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July 7, 2022

British Columbia Utilities Commission
Suite 410, 900 Howe Street
Vancouver, B.C.
V6Z 2N3

Attention: Mr. Patrick Wruck, Commission Secretary

Dear Mr. Wruck:

Re: FortisBC Inc. (FBC)

2021 Long-Term Electric Resource Plan (LTERP) and Long-Term Demand-Side Management Plan (LT DSM Plan) (Application) – Project No. 1599244

Response to the British Columbia Utilities Commission (BCUC) Panel Information Request (IR) No. 1

On August 4, 2021, FBC filed the Application referenced above. In accordance with the regulatory timetable established in BCUC Order G-130-22 for the review of the Application, FBC respectfully submits the attached response to BCUC Panel IR No. 1.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC INC.

Original signed:

Diane Roy

Attachments

cc (email only): Registered Parties

1.0 Reference: EXISTING SUPPLY SIDE RESOURCES

Exhibit B-11, BCUC IR 50.1

Long-term Water Availability

In response to British Columbia Utilities Commission (BCUC) information request (IR) 50.1, FortisBC Inc. (FBC) stated:

> FBC monitors developments with respect to long-term water availability by reviewing industry studies and reports, attending industry events and seminars, working closely with other utilities such as BC Hydro, and by keeping apprised of new information and studies as they become available.

1.1 Please discuss whether FBC considers there would be value in a generic review of the risk posed to BC's hydro-electric generation resources by changes in long-term water availability. Please explain why or why not.

<u>Response:</u>

A generic review of risk to BC's hydroelectric generation resources by changes in long-term water availability would help identify/quantify potential impacts to FBC's entitlements under the Canal Plant Agreement (CPA) and FBC's energy supply portfolio. However, if FBC or the BCUC were to engage in a generic review of this risk, it would have to be in cooperation with BC Hydro due to mutual interests under the CPA as well as the overall complexity of such an analysis.

2.0 Reference: TRANSMISSION AND DISTRIBUTION

Exhibit B-11, IR 51.4, 52.4

Peak Forecasting and Climate Change Planning

In response to BCUC IR 51.4, FBC stated:

> FBC is currently in the initial development of the FBC Annual Review for 2023 Rates and will determine whether the June 2021 heat event should be included in its system peak forecast by May 2022. FBC will make this determination by consulting with internal and external subject matter experts and analysis of the 2021 June event.

2.1 Please discuss whether FBC has determined whether the June 2021 heat event will be included in its system peak forecast.

Response:

FBC has determined that the June 2021 heat event will be included in the system peak forecast.

2.1.1 If yes, please explain, with rationale, what FBC has determined. Please clarify whether this is applicable to FBC's system peak forecast, 1-in-20 forecast, both, or clarify otherwise.

Response:

FBC has included the 2021 June heat event in the forecast since the FBC transmission and distribution system needs to be designed to be reliable even during extreme weather conditions. The June 2021 heat event produced a system summer peak demand of 764 MW while the December 2021 system winter peak demand was 777 MW, both of which were record breaking for FBC. With the uncertainty regarding weather impacts due to climate change and the potential for increased electrification in the future, it is possible that these system peak demand levels could reoccur and possibly more frequently; therefore, the system needs to be reliable enough to handle such events. Not including the June 2021 heat event increases the potential that the system may have insufficient resources or infrastructure to handle such an event in the future when taking into consideration future load growth. The June 2021 heat event will be included in all system peak forecasts, including the 1-in-20 forecast.

2.1.2 If not, please provide an update as to when FBC expects it will determine whether the June 2021 heat event should be included in its peak forecast(s) or not.

Response:

Please refer to the response to BCUC Panel IR1 2.1.1.

In response to BCUC IR 52.4, FBC identified timelines for completion for climate change related planning documents as follows:

(i) FBC's roadmap on climate change adaptation is under development and FBC expects that it will be completed in Q4 2022;

(ii) The alternative material pole type pilot program was completed for the Creston wetlands areas in November 2021;

(iii) FBC's business case relating to wildfire mitigation and adaptation strategies will be completed in Q2 2022;

(iv) The flooding business case will be completed in 2023/2024, followed by the extreme weather business case in 2025 to 2027.

2.2 Please discuss whether FBC considers it feasible to complete the extreme weather business case sooner than the 2025 to 2027 timeframe. If yes, please discuss feasible earlier timeframes. If not, please explain why not.

Response:

FBC does not consider it feasible to complete the extreme weather business case sooner than the 2025 to 2027 timeframe due to the uncertainty related to what the findings of the extreme weather study will be, which will inform the business case. FBC has identified the following high-level steps that are needed to complete the study and then develop the business case:

- Identify potential extreme weather events (e.g., heat domes, extreme windstorms, extreme snowstorms, etc.) and their impacts and risks to the FBC system;
- Evaluate any potential changes or impacts to design standards, design criteria, material specifications, planning criteria, work procedures, etc.;
- Define options for system hardening to mitigate the extreme weather risks;
- Identify potential projects and develop scopes of work and cost estimates; and
- Complete stakeholder consultation and internal business approvals.

As stated in the response to BCUC IR2 52.4, FBC expects the business cases for wildfire and flooding to be completed in Q2 2022 and 2023/2024, respectively, as these have been prioritized as important risks to be mitigated for which supporting data is currently available. Based on the timelines for these business cases and the steps needed above, the business case for other extreme weather events is expected to be completed in the 2025 to 2027 timeframe.

2.3 Please explain why FBC expects the extreme weather business case to take approximately 3 years to complete (2025 to 2027).

Response:

Please refer to the response to BCUC Panel IR1 2.2.

3.0 Reference: PLANNING ENVIRONMENT

Exhibit B-1 (Application), pp. ES-14–ES-15, 14, 158-159; Exhibit B-2, BCUC IR 21.3 Exhibit B-4, BCOAPO IR 43.1; Exhibit B-11, BCUC IR 43.4.1, 51.4; Exhibit B-13, CEC

IR 78.1

LTERP Capacity Self-Sufficiency Criteria and Market Reliance

On pages ES-14 to ES-15 of FBC's 2021 Long-Term Electric Resource Plan (2021 LTERP) and Long-Term Demand Side Management Plan (LT DSM Plan) (Application), FBC states:

> Although FBC is currently comfortable with relying on market purchases for some of its energy needs, relying on market purchases for capacity over the long term can be risky in terms of availability. There is no guarantee that FBC will be able to access market capacity supply reliably and cost effectively. <u>The month of June, however, is the exception to FBC requiring capacity self sufficiency for LTERP planning purposes</u>. Due to the availability of freshet power during the month of June and FBC's market import capacity, FBC expects that the June gaps (after DSM) up to the level of 75 MW could be met with market block purchases, contracted prior to the start of each June, rather than acquiring new resources, up until 2030. FBC cannot rely on abundant freshet market capacity for meeting winter and summer LRB [Load-Resource Balance] gaps as it is not available during those periods. After 2030, FBC is assuming capacity self-sufficiency given the risks with long-term reliance on market capacity. [Emphasis added]

In response to Commercial Energy Consumers Association of BC (CEC) IR 78.1, FBC stated:

> As a result of the heat dome event in June 2021, FBC changed the LTERP capacity self-sufficiency criteria to be inclusive of June when new resources are required to meet expected seasonal peaks. Prior to the heat dome, June was exempt from this planning assumption. This is a material change to the LTERP planning criteria since June is FBC's most resource constrained month and adds NPV [Net Present Value] incremental costs to portfolio C3 of approximately $1.3 million.[7] In the short term, FBC will purchase up to 75 MW of fixed-price market blocks as discussed in the response to BCUC IR1 1.3. [Emphasis added]
>
> [7] Only Portfolio C3 was examined

3.1 Please explain whether the change referenced in FBC's response to CEC IR 78.1 is reflected in the Application, or whether this amounts to an update to the Application.

Response

The change referenced in the response to CEC IR2 78.1 is reflected in the original Application filing and does not represent an update to the Application. FBC's decision to meet June gaps (after DSM) with market block purchases up until 2030, and to be capacity self-sufficient for June after 2030, when resources are otherwise required to meet seasonal peaks, was made prior to FBC submitting the Application and is incorporated into the Application as filed.

3.1.1 If this amounts to an update to the Application, please provide an update to all necessary sections of the Application including, but not limited to, Section 11, FBC's Portfolio Analysis.

