Termination of the Sundance A, Sundance B, and Sundance C Power Purchase Arrangements with Generation Owners

July 4, 2017

Table of Contents

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 used 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 Sundance A, Sundance B, and Sundance C Power Purchase Arrangements ("PPAs") is in alignment with the organization's mandate requiring it 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 terminations.

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 corporation 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) 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, various Buyers elected to terminate their respective PPAs 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. Only two PPAs remain subject to the lawsuit: namely the Battle River and Keephills PPAs.

As at the time of this writing, the Balancing Pool is the default Buyer for all the PPAs (including the Battle River and Keephills PPAs). The Balancing Pool may, under the Section 97 of the Act, terminate a power purchase arrangement 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 power purchase arrangement applies 6 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[1] of the generating unit, determined in 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.

[1] The net book value is more fully described later in this document.

Given these requirements, the range of considerations by the Balancing Pool in relation to Section 97 PPA terminations 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.

The sections that follow explore the considerations listed above.

Financial Consequences of Termination to the Balancing Pool

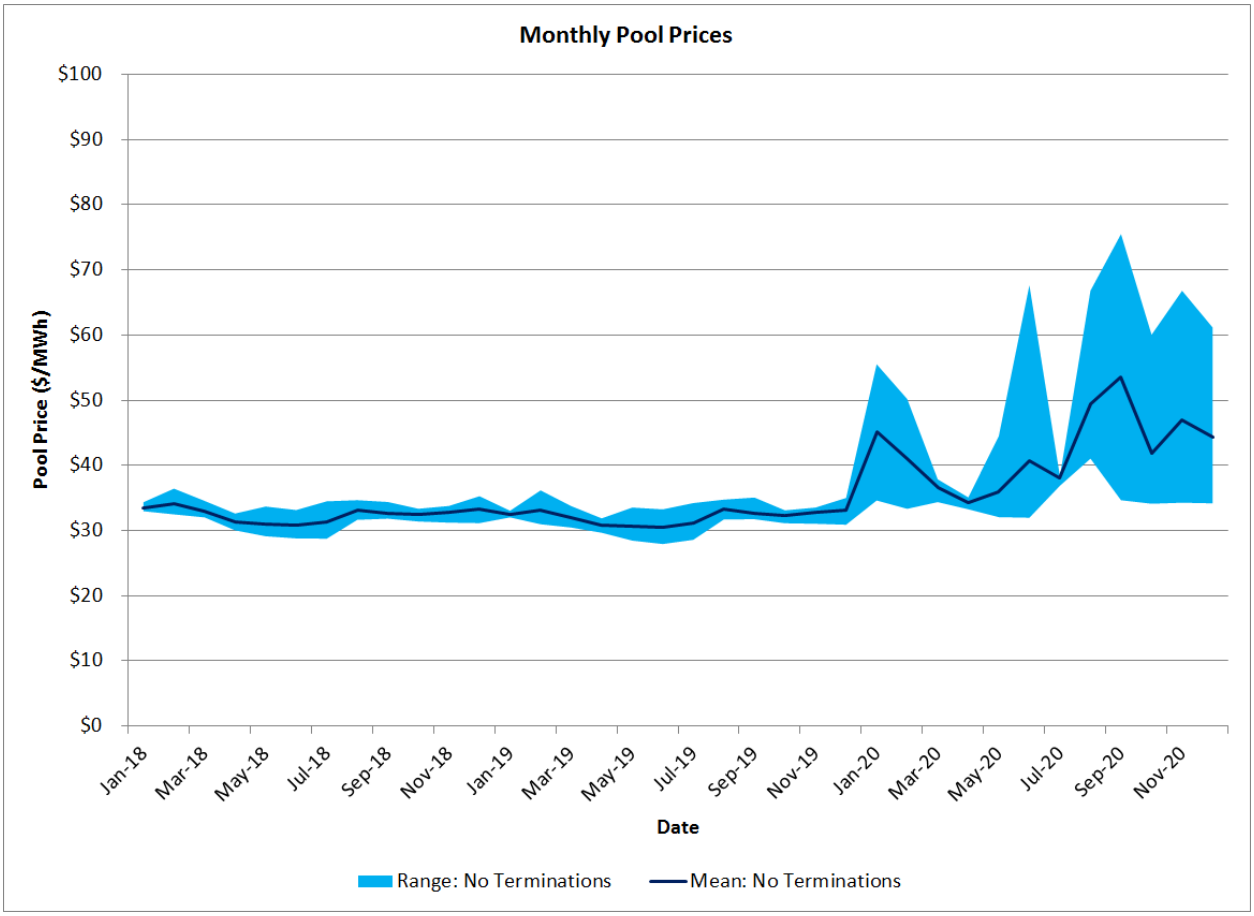
The analysis contained herein compares the financial implications to the Balancing Pool of continuing to hold the PPAs versus terminating them. For the purpose of these comparisons, the expected future net cash flows for each PPA were forecasted and then discounted to yield a net present value ("NPV") at the beginning of 2018. The NPV represents the cost to the Balancing Pool of retaining a specific PPA. As a basis for decision making, the NPV can be compared to the termination payment payable to Owner which is equal to the PPA units' Net Book Value ("NBV") at the beginning of 2018. The date of the termination payments were assumed to be at the beginning of 2018 given that the Owners are entitled to six months' notice by the Balancing Pool in the event of termination[2].

