Termination of the Battle River 5 Power Purchase Arrangement with the Generation Owner

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Disclaimer

This document contains forward looking statements including statements regarding the Balancing Pool's forecasts or expectations with respect to market conditions, market prices, results of operations, and financial results. Readers are cautioned not to place undue reliance on these forward looking statements. While due care has been taken in the preparation of forecast information, actual outcomes may vary in material ways. Forecasts are subject to uncertainty.

Executive Summary

The Balancing Pool is of the view that terminating the Battle River 5 Power Purchase Arrangement ("PPA") is in alignment with the organization's mandate to manage its generation assets in a commercial manner and to conduct itself in a fashion that is not contrary to a fair, efficient, and openly competitive ("FEOC") market. As part of the Balancing Pool's duties when terminating one or more PPAs, the Electric Utilities Act ("EUA" or "Act") requires the Balancing Pool to consult with representatives of customers and the Minister of Energy ("Minister") about the reasonableness of the termination(s). This document aims to provide customer representatives with the background and reasoning behind the Balancing Pool's proposed PPA termination.

Overview of the Balancing Pool and the Power Purchase Arrangements

Commencing in the mid-1990s, Alberta began a process through which the province's electricity sector was to be restructured. The Act provided for a transition period to full deregulation of electrical generation through the implementation of PPAs which covered the vast majority of the formerly regulated power plants in the province. The PPAs allowed the existing generation owners to continue to own and operate their facilities, but auctioned the dispatch rights and beneficial ownership of the associated energy to new buyers. This framework was intended to enhance the competitiveness of the wholesale generation market by immediately introducing new players into the market.

The various PPAs are regulations that set out the terms for the wholesale purchase and sale of electricity between the Owner of a generating plant and the Buyer of the electricity from that plant. The PPAs grant the various Buyers the right to the capacity and the electricity associated with the underlying generating facilities. The Buyer pays the Owner a regulated payment and, in exchange, is granted pricing control over the facilities' capacities, allowing the Buyers to determine the offer prices at which their blocks of capacity are offered into the market. The Buyer sells the electricity to consumers through the Alberta power pool and retains for itself the spread between the regulated payment it pays the Owner and the hourly wholesale price it receives for its energy. The PPAs were auctioned to potential Buyers through a competitive process in the year 2000.

The Balancing Pool was created as an independent entity under the Act and has a role in the electric power sector in Alberta with corresponding duties and powers. Though originally envisaged as a repository for the proceeds of the PPA auction and a backstop to certain specified event risks, the Balancing Pool also legislatively assumed a role as a market participant in the sector when some PPAs remained unsold following the initial PPA auction. Any Balancing Pool net earnings over and above the amounts needed to cover PPA related obligations and to fund operations are passed onto electricity consumers through an allocation on consumers' power bills; similarly, but conversely, any shortfall in earnings relative to the amounts needed must be collected from consumers via a charge.

The Balancing Pool plays a prominent role in supporting the PPAs. By design, the organization effectively perpetuates the so called "regulatory compact" that existed between the investor owned utilities and consumers during regulation. This is achieved by protecting Owners against certain risks they were not required to bear in the regulated regime, but which could not be efficiently transferred to Buyers via the PPA mechanism. One of the most important risks retained by consumers via the Balancing Pool is an event of PPA termination.

Under the Act, a PPA that is terminated (for reasons other than destruction of the facility) by a PPA Buyer is deemed to have been sold to the Balancing Pool. The Balancing Pool becomes the default Buyer of a PPA in the event of a termination and assumes responsibility for making the related payments to the Owner and for offering the associated capacity into the wholesale electricity market.

In late 2015 / early 2016, the various Buyers elected to return their respective PPAs to the Balancing Pool under the terms of the arrangements. In mid-2016, the Government of Alberta contested these terminations through litigation against the parties involved, but by late-2016, the litigations were substantially settled and the terminations accepted with all but one Buyer. As a result, only two PPAs remain subject to the lawsuit: specifically the Battle River 5 and Keephills PPAs.