Response:

Please refer to the response to BCUC Panel IR1 3.1.

3.1.2 Please specify the LTERP capacity self-sufficiency criteria before and after the change referred to by FBC and the rationale for the change(s).

Response:

FBC's capacity self-sufficiency criteria after the material change referred to in the response to CEC IR1 78.1 are similar to past criteria, with the difference being how expected capacity shortfalls in June should be treated within the planning horizon. There is no change to how actual loads beyond the expected load forecast will be met.

Historically, FBC has planned its power supply with the understanding that during the freshet month of June, power would always be abundantly available in any hour and market prices would be reasonable given the amount of hydrogeneration in the Mid-C region. Correspondingly, FBC was historically comfortable planning to make real-time market purchases in June (freshet) hours when FBC did not have sufficient capacity to meet load.

As set out in the 2021 LTERP, FBC now plans to cover the expected June capacity shortfall through a firm market block up to 2030. This will reduce the risk of real-time power not being available in the spot market. After 2030, June is no longer the only month with capacity shortfalls and June gaps should be addressed at that time.

For additional discussion on rationale for the changes, please refer to the response to BCUC Panel IR1 3.4.

3.2 Please further explain why this change adds NPV incremental costs to portfolio C3 of approximately $1.3 million.

Response:

The NPV incremental cost of portfolio C3 is approximately $1.3 million due to the portfolio's requirement to purchase market blocks to meet the June capacity requirements instead of the portfolio allowing real-time market capacity purchases, up to the year 2030. In other words, there is a higher cost for purchasing market blocks than there is for purchasing real-time market capacity, on a planning basis. FBC believes this higher cost is reasonable due to the increased certainty that capacity will be available to meet customer demand in June.

3.2.1 Please clarify whether these incremental costs are reflected in the portfolio analysis provided in Section 11 of the Application for portfolio C3, such as the detail provided in Figure 11-3 of the Application and the analysis provided in Table 11-2 of the Application, etc.

Response:

These incremental costs are included in the portfolio analysis provided in Section 11 of the Application. The portfolio analysis consistently allowed June gaps (after DSM), up to the level of 75 MW, to be met with forward market block purchases, but not real-time market purchases, up until 2030.

3.3 Please explain why only portfolio C3 was examined as opposed to also examining other preferred portfolios, such as B2 and C4.

3.3.1 Please explain whether FBC expects the NPV incremental costs to be similar for portfolios B2 and C4. Please explain why or why not.

Response:

FBC specifically examined portfolio C3 because it is the preferred portfolio. However, FBC expects the NPV incremental costs to be similar for portfolios B2 and C4, as FBC's resource gaps are the same among portfolios C3, B2, and C4, as all portfolios have the same existing resources and Reference Case load forecast assumptions. The differences in these portfolios are in the portfolio model constraints, which in part govern how new resources are selected and all resources are dispatched in combination. All of these portfolios have no capacity gaps prior to 2030, apart from June, and are subject to the same operating constraints. Therefore, portfolios C3, B2, and C4 all have the same annual dispatch and costs in the years 2021 to 2030 of the planning horizon.

In response to BCUC IR 51.4, FBC stated:

> FBC is currently in the initial development of the FBC Annual Review for 2023 Rates and will determine whether the June 2021 heat event should be included in its system peak forecast by May 2022. FBC will make this determination by consulting with internal and external subject matter experts and analysis of the 2021 June event.

In response to BCUC IR 21.3, FBC stated:

> FBC is currently assessing data from the June 2021 peak demand event to determine if it is appropriate to include the June 2021 peak demand in future 1 in 20 forecasts. The June 2021 peak demand was over 200 MW higher than any historical June peak demand and over 100 MW higher than any historical summer peak demand in the last 25 years. FBC is currently collaborating with other regional utilities with regards to the peak demand forecast related to extreme weather conditions, but additional time is required to determine how or if the June 2021 peak demand should be included in future forecasts.
>
> FBC assesses the timing of projects annually based on the updated 1 in 20 peak demand forecasts. As FBC is currently still assessing the June 2021 peak demand, it is too early to determine if this may impact the timing of any of the planned projects.

3.4 Please explain why FBC decided to change its LTERP capacity self-sufficiency criteria to be inclusive of June as a result of the June 2021 heat event, given FBC is still in the process of determining whether the June 2021 heat event should be included in its peak forecasting.

Response:

The heat dome event served as a trigger for FBC to reevaluate its supply-side policies. The heat dome demonstrated that market supply in June can be constrained in the Pacific Northwest, which

FBC previously considered to be a very remote possibility given the abundant amount of hydro generation in the region and the relationship of freshet to rising temperatures.

Further, the June 2021 heat event reinforced the capacity self-sufficiency policies that FBC already had in place, and fostered expansion of that policy to include the month of June at such time that new resources are otherwise being acquired to meet seasonal summer peaks. By procuring market blocks until 2030, rather than relying on the real-time market to address June resource gaps, FBC's supply risk is reduced. With contracted market blocks secured in advance, the seller has an obligation to deliver power, thereby shifting some risk from FBC to the seller. In the real-time market, there is a higher probability, under constrained conditions, that counterparties would have limited surplus supply available at that time and therefore be limited in their ability to enter into short-term transactions. FBC is still planning to rely on market access as a Planning Reserve Margin resource used to manage contingency events. Locking in June market blocks to meet planned load reduces the volume that FBC would need to source in a contingency situation.

3.4.1 If FBC determines not to include the June 2021 heat event in its peak forecasting, please discuss whether FBC may consider reverting back to excluding June from its self-sufficiency criteria. Please explain, with rationale, why or why not.

Response:

As discussed in the responses to BCUC Panel IR1 2.1 and 2.1.1, FBC has determined that the June 2021 heat event will be included in the system peak forecast. Had FBC determined not to include the June 2021 heat event into its peak forecast, this would not have changed FBC's plans to include June in its self-sufficiency criteria or otherwise change its shorter-term June purchase strategy. As described in Section 2.4 of the Application, FBC recognizes that the Pacific Northwest region is facing a period of upcoming resource adequacy concerns. By purchasing firm forward market blocks in June, FBC will be able to reduce supply risk and allow for a smooth transition to capacity self-sufficiency on a planning basis in the long term.

In response to BCUC IR 43.4.1, FBC stated:

> FBC recognizes that during the June 2021 event market supplies were very constrained and pricing was particularly high due to extreme temperatures. However, at this time, FBC has insufficient data to determine whether the June

weather event was anomalous or not, at stated in the response to MoveUp [Movement of United Professionals] IR1 2.1.4. FBC continues to expect market power to be available during June for the foreseeable future, especially if purchased in advance in the form of forward blocks. As stated in the response to BCUC IR2 43.1, if the region were to experience persistent supply shortages and/or increased load requirements during the month of June, and FBC were unable to procure the required power on an ongoing forward basis, FBC would reconsider its practice of relying on the market for June capacity through 2030.

3.5 Please provide further evidence, if any, that a continued reliance on the market to deliver FBC's dependable capacity in June until 2030 is reasonable should the June 2021 event prove not to be anomalous. If the latter proves to be the case, what, if any, alternatives are available to FBC to meet the supply shortages or to manage the increased load requirements.

Response:

FBC considers that its plan to acquire June capacity resources up to the expected (or average) capacity load forecast amount is reasonable and necessary in the event that the June 2021 heat dome proves not to be anomalous. However, in and of itself, this approach will not ensure supply if the June 2021 heat dome event should reoccur.

If the June 2021 heat dome event were to reoccur, the actual loads would far exceed FBC's expected capacity load forecast amount and, while FBC will make strong and continuous efforts to ensure supply, as was successfully accomplished in June 2021, there can be no certainty of success. Key to ensuring there would be sufficient capacity resources to meet customer demand at all times would be minimizing the amount of market power that must be purchased on short notice by securing supply up to a reasonable level in advance.

While continued reliance on the market to deliver dependable capacity in June until 2030 is not without risk, FBC's past operating experience during the freshet and long-term market price forecasts indicate that FBC will very likely be able to procure 75 MW of dependable capacity by way of forward market blocks in the month of June until 2030.