As the basis for forecasting the future expected cash flows of each 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 chart on the next page. This price forecast was developed assuming that the Balancing Pool continues to

[2] 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.

hold the full complement of PPAs and continues to offer the various units into the market at variable cost.



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 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.

Under the scenario in which none of the PPAs are terminated with the Owners, pool prices remain stable and low (just over $30 per MWh) from 2018 to the end of 2019 with little potential upside or volatility. In 2020, following the planned retirement of several coal units, prices have the potential to elevate and become more volatile.

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 each of the PPAs. An NPV of the net cash flows was also calculated for each of these PPAs. The cash flows are presented in the following table.

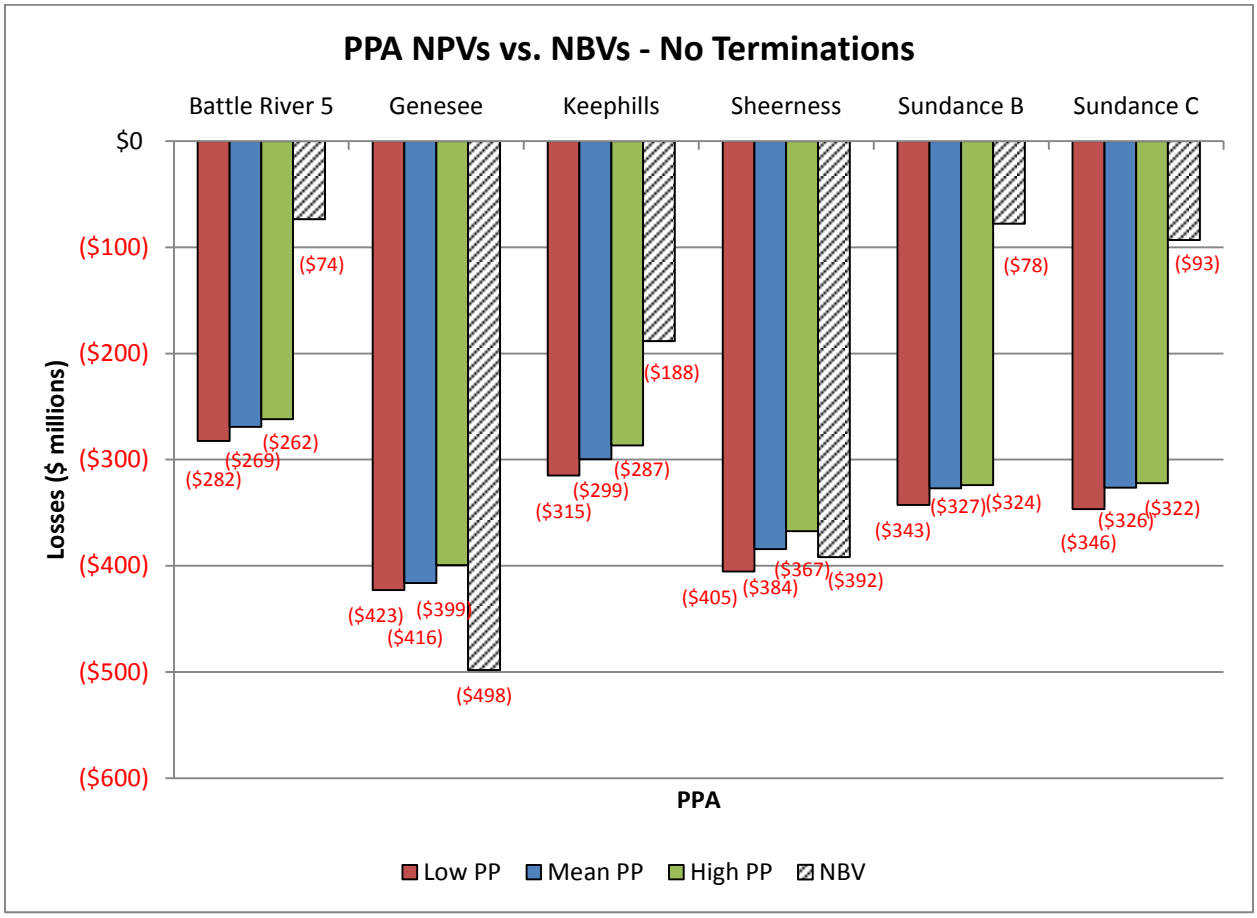
Table 1: Expected Net Cash Flows and Pool Prices ($ millions)				
	2018	**2019**	**2020**	**NPV at Jan. 1, 2018**
Battle River 5	($95)	($97)	($82)	**($269)**
Genesee	($158)	($157)	($109)	**($416)**
Keephills	($110)	($122)	($73)	**($299)**
Sheerness	($151)	($150)	($91)	**($384)**
Sundance B	($122)	($127)	($84)	**($327)**
Sundance C	($120)	($127)	($86)	**($326)**
Pool Price ($/MWh)	$32	$32	$42	

The Balancing Pool anticipates it will continue to experience considerable loses if it continues to hold these PPAs.

As previously discussed, the Balancing Pool is required to pay the Owner a termination payment equivalent to the NBV of the PPA should the Balancing Pool elect to terminate that PPA. Therefore, to determine whether it is better to hold the PPA or terminate it, it is necessary to 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 following table summarizes the NBV of each PPA.

