon generating station is taken from Manitoba Hydro reports and not PTC analysis.

To evaluate the appropriate level of new firm dispatchable capacity to backstop 600 MW of new variable wind generation would require load forecasts with daily and annual profiles, information on wind resources and therefore modelling and forecasting of the wind generation, historical data and forecasts on all existing generation in Manitoba and any constraints that may arise due to line loading, in particular during weather and seasonal extremes and contingency events. Such analysis is not our area of expertise and wasn't part of our assessment for the MNF application, beyond the strategic comments made.

MIPUG/PTC I-2

Part and Chapter:	Section 7.1.2 Operational States Driving Brandon Generation	**Page #:**	PDF p. 26
Topic:	Firm Capacity Requirements to Support Wind Integration		
Subtopic:	Backstopping and System Reliability		

Preamble (if any):

Under the operational state “Back Stop Variable Wind Generation,” PTC states that “Brandon is anticipated to provide firming capacity to enable wind generation".

Question:

a) Please provide an explanation with an estimate for the portion of new 750 MW in firm, dispatchable CT capacity that will be required to backstop the installation of 600 MW in new variable wind generation providing 120 MW in new accredited capacity resources.

b) Please explain how the installation of 750 MW in new firm, dispatchable generation will enhance the capacity for domestic Manitoba load to consume the annual energy output from 600 MW in new variable wind generation.

c) Please explain whether the installation of 750 MW in new firm dispatchable generation will reduce the amount of wind energy that is surplus to Manitoba’s domestic energy needs in a normal water year.

Rationale for Question:

Evaluate the justification of the 750 MW combustion turbines in enabling wind generation.

Response:

a.) See PTC response to the question above. Such analysis requires reviewing historical and forecast generation and load profile data which is outside of the scope of the PTC review.

b.) Unless there is an interruptible load profile being served, intermittent generation capacity needs to be complemented by dispatchable generation or storage. To the extent that Manitoba load requirements rely upon the new 600 MW of new wind generation, this would require back up from the new gas fired generation at those times when existing generation cannot meet the shortfall. When serving a firm load, you cannot build intermittent generation without backing it up with dispatchable generation or storage. Analysing this more precisely requires looking at the provincial grid generation mix, characteristics, hydro reserves, existing dispatchable generation, renewables and

interconnections outside of the province and reconciling this resource with forecast load profiles and contingency events. The detailed analysis of this is outside of the PTC scope.

c.) This question requires specific analysis that is outside of the PTC scope.

MIPUG/PTC I-3

Part and Chapter:	Section 9.1 CAPEX Basis for Estimate; Section 7.2 Operating Plan – Table 5; MNF Attachment 1.2 - Updated Supply Demand Tables, Figure 1 & Figure 3	**Page #:**	PDF p. 28 & 33
Topic:	Operating Plan and Generation Equipment Capability		
Subtopic:	Capacity Factor and Dependable Energy Supplies		

Preamble (if any):

PTC notes that the operational requirements for the proposed Brandon generating station are strictly for "Peak load and drought support," with system requirements of "less than 1% capacity factor on average over all flow conditions and up to 20% capacity factor for the worst drought on record."

In Table 5, PTC indicates maximum operating hours of 2,200 hours per year.

Manitoba Hydro's Dependable Energy Supply & Demand Tables (Volume 2, Attachment 2.1) identify "Total New Thermal" as providing 5,367 GWh of dependable energy by 2034/35. For a 744 MW facility to deliver 5,367 GWh annually, the units would need to operate at an approximate annual capacity factor of 82.4%.

Question:

a) Given PTC's assumption in Table 5 of a maximum of 2,200 operating hours per year for the proposed combustion turbines, please explain whether - and if so, how - this assumption supports Manitoba Hydro's estimate that new thermal generation could provide 5,367 GWh per year of dependable energy.

b) Given Power Team Consulting's characterization of the proposed 750 MW (744 MW) of new firm, dispatchable capacity as a peaking and reliability resource, please indicate whether PTC assessed whether the proposed combustion turbine configuration could reasonably deliver 5,367 GWh of dependable energy at an estimated annual capacity factor of approximately 82%, as reflected in the Dependable Energy Supply & Demand Tables (Attachment 2.1).

Rationale for Question:

Evaluating possible differences between PTC's peaking utilization assumptions and Manitoba Hydro's baseload-level energy projections.

Response:

a.) PTC received the generation capacity factor forecast and maximum operating hours forecast from Manitoba Hydro and were not involved in the analysis that generated

those numbers. Our key interest in the forecasts relates to items such as the power station operating and maintenance regime, OPEX costs, diesel fuel storage capacity, starting / ramping capability and cold weather protection when not operating.

We understand the basis of your question and must default to Manitoba Hydro to respond, or other IEC's who supported the generation and load forecast analysis.

b.) If the planned 744 MW power station is required to deliver 5367 GWh of generation by 2034 / 2035, it will be very capable of doing so and these type of generating units are often used for base load power stations. PTC predicts a forced outage rate of about 2.5% for these open cycle units. Adding in a planned outage rate of less than 5% on average for each unit should easily provide an annual generation capability in excess of 6000 GWh.

If the capacity factor is this high, PTC recommends that MH consider proceeding with the combined cycle conversion, which would increase efficiency in excess of 60%.