In the short term, should an extreme June heat event occur and, in the highly unlikely case no market power was available during freshet in the Mid-C region, FBC would likely default onto the BC Hydro system and FBC supply would tend to match whatever success BC Hydro had in meeting their loads. BC Hydro is expected to be one of the major regional market suppliers of June energy and capacity in the event of a future heat dome as they are expected to have significant capacity available at that time of the year. In addition, BC Hydro may have additional supply available as a reserve to meet BC needs that is not released for market sale. FBC can access both the BC Hydro power released to market through Powerex as well as the power reserved for BC needs through the Imbalance Agreement (but no planned use of this agreement is allowed). However, if BC Hydro is also short supply and cannot make any power available, the entire region would likely be experiencing an extreme capacity shortfall. In that case, FBC believes that it is likely that the required power would not be available and voluntary customer curtailments combined with rolling blackouts would most likely be required throughout the region to reduce load to match the available supply.

Longer-term alternative solutions available to FBC include accelerating new resource development in line with the LTERP contingency plans.

The use of market capacity in June up to 2030 (the time in the LTERP planning horizon when FBC is otherwise expecting to acquire new resources to meet projected summer seasonal peak demand) is a tradeoff between allowing a smoother change in long-term supply policies[1] in return for continuing to accept a small amount of risk no greater than what stakeholders have historically accepted.

In response to British Columbia Old Age Pensioners' Organization et al. (BCOAPO) IR 43.1, FBC stated:

> FBC is proposing to purchase capacity blocks[11] for June, entered into before the month begins. On an expected basis, June is a freshet month and FBC expects these blocks to be available for the foreseeable future due to the expected availability of water, even beyond 2030. However, in 2030, other months begin to require additional capacity resources and as FBC obtains additional resources to meet these requirements, it is reasonable and prudent to include a self-sufficiency capacity requirement in June as well. Please also refer to the response to BCUC IR1 1.3 for a discussion of the 75 MW level.
>
> [11] Most likely this will be a standard Heavy Load Hour monthly block.

3.6 If possible, please provide an estimate as to the number of hours per year where FBC's forecasted demand exceeds FBC's existing capacity resources for years 2021 through 2030. Please also specify the month(s) in which this occurs.

Response:

The table below provides the estimated number of hours per year, broken out by month, where FBC's forecasted peak demand, based on the LTERP Reference Case load forecast, exceeds FBC's existing capacity resources for the years 2021 through 2030. The estimates are based on data contained in the LTERP resource portfolio model and actuals were not used for 2021 or for 2022 year-to-date. Note that the Residual Capacity Agreement (RCA) expires in 2025, which

[1] FBC believes that market blocks are sufficient to meet the June capacity gaps. However, once gaps begin to occur in other months as well, it is reasonable that the capacity gaps in all months, including June, should be covered by the new resources.

increases available June capacity and, therefore, initially reduces the number of hours that demand is expected to exceed FBC's existing resources.

Estimated number of hours Demand exceeds existing supply (COUNT)													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	**Total**
2021	0	0	0	0	0	10	0	0	0	0	0	0	10
2022	0	0	0	0	0	11	0	0	0	0	0	0	11
2023	0	0	0	0	0	11	0	0	0	0	0	0	11
2024	0	0	0	0	0	10	0	0	0	0	0	0	10
2025	0	0	0	0	0	12	0	0	0	0	0	0	12
2026	0	0	0	0	0	1	0	0	0	0	0	0	1
2027	0	0	0	0	0	2	0	0	0	0	0	0	2
2028	0	0	0	0	0	12	0	0	0	0	0	0	12
2029	0	0	0	0	0	15	0	0	0	0	0	0	15
2030	0	0	0	0	0	21	2	0	0	0	0	0	23

4.0 Reference: PLANNING ENVIRONMENT

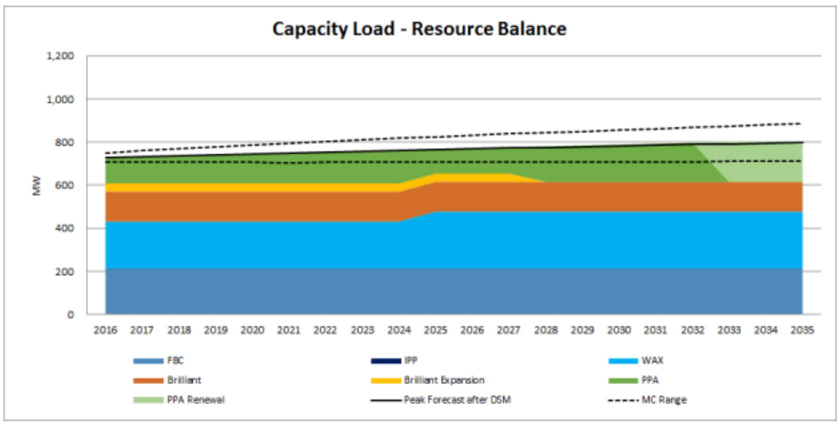
Exhibit B-1, pp. 14, 158-159; 2016 FBC LTERP Proceeding, Exhibit B-1, pp. 101-103

Capacity Load Resource Balance

On pages 101 to 103 of the 2016 LTERP, FBC stated the following in Section 8.1.2.2 Capacity Load-Resource Balance after DSM:

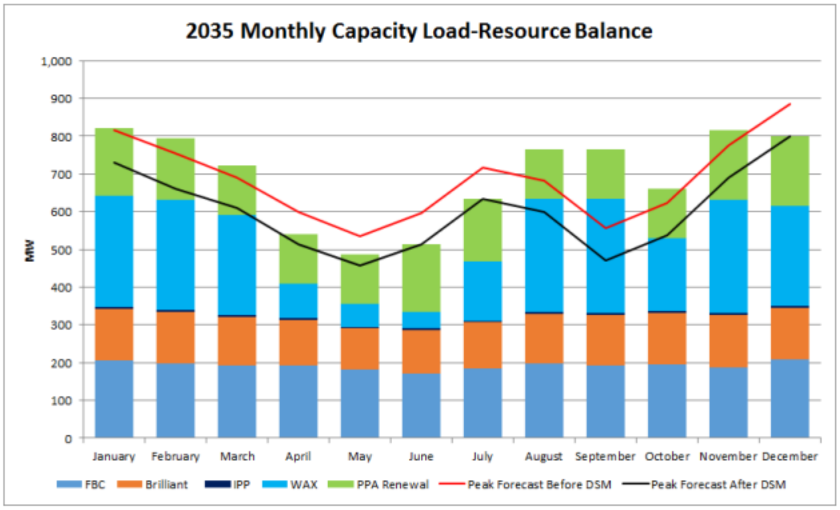
> The following figure shows the LRB for peak capacity during the winter after netting off the high level of DSM from the reference case forecast.

Figure 8-4: Capacity Load-Resource Balance after DSM



> The figure above shows that with the High scenario level of DSM offsetting about 56 percent of future peak load growth, there are no gaps that need to be filled if the PPA [Power Purchase Agreement] is renewed based on the reference load forecast peak after DSM. In fact, based on the peak load forecast after DSM, there would be surpluses of capacity for most years if the PPA is assumed to provide its full peak supply of 200 MW. However, the figure reflects the reduction in the PPA to match what is required to meet the peak demand forecast. If the PPA is not renewed, then gaps on the order of about 200 MW occur in the period from 2033 to 2035.
>
> …
>
> FBC also examines the LRB on a monthly basis to see if there are any capacity gaps in months other than for the winter peak period, such as during the summer months. The following figure shows this monthly LRB for 2035, the last year in the planning horizon, when the gaps are at their highest levels. The figure shows the peak forecast both before and after the High level of DSM. The figure assumes that the PPA is renewed.