Table 2: PPA Termination Payments / Net Book Values ($ millions) As at January 1st, 2018	
Battle River 5	$74
Genesee	$498
Keephills	$188
Sheerness	$392
Sundance B	$78
Sundance C	$93

With the NPVs and NBVs associated with each PPA in hand, a comparison between the costs of holding the PPAs relative to the costs of terminating them can now be made. The NPVs are presented in the following chart alongside the PPAs' associated termination payments (based on the NBVs). For further analytical robustness, the expected cash flows and their associated NPVs were recalculated under a potential low pool price scenario and a potential high pool price scenario.



The graph is presented as follows:

- Each cluster of four bars is associated with the specific PPA labelled along the top of the horizontal axis.
- The first three coloured bars in each cluster are the NPVs of the expected future cash flows associated with a PPA under three price runs:
    - A potential *low pool price* scenario is represented by the red bar;
    - The *mean (or expected) pool price* is represented by the blue bar; and,
    - A potential *high pool price* scenario is represented by the green bar.
- The fourth cross-hatched bar represents the cost to terminate the PPA with its Owner (i.e. the NBV at the beginning of 2018).

- Where the cross-hatched bar is less negative than the neighbouring coloured bars associated with a specific PPA, the interpretation is that the Balancing Pool should expect to realize cost savings by terminating that PPA.

The analysis demonstrates that the Balancing Pool may be able to reduce its losses associated with certain PPAs via early termination. The chart above illustrates that:

- Potential termination candidates include the Battle River 5, Keephills, Sundance B, and Sundance C PPAs since their NPVs are more negative than their NBVs.