Although the Balancing Pool had accepted the return of Battle River 5 PPA from the PPA Buyer, the Balancing Pool took the position that it could not make a determination on the return of the Keephills PPA until after a decision had been rendered in the Government of Alberta's lawsuit. In the summer of 2017, the PPA Buyer filed an injunction in the Court of Queen's Bench in which it asked the court to direct the Balancing Pool to complete and issue its determination on return of the Keephills PPA, which the Balancing Pool was subsequently ordered to do. Based on the court's ruling, the Balancing Pool has since accepted the return of the Keephills PPA and is now of the view that the Government of Alberta's lawsuit is no longer an impediment to any actions related to the termination of the PPAs.

The Balancing Pool may, under the Section 97 of the Act, *fully* terminate[1] a PPA with an Owner if the Balancing Pool:

- Consults with representatives of customers and the Minister about the reasonableness of the termination,

- Gives to the Owner of the generating unit to which the PPA applies six months' notice, or any shorter period agreed to by the owner, of its intention to terminate, and

- Pays the Owner or ensures that the owner receives an amount equal to the remaining closing net book value[2] of the generating unit, determined in

[1] Termination by a PPA Buyer results in the PPA being returned to the Balancing Pool. Termination by the Balancing Pool results in the cessation of the arrangement and the control of the underlying PPA units returning to the Owner.
[2] The net book value is more fully described later in this document.

accordance with the power purchase arrangement, as if the generating unit had been destroyed, less any insurance proceeds.

In addition to these required steps, the termination of any PPAs must be considered in the context of the applicable legal principles of the Act and the responsibilities set out for the Balancing Pool. The Act requires Balancing Pool to act prudently in managing its accounts associated with all PPAs, to conduct itself in a fashion that is not contrary to the fair, efficient, and openly competitive ("FEOC") operation of the market, and to manage generation assets held by it in a commercial manner.

Given these requirements, the range of considerations by the Balancing Pool in relation to a PPA termination may include such things as:

1. The financial consequences for the Balancing Pool of terminating any one or more PPAs,

2. Any significant consequences of the termination(s) for the FEOC market,

3. The consequences of termination(s) on an overall basis for customers related to electricity prices and the Balancing Pool allocation or charge.

In 2017, the Balancing Pool elected to terminate the Sundance B and Sundance C PPAs effective April 1st, 2018. As at the time of this writing, the Balancing Pool is the default Buyer for all the outstanding PPAs, including the Battle River 5, Keephills, Genesee, and Sheerness PPAs. The Balancing Pool has assessed the economics of each of these PPAs and has identified the Battle River 5 PPA as another termination candidate in the context of the considerations articulated above.

The sections that follow explore the considerations discussed in this section as they relate the termination of the Battle River 5 PPA.