Figure 8-5: Monthly Capacity Load-Resource Balance for 2035, Before and After DSM



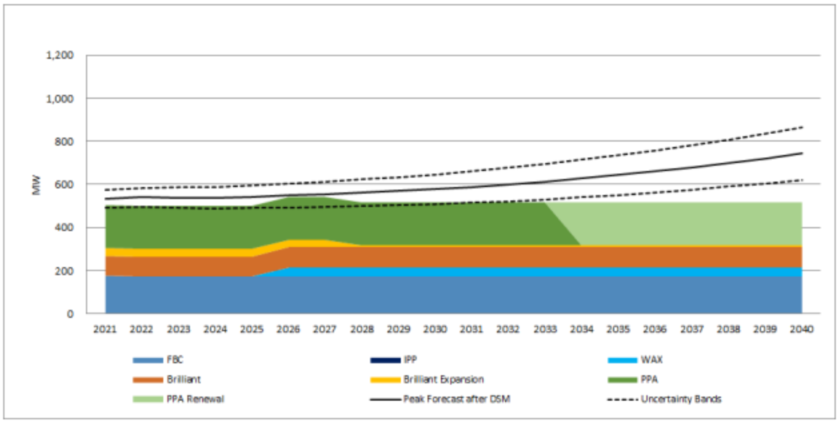
> The figure above shows the full PPA capacity available so that surpluses, as well as any gaps, can be identified. It shows that for most months there will be surplus capacity if the PPA capacity take is not reduced (assuming PPA is renewed). These surpluses are at their largest in September. It also shows that there are some months where slight deficits, or gaps, occur. These gaps occur in June and July and are minimal amounts of about 1 MW in each month. <u>As the previous figures show, there are minimal gaps for peak capacity if the PPA is renewed beyond 2033</u>. Therefore, the main focus for FBC in filling any gaps will be related to energy. [Emphasis added]

On page 14 of the Application (the 2021 LTERP), FBC states:

> For long-term planning purposes, FBC assesses both its winter and summer capacity LRB. While FBC's highest peak demand during the year typically occurs in the winter months, it also experiences significant demand during the summer period. In addition, FBC assesses the capacity LRB for the other months of the year to determine other material gaps. In particular, FBC experiences significant LRB gaps in June due to the lower monthly shaping of its existing generation resources and supply contracts. [Emphasis added]

In section 9 of the Application, FBC provides its capacity load-resource balances after DSM for Winter, Summer and June for years 2021 to 2040. Figure 9-6 on page 158 of the Application provides the June Capacity Load-Resource Balance after DSM as follows:

Figure 9-6: June Capacity Load-Resource Balance after DSM



Following Figure 9-6 on page 158 of the Application, FBC states:

> The figure above shows that, with the proposed level of DSM, there are gaps in all years through 2040. The capacity gaps increase until they reach approximately 230 MW by 2040 if the PPA is renewed. If the PPA is not renewed, then gaps of approximately 430 MW occur by 2040. As discussed in Section 7.2, FBC's total existing capacity resources are lower in June which results in larger gaps during this month than in winter and summer periods. [Emphasis added]

On page 159 of the Application, FBC provides Table 9-1 that summarizes the forecast 2040 load-resource balance gaps for annual energy and winter, summer and June capacity with and without the PPA renewal after the proposed level of DSM but before any supply-side resource options are included to meet the gaps.

Table 9-1: Load-Resource Balance Gaps

	First Year of Gap	2040 Gap With PPA Renewal	2040 Gap Without PPA Renewal
Annual Energy (GWh)	2023	950	1,990
Winter Capacity (MW)	2031	175	375
Summer Capacity (MW)	2030	180	380
June Capacity (MW)	2021	230	430

4.1 Please discuss the primary reasons for the change in forecasted capacity gaps between the 2016 LTERP, where FBC was forecasting minimal capacity gaps in that planning horizon, namely 1 MW in June and July of 2035, and the 2021 LTERP, where FBC is forecasting capacity gaps in June for all years through 2040, winter capacity gaps in 2031 and beyond and summer capacity gaps in 2030 and beyond. Where necessary, please include a comparison of the proposed DSM savings in both proceedings.

1 **Response:**

2 As shown in Figures 3-4 and 3-5 of the 2021 LTERP, the main driver of peak demand growth to
3 2040 is EV charging. The Reference Case load forecast in the 2016 LTERP did not include any
4 explicit forecast for EV charging. This is the primary reason for the change in forecast capacity
5 gaps between the 2016 LTERP and the 2021 LTERP.

6 The table below provides a comparison of the proposed DSM peak winter demand savings
7 between each filing. As the data in the table shows, because the differences in the proposed
8 DSM capacity savings are relatively small, they are not a primary reason for the change in the
9 forecast capacity gaps between the 2016 LTERP and 2021 LTERP.

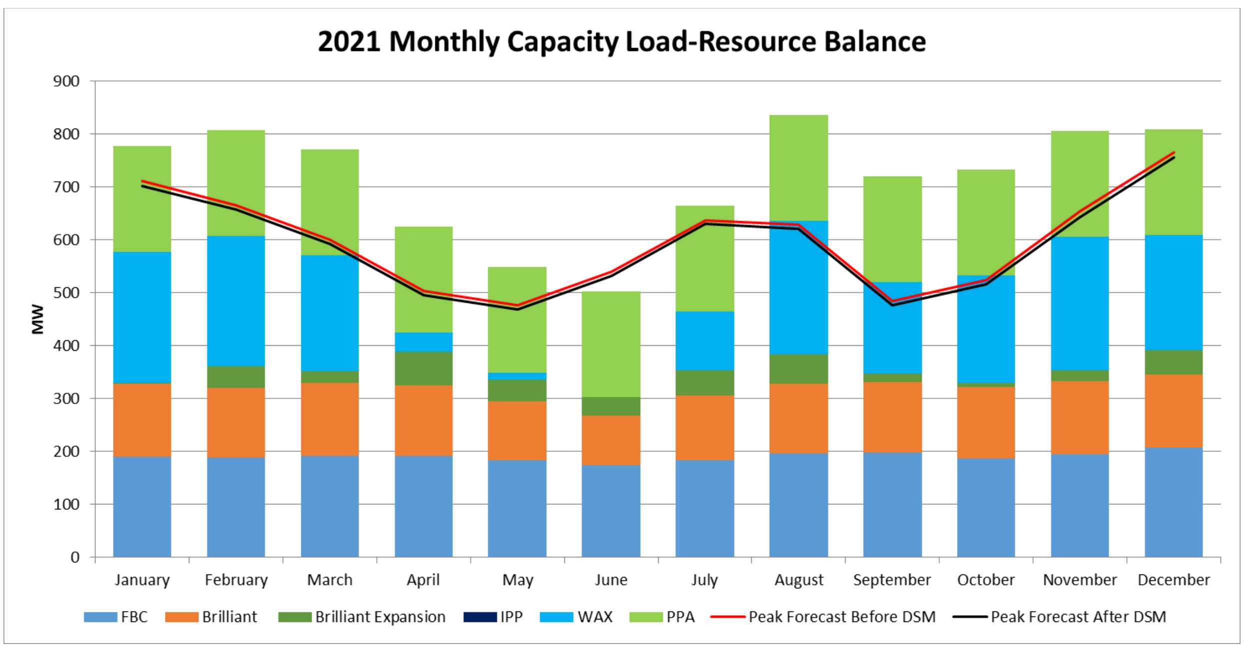
	Incremental DSM Capacity Savings excluding system losses (MW)	
Year	2016 LTERP	2021 LTERP
2016	2.8	-
2017	3.4	-
2018	3.6	-
2019	3.5	-
2020	3.5	-
2021	3.7	4.5
2022	3.9	4.4
2023	3.9	3.4
2024	3.9	3.6
2025	3.9	3.9
2026	3.8	3.8
2027	3.7	3.7
2028	3.6	3.5
2029	3.6	3.4
2030	3.5	3.3
2031	3.4	3.0
2032	3.4	2.7
2033	3.3	2.5
2034	3.3	2.3
2035	3.2	2.2
2036	-	2.1
2037	-	1.8
2038	-	1.7
2039	-	1.7
2040	-	1.6