- The expected cost of holding the Genesee PPA is less than the cost of terminating it.

- The termination decision for the Sheerness PPA is unclear. Its NBV is almost equal to its mean pool price NPV and is in between the high and low pool price NPVs.

The following table summarizes the forecasted cost savings achieved through the early termination of the various PPAs. The savings are calculated as the NBV minus the NPV under the low, mean, and high pool price scenarios.

Table 3: Expected Savings ($ millions) from Terminating (NBV - NPV)

PPA	Low Pool Price	Mean Pool Price	High Pool Price
Battle River 5	$209	$196	$188
Genesee	($76)	($82)	($99)
Keephills	$127	$111	$98
Sheerness	$14	($7)	($24)
Sundance B	$265	$249	$246
Sundance C	$253	$233	$229

The table shows that the greatest savings are associated with the termination of the Sundance PPAs followed by the Battle River and Keephills PPAs. It is important to note, however, that the Battle River and Keephills PPAs cannot be terminated until the government's lawsuit contesting the return of those PPAs to the Balancing Pool is resolved.

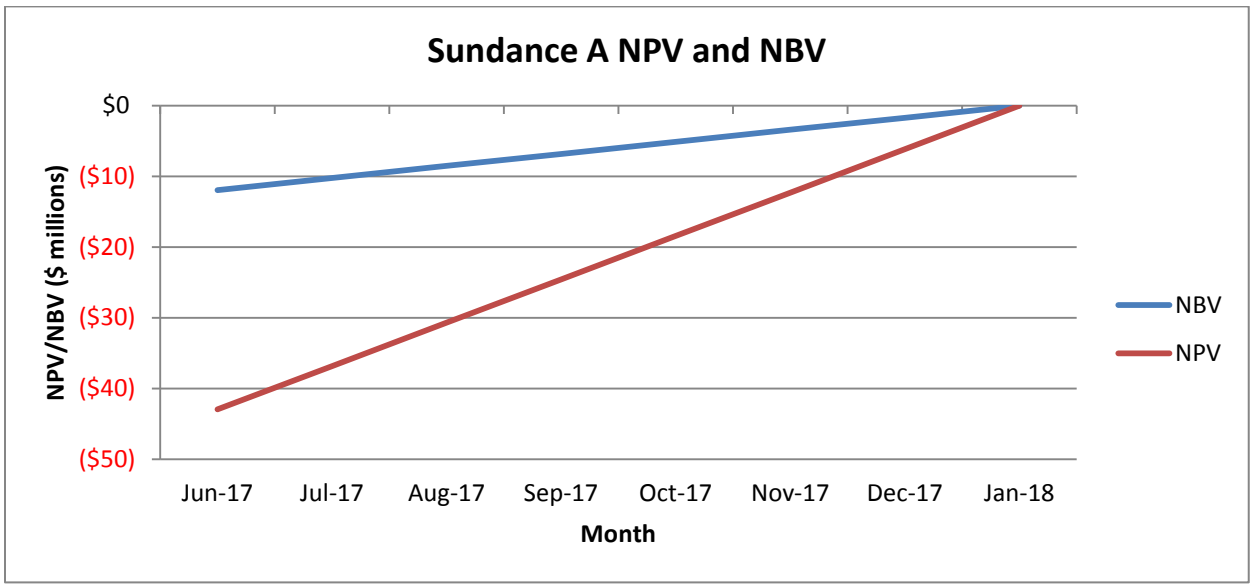
The Balancing Pool estimates it would save **$475 to $518 million** by terminating a first tranche of PPAs consisting of the Sundance B and Sundance C PPAs, net of the $171 million in termination payments to the Owners (see Table 2 for a breakdown of the termination payments). The Balancing Pool is of the view that terminating these

unprofitable arrangements is consistent with the organization's mandate to manage its generation assets in a commercial manner.