Financial Consequences of Termination to the Balancing Pool

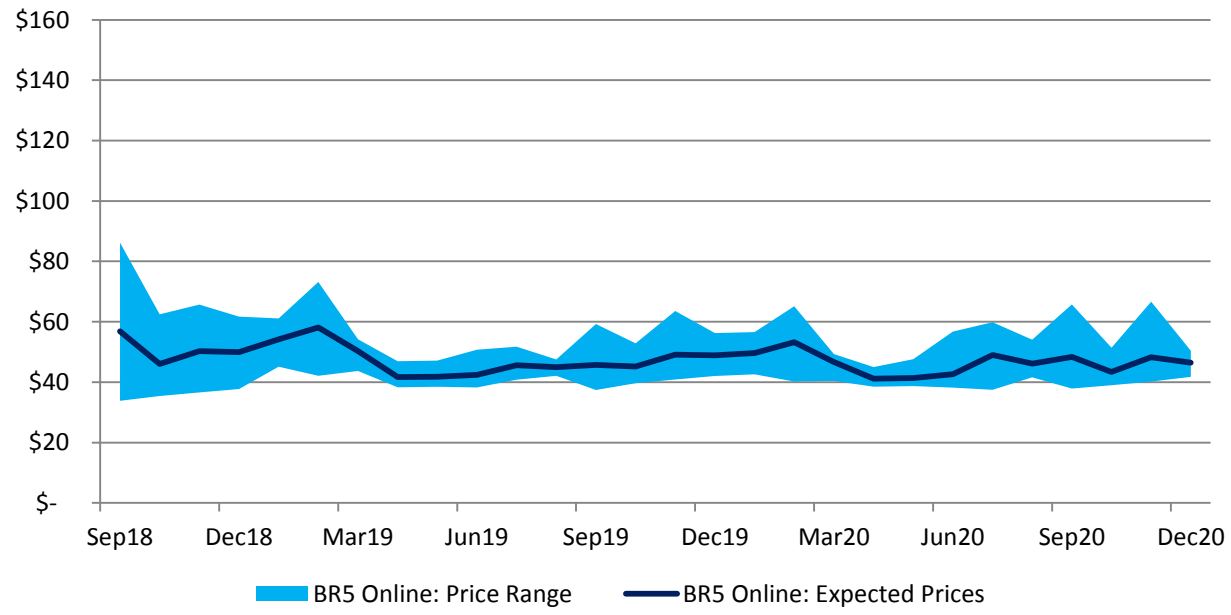
The analysis contained herein compares the financial implications to the Balancing Pool from continuing to hold the Battle River 5 PPA over the balance of its remaining term versus terminating it under Section 97 of the Act. For the purpose of the comparison, the expected future net cash flows for the PPA were forecasted and then discounted to yield a net present value ("NPV") on September 1, 2018. The NPV represents the cost to the Balancing Pool of retaining the PPA through to 2020 when the PPA expires. As a basis for decision making, the NPV can be compared to the termination payment payable to Owner which is equal to the PPA unit's Net Book Value ("NBV"). The date of

the termination payment was assumed to be on September 1, 2018 since the Owner is entitled to six months' notice from the Balancing Pool in the event of termination[3].

As the basis for forecasting the future expected cash flows of the PPA, market prices and generation volumes were simulated using an independent consulting firm's proprietary hourly dispatch model. The forecasting model is based on a physical representation of electricity supply resources, allowing the model to evaluate the impacts of generation retirements, additions, outages, constraints, and other physical factors that have an effect on market prices. It uses historical data on past market operations to incorporate factors such as offer strategies, forced outages, and weather-dependent supply and demand. A Monte Carlo approach is used to simulate the impact of random factors in the model.

A summary of the price forecast from the modelling is shown in the next chart. This price forecast was developed assuming that the Balancing Pool continues to hold the Battle River 5 PPA and continues to offer the unit into the market at variable cost.

Figure 1: Monthly Prices



The dark blue line in the graph is the mean, or expected, average monthly pool price over the relevant time horizon. The light blue area represents the range between the

[3] The six months can be shortened if the Owners agree to a shorter notice period. To mitigate the ongoing losses associated with holding the PPAs, the Balancing Pool will attempt to agree on a shorter notice period with the Owners if possible.

10th and 90th percentile pool price as simulated for a given month. The blue area can be interpreted as the potential high and low price range for each month.

The forecast suggests pool prices may be expected to average approximately $47 per MWh over the time horizon, with the potential to hit highs of $86 per MWh and lows of $34 per MWh. For comparison, pool prices have averaged $53 per MWh over the last ten years with a high of $138 per MWh and a low of $14 per MWh.

The Balancing Pool has input the price forecast above, together with anticipated generation volumes and PPA related expenses, into a financial model to estimate the future expected cash flows associated with the PPA. The estimates were determined under a low, expected, and high pool price scenario. NPVs of the net cash flows under each scenario were also calculated. The cash flows are summarized in the following table.

Table 1: Battle River 5 PPA Net Cash Flows ($ millions)[4]

	Sep-Dec 2018	2019	2020	NPV at Sep. 1, 2018
Low Prices	(27)	(74)	(86)	**(185)**
Expected Prices	(23)	(70)	(82)	**(172)**
High Prices	(18)	(68)	(84)	**(168)**

The results above lead the Balancing Pool to anticipate it will experience losses in the range of $168 to $185 million if it continues to hold the PPA through to the end of 2020.