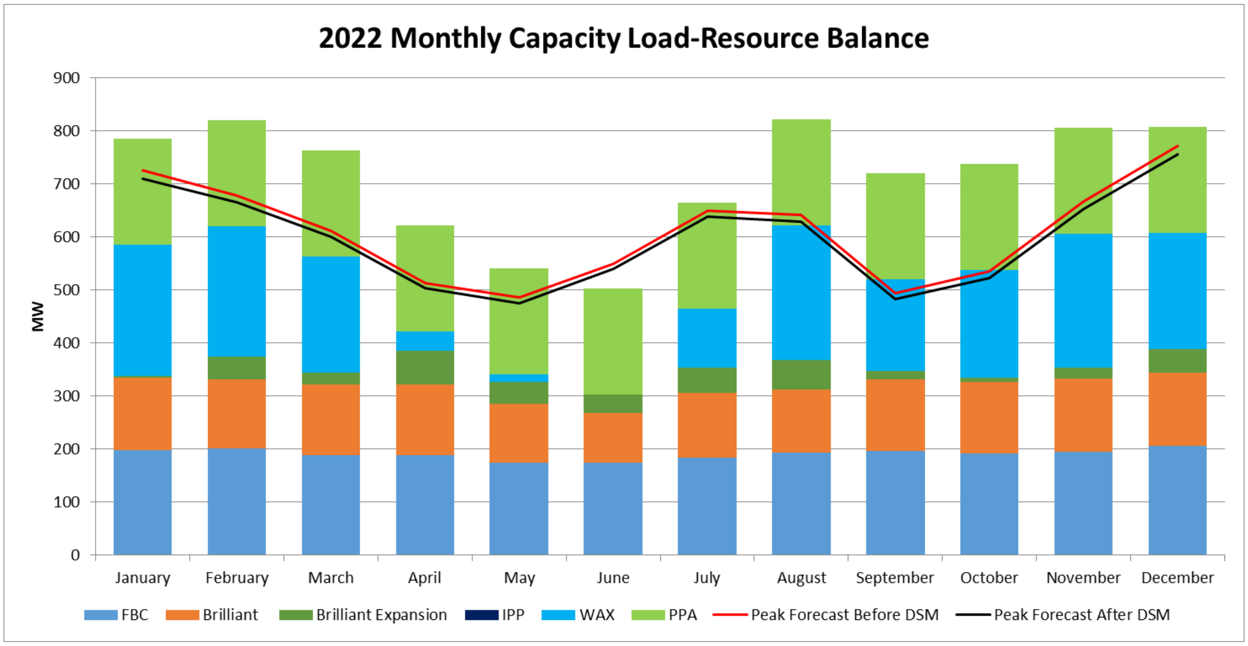
The 2016 LTERP did not include summer DSM capacity savings and the 2021 LTERP did not include summer DSM capacity savings beyond the market potential. The focus of FBC's DSM capacity savings at the time were for the winter season, as both of these results were determined prior to the heat dome event in June 2021. FBC expects to revisit its DSM capacity savings in the next LTERP.

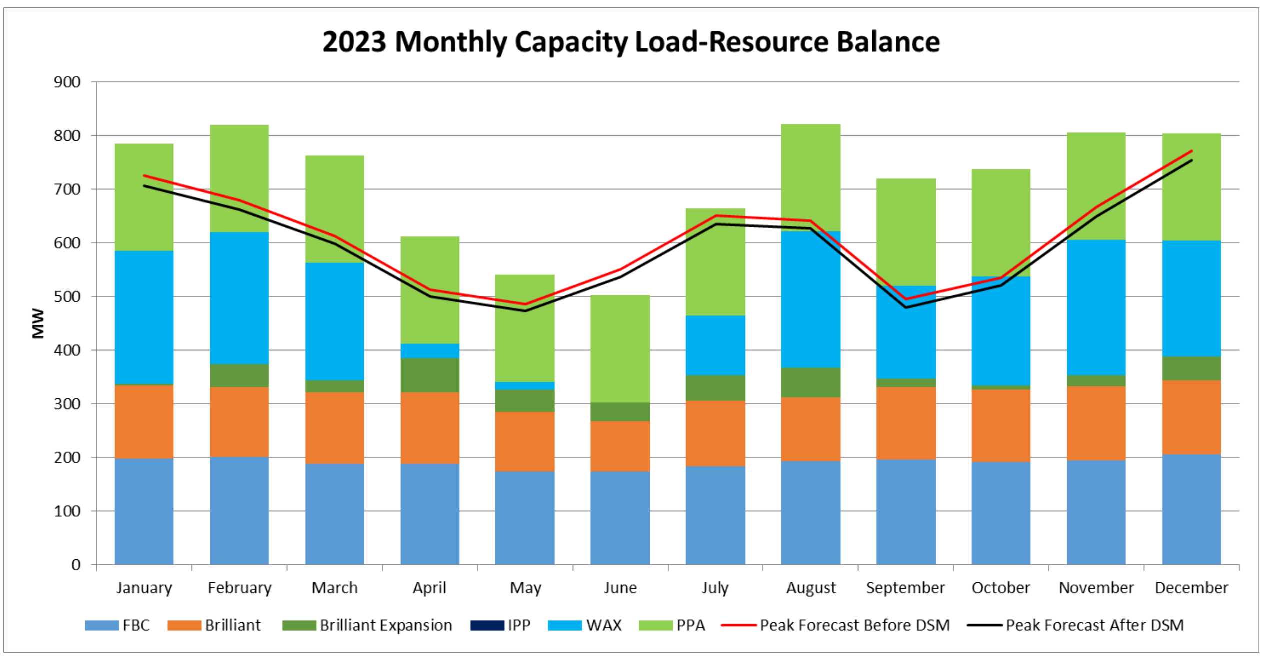
4.2 If possible, please provide a monthly capacity load resource balance figure for years 2021 through 2030 similar to that provided in Figure 8-5 of the 2016 LTERP, with the maximum available resources stacked, and the monthly peak forecast shown.

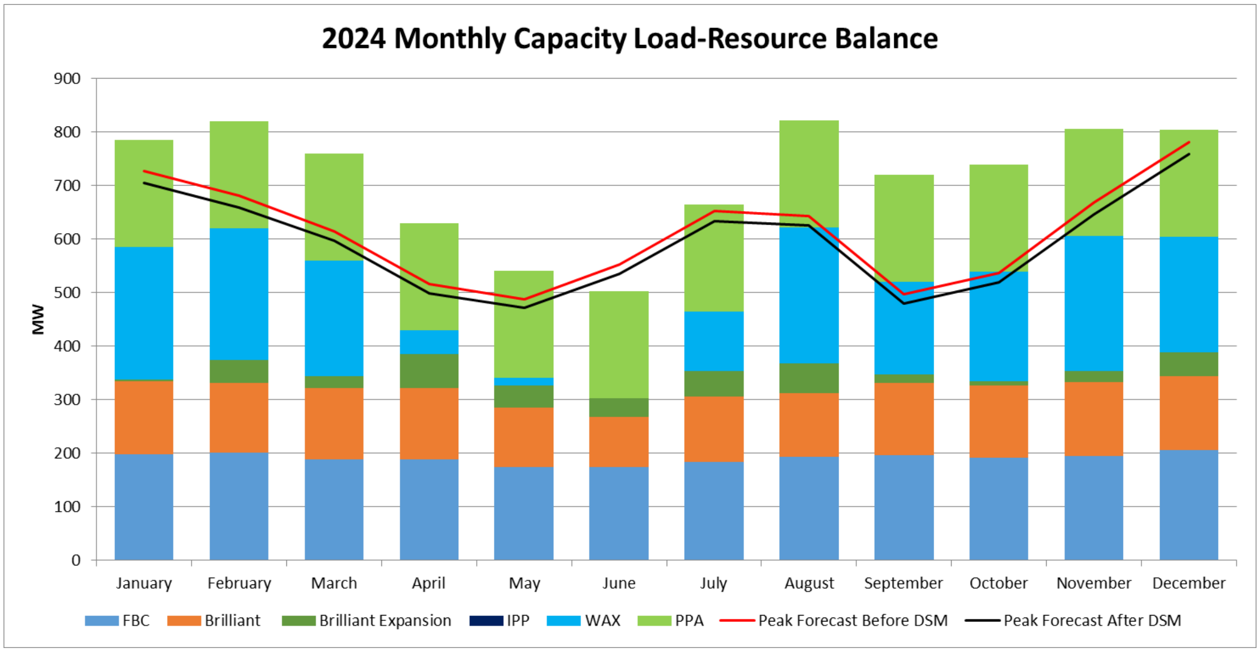
Response:

The figures below show the monthly capacity load resource balance for each year from 2021 through 2030, in the same format as that provided in Figure 8-5 of the 2016 LTERP.