Forecasts suggest that pool prices may increase as offer control shifts from the Balancing Pool, which has maintained a commercial but conservative offer strategy, to generation owners, who may employ more aggressive offer strategies or as some of the underlying PPA units are retired or mothballed. These higher pool prices, in turn, improve the economics of the residual PPAs retained by the Balancing Pool, potentially altering the case for their termination. The Balancing Pool will continue to evaluate the relative merits of terminating, holding, or selling further PPAs as circumstances and market conditions evolve. Should the Balancing Pool determine further PPA terminations are warranted, another consultation processes would be initiated in the future.

A Note on Sundance A

The Sundance A PPA is set to expire at the end of 2017 and, as such, it was not included in the analysis above that focused on the 2018 to 2020 time horizon. However, should the Owner agree to a shorter notice period than the six months required, the Balancing Pool forecasts it could reduce its losses in 2017 given that the NBV of the Sundance A PPA is lower than the NPV of the remaining cash flows in 2017. The Sundance A NPV and NBV are plotted in the graph that follows.



The red line in the graph above is the NPV of Sundance A's 2017 cash flows and the blue line is the NBV in a given month. Both the NPV and NBV decline as the PPA reaches its expiration at the end of the year, but note that the red NPV line remains

below the blue NBV line over the entire time period, indicating it should always beneficial to terminate the PPA early.

Given that only a few months remain in 2017, the potential for an "upside surprise" in electricity prices that dramatically alters the Sundance A PPA's economics is highly improbable. Furthermore, given that Sundance A PPA expires in a matter of months, the impact of its early termination on the market, on prices, on consumers, or on generators would be rather insignificant. As such, should the Balancing Pool decide to move forward with an initial tranche of PPA terminations prior to yearend, the Sundance A PPA should be included in that tranche.

Fair, Efficient, and Openly Competitive Market Considerations

As discussed in earlier sections, the Balancing Pool should consider any substantial consequences of the PPA terminations 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.

Offer Control by Market Participant		
Company	**Offer Control (MW)**	**Offer Control (%)**
Balancing Pool	3,893	25%
ENMAX	2,320	15%
TransAlta	1,839	12%
ATCO	1,609	10%
Capital Power	1,010	6%
Suncor	959	6%
Other	3,936	25%
Non-dispatchable	350	2%
Total	**15,915**	**100%**

As demonstrated by the table, the Balancing Pool controls a quarter of the installed capacity in the wholesale market and is the largest market participant by a significant margin. 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 January 1st, 2018 assuming the candidate PPA terminations are in effect. The forecast incorporates new generation projects currently under active construction that are expected to be completed by the end of 2017 as well as the announced retirement of the Sundance 1 unit[3]. The results are as follows.

Table 6: Offer Control by Market Participant after PPA Terminations		
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	4,195	26%
Non-dispatchable	350	2%
Total	**16,057**	**100%**

As demonstrated by the table, the 30 percent offer control limit would not be expected to be breached following the termination of the Sundance PPAs.