As previously discussed, the Balancing Pool is required to pay the Owner a termination payment equivalent to the NBV of the underlying PPA unit should the Balancing Pool elect to terminate that PPA. Therefore, to determine whether it is better to hold the PPA or to terminate it, one must compare the cost of continuing to hold a given PPA (the NPV) to the cost of terminating it (the NBV). The NBV is calculated in a prescribed, formulaic fashion under the terms of the PPAs. The NBV of the Battle River 5 PPA is expected to be $63 million on September 1, 2018.

In addition to the NBV payment, the Battle River 5 PPA has unique provision in its schedules that could obligate the PPA Buyer to make a termination payment related to the mine (this payment is not associated with the NBV of the mine assets). As Buyer, the Balancing Pool may be liable for the payment, but the payment is trigged only if the Owner shuts down all Battle River units. As such, the Owner would need to decommission Battle River 3, 4, and 5 upon the termination of the Battle River 5 PPA,

[4] See Appendix A for details.

which the Balancing Pool does not expect. The total payment, if required, is estimated to be approximately $17 million.

The following table summarizes the forecasted cost savings that could be achieved through the early termination of the Battle River 5 PPA. The savings are calculated as the NBV minus the NPV under the low, expected, and high pool price scenarios.

Table 3: Expected Savings ($ millions) from Terminating (NBV - NPV)		
Low Prices	**Expected Prices**	**High Prices**
$122	$109	$105

The Balancing Pool estimates it would save $105 to $122 million by terminating the Battle River 5 PPA. In order to justify continuing to hold the PPA (that is, for the expected savings from terminating to be $0 or less), pool prices would need to be consistently above $63 per MWh – above most of the top end of the blue shaded area in Figure 1[5]. This leads the Balancing Pool to be of the opinion such price levels are not likely to occur.

Accordingly, the Balancing Pool is of the view that terminating this unprofitable arrangement is consistent with the organization's mandate to manage its generation assets in a commercial manner.

Fair, Efficient, and Openly Competitive Market Considerations

As discussed in earlier sections, the Balancing Pool should consider any substantial consequences of the PPA termination for the FEOC market.

On May 11th, 2017, the Market Surveillance Administrator ("MSA") released its annual tabulation of offer control in the wholesale electricity market for major market participants. The table below summarizes the results of that report adjusted for the termination of the Sundance PPAs as well changes to installed generation capacity expected by September 2018[6].

[5] See Appendix A for details.
[6] Source: AESO Long-term Adequacy Metrics - November 2017

Table 4: Forecasted Offer Control by Market Participant		
Company	**Offer Control (MW)**	**Offer Control (%)**
Balancing Pool	1,917	12%
ENMAX	2,320	14%
TransAlta	3,527	22%
ATCO	1,609	10%
Capital Power	1,010	6%
Suncor	1129	7%
Other	4,210	26%
Non-dispatchable	350	2%
Grand Total	**16,072**	**100%**

As demonstrated by the table, the Balancing Pool controls a significant percentage of the installed generating capacity in the wholesale market. Current FEOC regulations state that "a market participant shall not hold offer control in excess of 30% of the total maximum capability of generating units in Alberta." While the Balancing Pool's offer control does not exceed the regulated limit, it is the Balancing Pool's view that having offer control in the hands private market participants is more conducive to supporting a sustainable FEOC market than having that generation sit with the Balancing Pool.

The Balancing Pool has prepared a forecast of the change in offer control by market participant effective September 1, 2018 assuming the candidate PPA termination is in effect. The results are shown in the following table.