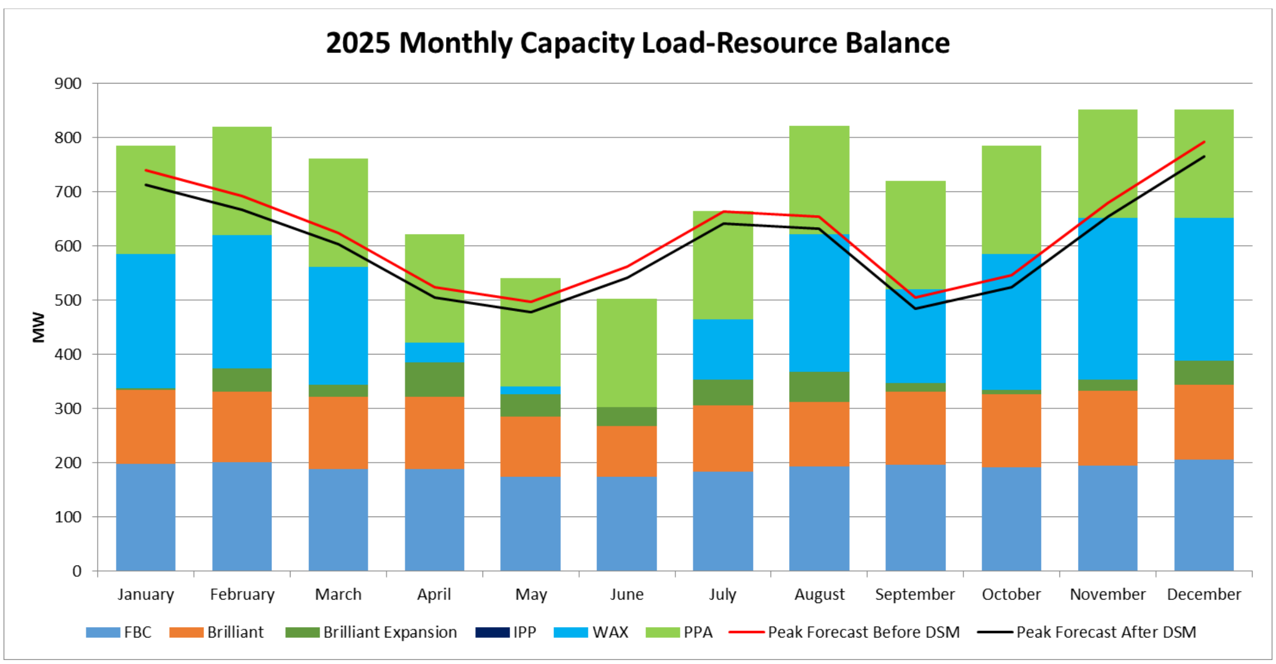


1 
2022 Monthly Capacity Load-Resource Balance
MW
0
100
200
300
400
500
600
700
800
900
January
February
March
April
May
June
July
August
September
October
November
December
FBC
Brilliant
Brilliant Expansion
IPP
WAX
PPA
Peak Forecast Before DSM
Peak Forecast After DSM

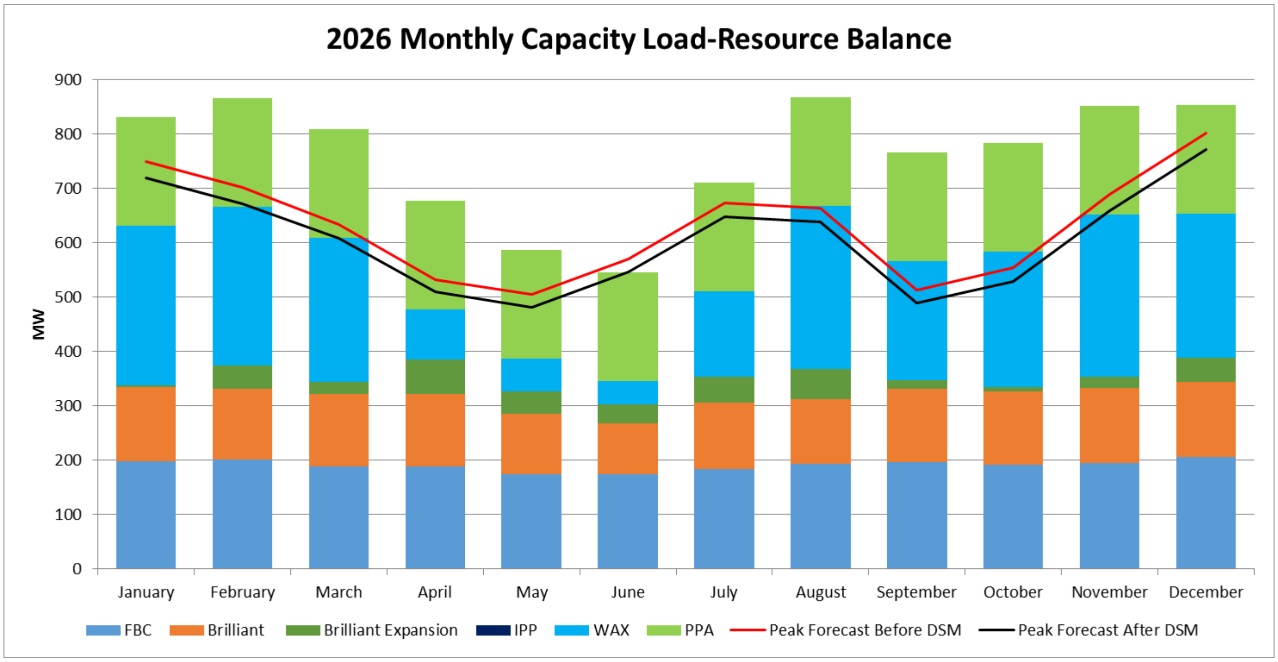
2 
2023 Monthly Capacity Load-Resource Balance
MW
0
100
200
300
400
500
600
700
800
900
January
February
March
April
May
June
July
August
September
October
November
December
FBC
Brilliant
Brilliant Expansion
IPP
WAX
PPA
Peak Forecast Before DSM
Peak Forecast After DSM