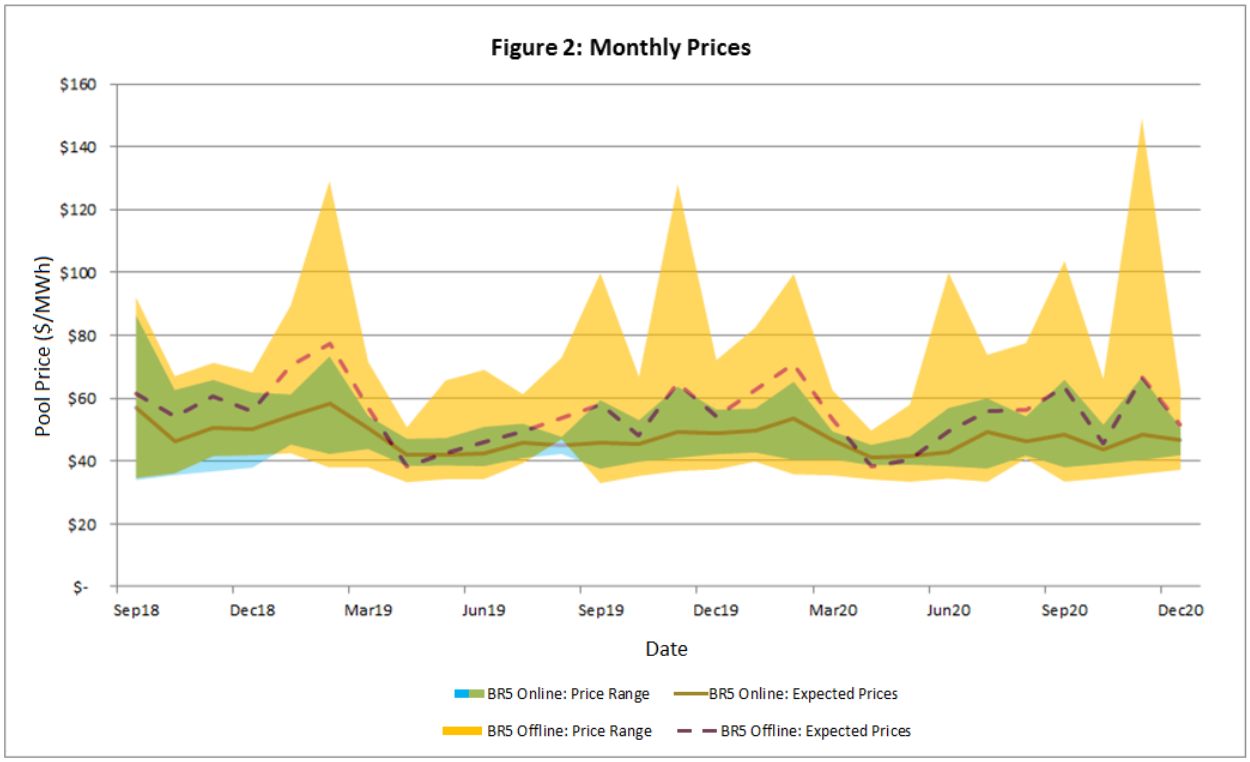
Table 5: Forecasted Offer Control by Market Participant Post PPA Termination		
Company	**Offer Control (MW)**	**Offer Control (%)**
Balancing Pool	1,549	10%
ENMAX	2,320	14%
TransAlta	3,527	22%
ATCO	1,977	12%
Capital Power	1,010	6%
Suncor	1129	7%
Other	4,210	26%
Non-dispatchable	350	2%
Grand Total	**16,072**	**100%**

As demonstrated by the table, ATCO's offer control is expected to increase by two percent while the Balancing Pool's is expected to decrease by the same amount, reducing the Balancing Pool's influence on the wholesale electricity market. The 30 percent offer control limit is not expected to be breached following the termination of the Battle River 5 PPA.

Impacts on Wholesale Electricity Prices

This final section of analysis examines the potential impacts on wholesale electricity prices from terminating the Battle River 5 PPA. As in the financial analysis presented earlier, market prices were simulated using an independent consulting firm's proprietary hourly dispatch model. Two price forecasts were developed: one in which the Balancing Pool holds the Battle River 5 PPA and one in which the PPA is terminated. The forecast in which the Battle River 5 PPA is terminated was developed under the assumption that the Battle River 5 unit is mothballed upon termination through to the end of the PPA term due to its uneconomic nature – though this outcome is not a certainty.