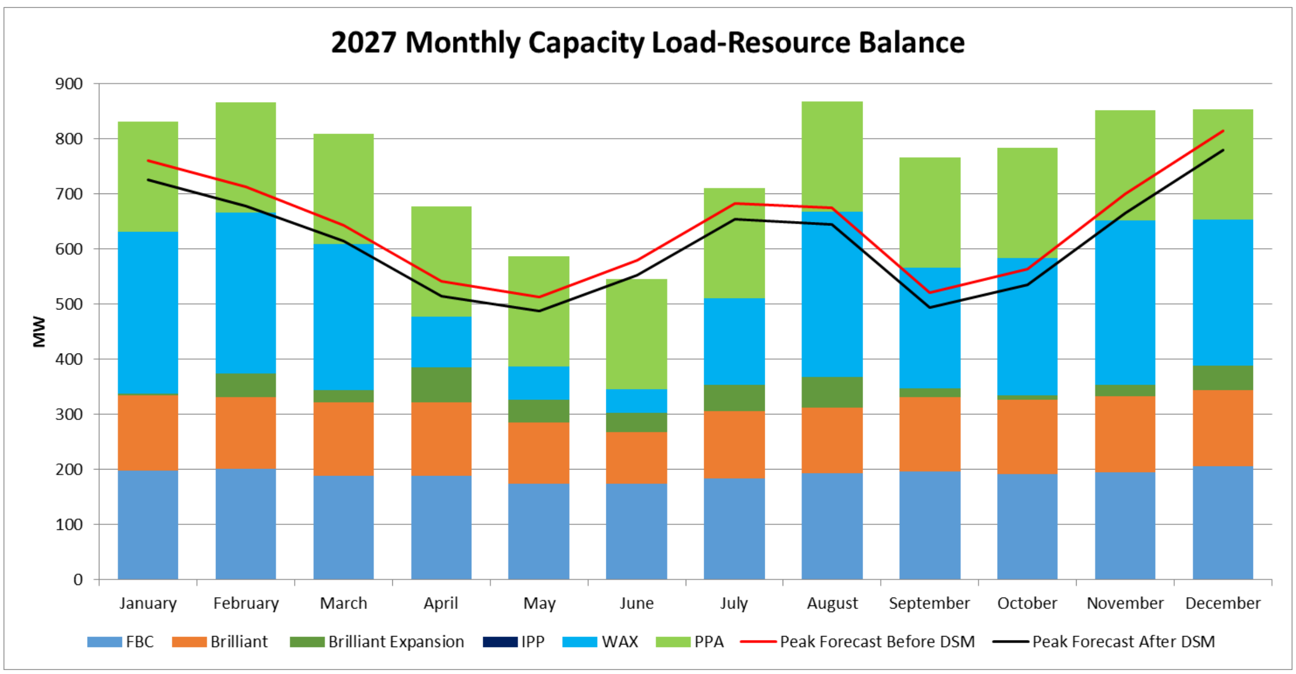


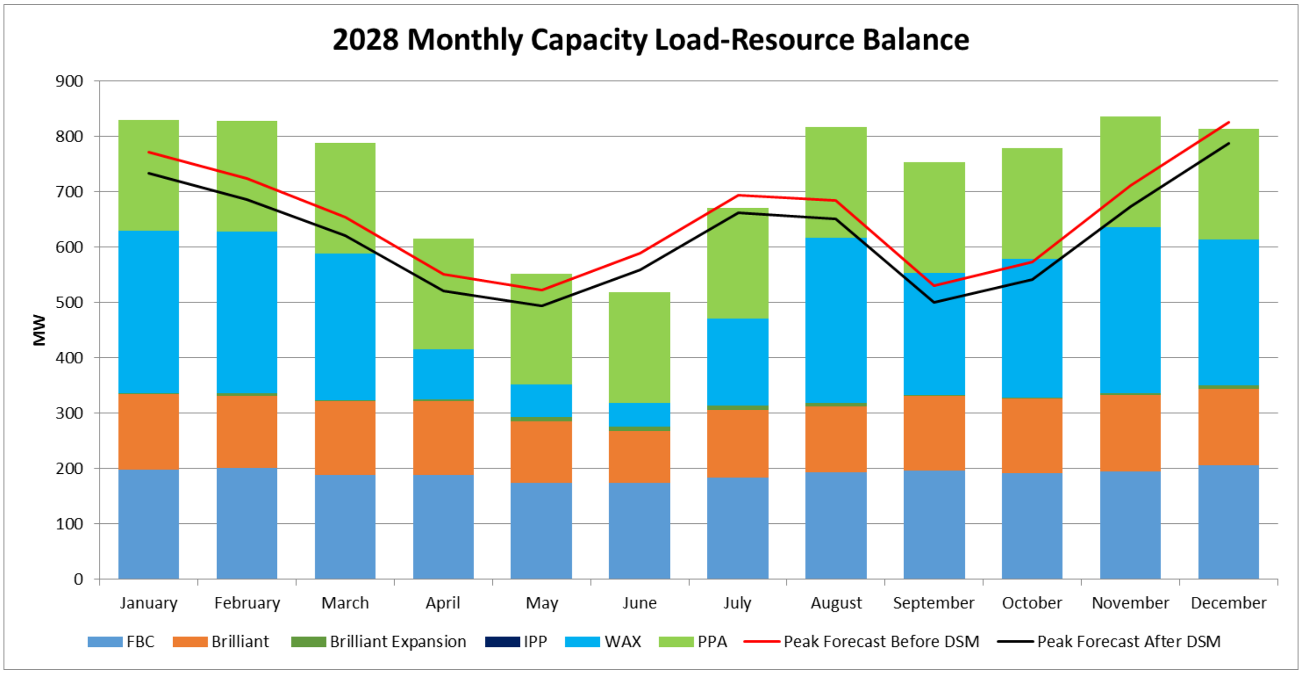
2024 Monthly Capacity Load-Resource Balance
MW
900
800
700
600
500
400
300
200
100
0
January
February
March
April
May
June
July
August
September
October
November
December
FBC
Brilliant
Brilliant Expansion
IPP
WAX
PPA
Peak Forecast Before DSM
Peak Forecast After DSM



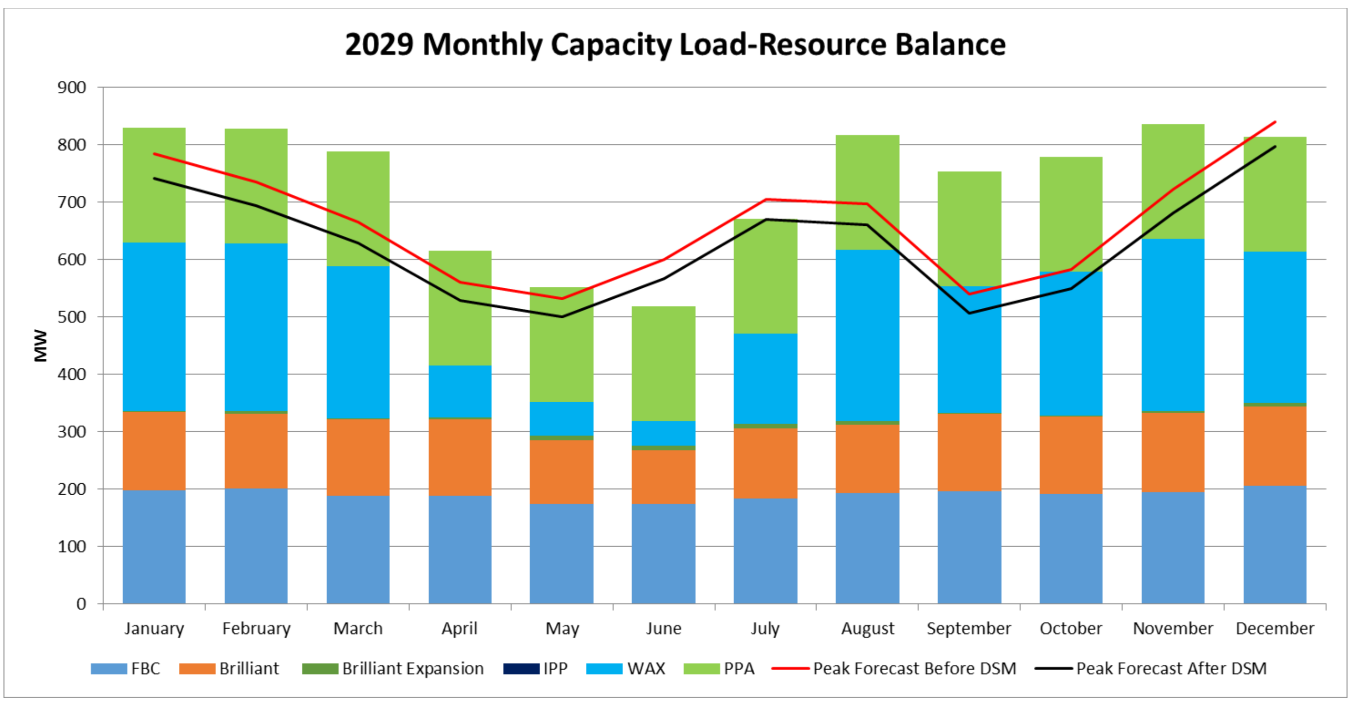
2025 Monthly Capacity Load-Resource Balance
MW
900
800
700
600
500
400
300
200
100
0
January
February
March
April
May
June
July
August
September
October
November
December
FBC
Brilliant
Brilliant Expansion
IPP
WAX
PPA
Peak Forecast Before DSM
Peak Forecast After DSM


2026 Monthly Capacity Load-Resource Balance
MW
900
800
700
600
500
400
300
200
100
0
January
February
March
April
May
June
July
August
September
October
November
December
FBC
Brilliant
Brilliant Expansion
IPP
WAX
PPA
Peak Forecast Before DSM
Peak Forecast After DSM