The chart that follows illustrates the change in forecasted market prices should the Battle River 5 PPA be terminated and the underlying unit mothballed.



The graph is interpreted as follows:

- The green/blue shaded area represents the range between the 10th and 90th percentile pool price for a given month assuming the Battle River 5 PPA *is not* terminated. This is the same price forecast shown in the *Financial Consequences of Termination to the Balancing Pool* section.

- The solid line in the graph is the mean, or expected, average monthly pool price over the relevant time horizon assuming the Battle River 5 PPA *is not* terminated.

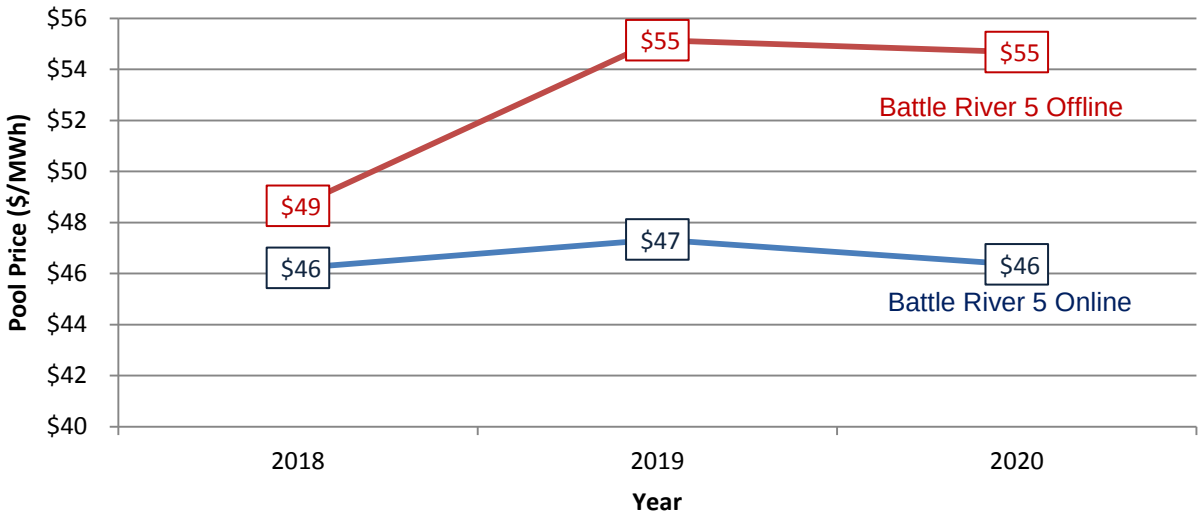
- The yellow shaded area represents the new range between the 10th and 90th percentile pool price for a given month assuming the Battle River 5 PPA *is* terminated and the underlying unit is subsequently mothballed.

- The dashed line in the graph is the mean, or expected, average monthly pool price over the relevant time horizon assuming the Battle River 5 PPA *is* terminated and the underlying unit is subsequently mothballed.

With the PPA terminations in effect, overall price levels and price volatility have the potential to increase from current levels. Due to the stochastic nature of the modelling, the reader should understand that the monthly prices are representative of potential market outcomes over the time horizon and that a particular month's price should not be interpreted as definitive forecast for that month – rather, the monthly prices illustrate the potential price range and the potential frequency of price excursions over the entire time horizon.

To get a better idea of the expected change in prices, yearly averages are more instructive. The next chart looks at the annual average price impact from terminating the Battle River 5 PPA and having the underlying unit shutdown.

Figure 3: Annual Average Pool Prices



The blue line in the chart presents the forecasted annual average electricity prices under the status quo environment in which the Balancing Pool holds and offers the

capacity of the Battle River 5 PPA into the market whereas the red line shows the annual price averages assuming the PPA is terminated. The 2018 average on the red line is lower than the other years because only four months would be affected by the termination (September through December) whereas the other years are affected in their entirety.

On average, the forecast suggests the impact on wholesale electricity prices from terminating the Battle River 5 PPA may be approximately $8 per MWh. For the average Regulated Rate consumer, this change in wholesale prices could increase the retail rate by approximately 1.17¢ per KWh or about $7 per month for an average household[7].

The higher prices following the PPA terminations would increase the value of the PPAs retained by the Balancing Pool. While consumers' electricity bills would increase with the higher wholesale prices, the increase in the value of the PPAs held by the Balancing Pool could provide an offset via the consumer charge.

Conclusion

This document has provided background on the Balancing Pool, the PPAs, and the Balancing Pool's view that it is reasonable for the Battle River 5 PPA to be terminated.

The financial analysis suggests the Balancing Pool could significantly mitigate its losses if it were to terminate the Battle River 5 PPA. The net benefit of terminating the PPA is expected to be $105 to $122 million after making the required $63 million termination payment to the Owner.

The Balancing Pool examined the implications of terminating the Battle River 5 PPA in the context of the FEOC regulations. Terminating these PPAs will not result in a breach of the 30 percent offer control limit set by regulation. The Balancing Pool considers the terminations to be in alignment with fostering a sustainable FEOC market.

Finally, the Balancing Pool considered the impact of the termination on wholesale electricity prices and the Balancing Pool charge. Forecasts suggest that terminating the Battle River 5 PPA may result in an increase in wholesale electricity prices once the PPA is no longer held by the Balancing Pool. The higher prices following the PPA termination should increase the value of the PPAs retained by the Balancing Pool, providing a partial offset for consumers via the consumer charge.

[7] These calculations assumed a 1.46x retail rate premium over the flat wholesale price and 600 KWh of monthly consumption for an average household.

Appendix A: Battle River 5 PPA Financial Tables

This appendix provides additional details regarding the Battle River 5 valuations. The following tables present the annual pool price forecasts, capacity factors, cash flows, and the NPV associated with the Battle River 5 PPA.

The first three tables present the low, expected, and high pool price scenarios' results. The low and high cases were the selected forecast runs that yielded the lowest and highest NPVs, respectively.

Low Pool Price Scenario ($ millions)			
Year	**Sep-Dec 2018**	**2019**	**2020**
Realized Price ($/MWh)	$41	$48	$47
Capacity Factor	38%	40%	38%
Revenue	17	62	58
Variable Costs	(19)	(60)	(58)
Gross Margin	(2)	2	(0)
Fixed Costs	(26)	(76)	(86)
Net Cash Flows	(27)	(74)	(86)
NPV	**(185)**		

Expected Pool Price Scenario ($ millions)			
Year	**Sep-Dec 2018**	**2019**	**2020**
Realized Price ($/MWh)	$53	$52	$51
Capacity Factor	38%	39%	37%
Revenue	22	66	61
Variable Costs	(19)	(59)	(57)
Gross Margin	3	7	4
Fixed Costs	(26)	(77)	(86)
Net Cash Flows	(23)	(70)	(82)
NPV	**(172)**		

High Price Scenario ($ millions)			
Year	**Sep-Dec 2018**	**2019**	**2020**
Realized Price ($/MWh)	$61	$51	$47
Capacity Factor	43%	43%	41%
Revenue	28	71	62
Variable Costs	(21)	(65)	(62)
Gross Margin	7	7	1
Fixed Costs	(25)	(75)	(84)
Net Cash Flows	(18)	(68)	(84)
NPV	**(168)**		

The next table shows the pool price required to yield an NPV exactly equal to the termination payment.

Breakeven Requirement ($ millions)			
Year	**Sep-Dec 2018**	**2019**	**2020**
Realized Price ($/MWh)	$63	$63	$63
Capacity Factor	85%	85%	83%
Revenue	57	172	168
Variable Costs	(41)	(124)	(123)
Gross Margin	16	48	45
Fixed Costs	(24)	(72)	(77)
Net Cash Flows	(8)	(24)	(32)
NPV	**(63)**		

As shown above, a consistent $63 per MWh pool price would be required to alter the conclusion that terminating is less costly compared to holding the PPA.