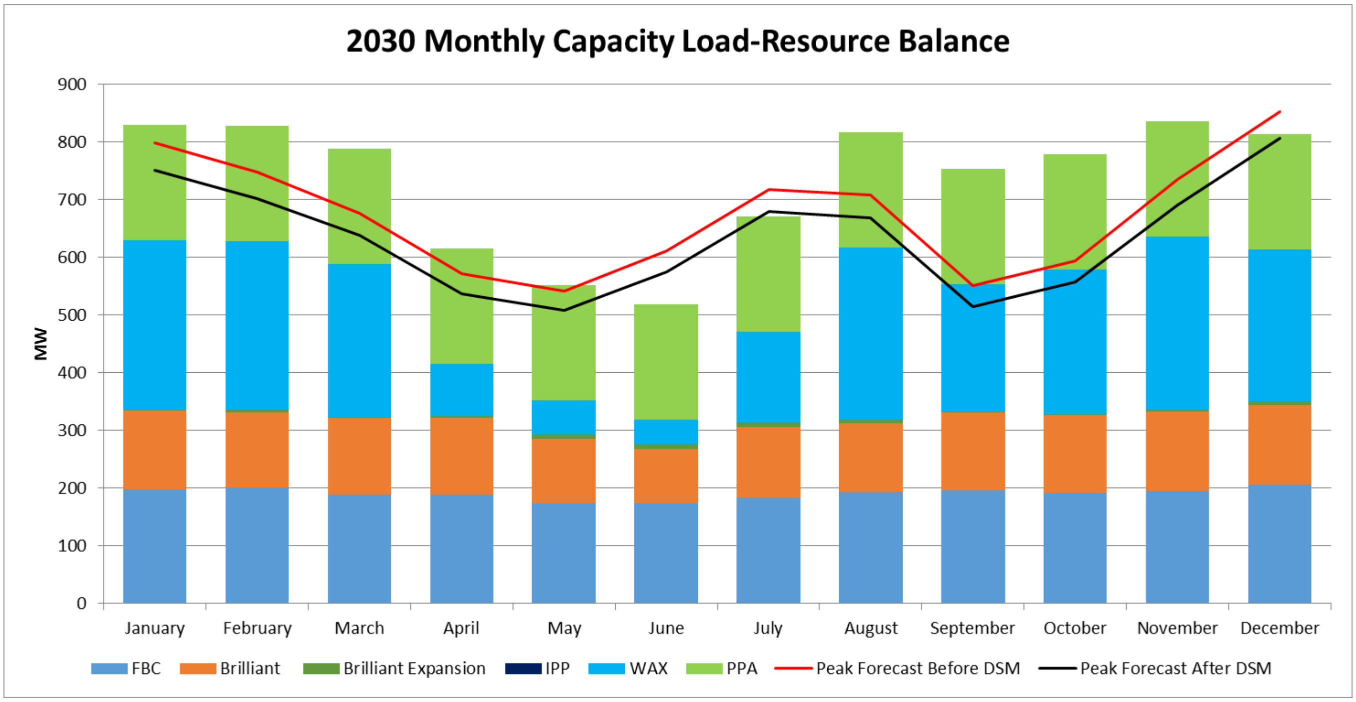

2027 Monthly Capacity Load-Resource Balance
MW
900
800
700
600
500
400
300
200
100
0
January
February
March
April
May
June
July
August
September
October
November
December
FBC
Brilliant
Brilliant Expansion
IPP
WAX
PPA
Peak Forecast Before DSM
Peak Forecast After DSM

1 

2028 Monthly Capacity Load-Resource Balance
MW
900
800
700
600
500
400
300
200
100
0
January
February
March
April
May
June
July
August
September
October
November
December
FBC
Brilliant
Brilliant Expansion
IPP
WAX
PPA
Peak Forecast Before DSM
Peak Forecast After DSM

2 

2029 Monthly Capacity Load-Resource Balance
MW
900
800
700
600
500
400
300
200
100
0
January
February
March
April
May
June
July
August
September
October
November
December
FBC
Brilliant
Brilliant Expansion
IPP
WAX
PPA
Peak Forecast Before DSM
Peak Forecast After DSM

1 
2030 Monthly Capacity Load-Resource Balance
900
800
700
600
500
400
300
200
100
0
MW
January
February
March
April
May
June
July
August
September
October
November
December
FBC
Brilliant
Brilliant Expansion
IPP
WAX
PPA
Peak Forecast Before DSM
Peak Forecast After DSM

2

5.0 Reference: PLANNING ENVIRONMENT

Exhibit B-9, CEC IR 28.3, 38.2

Contingency Resources

In response to CEC IR 28.3, FBC stated:

> FBC's available energy and dependable capacity from the FBC CPA [Canal Plant Agreement] entitlements, BPPA [Brilliant Power Purchase Agreement], BRX [Brilliant Expansion], and WAX [Waneta Expansion] (net of RCA) are subject to generation outages at the corresponding facilities. FBC has several options to respond to outages, and replace lost power. On a short-term, operational basis, FBC can call on operating reserve to cover any power lost for the first 60 minutes of any outage. For any outages longer than 60 minutes in duration, FBC has the option of purchasing replacement power from the wholesale market, via its CEPSA [Capacity and Energy Purchase and Sale Agreement] contract with Powerex. FBC may also choose to reduce the amount of surplus WAX capacity that it sells to Powerex under the CEPSA, and retain that capacity for its own use. Furthermore, FBC can also increase its usage under the PPA contract with BC Hydro, as FBC is rarely using the full 200 MW of PPA capacity available, and has never used the full amount of energy available under the contract.

In response to CEC IR 38.2, FBC stated:

> In the response to CEC IR1 38.1, FBC provided a list of FBC's resources and the corresponding capacity (in MW) that FBC used to meet its capacity needs in June 2021. During that period, FBC's available capacity exceeded the load level during the heat dome event. Although there can be no "planning" for such an unprecedented event, this illustrates the depth and flexibility of FBC's capability to meet unplanned load on an operational basis. The magnitude of the load was itself a severe contingency requirement. If further resource contingency events had occurred (such as FBC generator outages), FBC would have been able to call on Operating Reserve for 60 minutes. After that, even higher market purchases would have been required, if available. If the market resources were unavailable, then there would have been no other recourse but to exercise the Imbalance Agreement with BC Hydro, which allows FBC to rely on BC Hydro supply on an emergency basis.7 If that had also been insufficient due to BC Hydro's inability to provide the needed capacity, then FBC would have had no choice but to manually curtail load.
>
> [7] The Imbalance Agreement allows FBC access to additional BC Hydro capacity in the event of an emergency. However, FBC is contractually prevented from relying on this as part of its planning process.

5.1 Please discuss the risk factors affecting the availability of the contingency resources identified in the above IR responses, namely the Operating Reserve, higher market purchases, reducing surplus WAX capacity sold to Powerex, increasing usage under the PPA, and the resources available via the Imbalance Agreement with British Columbia Hydro and Power Authority.

Response:

The risk factors affecting the availability of the contingency resources identified in the referenced IR responses are each discussed separately in the following paragraphs.

Operating Reserves: BC Hydro is a participant in the Northwest Power Pool (NWPP).[2] The NWPP is a voluntary organization and is a designated Reserve Sharing Group in accordance with BC, North American Electric Reliability Corporation (NERC), and Western Electricity Coordinating Council (WECC) reliability standards. FBC is not a Balancing Authority and therefore does not formally participate in the NWPP Reserve Sharing Group except indirectly through BC Hydro and the Canal Plant Agreement (CPA). As Operating Reserves are held by the participating members, the only way that FBC would not be able to receive Operating Reserve from BC Hydro is if the reserves from the entire region were already allocated to a previous event. Operating Reserves are only available for use after an initiating event, such as loss of generation, and can only be used for 60 minutes.

Market purchases: FBC has the ability to purchase wholesale power from Powerex under the CEPSA Agreement, via forward block contracts, day-ahead purchases, or real-time hourly purchases. Provided 71 Line transmission is available,[3] there is a very high probability that FBC would be able to purchase the required power. If 71 Line were not available, or the required imports exceed the available transmission space on 71 Line, Powerex would still attempt to deliver required power to FBC, but the probability is slightly lower. FBC is not able to quantify these probabilities but, in either case, FBC expects that it is reasonable to assume that supply will be available under almost all circumstances. Some factors that could impact FBC's ability to import market power would be: availability of 71 Line due to planned or forced outages, Teck Resources Limited's use of 71 Line import rights reducing FBC's import ability, or a Powerex supply shortfall causing them to limit exports to FBC.

Reduction of surplus capacity sales to Powerex: On a day-ahead basis, FBC schedules any WAX surplus capacity it has available to Powerex. This means that FBC has enough flexibility to adjust or reduce the amount of surplus released, on a day ahead basis, to accommodate its native load forecast first. FBC cannot adjust its capacity sales after the preschedule deadline except in the event of a WAX unit outage. If the WAX plant is out of service for any reason, FBC loses access to that capacity which it may require to serve load, and also to enable capacity sales.

Increasing use under the PPA: On a preschedule basis, under the PPA agreement with BC Hydro, FBC can take up to 200 MW of capacity in any hour. However, on a real-time, hourly basis, FBC is limited to a 25 MW maximum schedule change. This could impact FBC if requirements change by more than 25 MW on a real-time basis. Furthermore, if BC Hydro were

[2] The NWPP is in the process of rebranding to the Western Power Pool (WPP).
[3] 71 Line is owned by Teck Resources Limited.

to have supply constraints, there could be a situation in which BC Hydro is unable to deliver the requested PPA capacity to FBC.

Imbalance Agreement: Under the terms of the Imbalance Agreement, FBC is precluded from relying on Imbalance Energy for planning purposes and thus does not intend to take or rely upon Imbalance Energy. The only risk in being unable to take energy under the Imbalance Agreement would be if BC Hydro did not have sufficient resources to supply FBC.