Impacts on Wholesale Electricity Prices

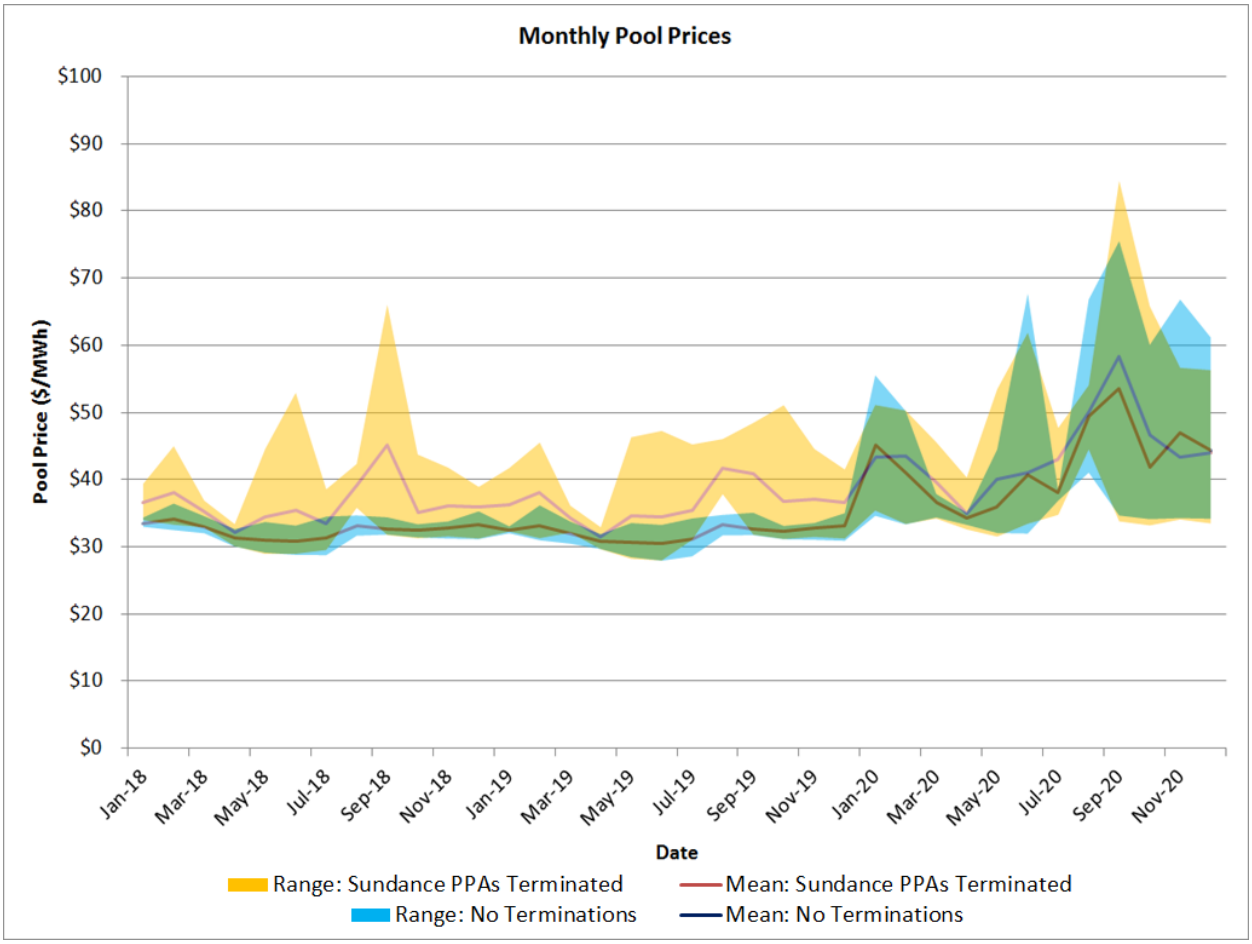
This final section of analysis examines the potential impacts on wholesale electricity prices from terminating the Sundance PPAs. As in the financial analysis presented earlier, market prices were simulated using an independent consulting firm's proprietary hourly dispatch model. Two price forecasts were developed: one in which the Balancing Pool holds all the PPAs and one in which the Sundance PPAs are terminated.

Note that the modelling assumptions used in the forecasts contained in this document included the assumption that the historical offer behaviours of the various market participants are representative of the future offer behaviours of these same market participants. However, in late May, the MSA revoked its Offer Behaviour Guidelines ("OBEG") which had permitted generators to engage in the economic withholding of their capacity for the purpose of increasing wholesale electricity prices. In its decision, the MSA identified that economic withholding may no longer be appropriate in Alberta's wholesale electricity FEOC market. As such, market participants may avoid aggressive economic withholding that results in significant market price movements in the future. If this is the case, the forecasted estimates of future prices following the termination of

[3] Source: AESO Long-term Adequacy Metrics - May 2017

various PPAs may be overstated, though the Balancing Pool does still expect the terminations to have some upward effect on prices.

The following chart illustrates the change in forecasted market prices under the scenario in which the Sundance PPAs are terminated.



The graph is interpreted as follows:

- The blue (and overlapping green) shaded area represents the range between the 10th and 90th percentile pool price for a given month assuming the Sundance PPAs *are not* terminated. This is the same price forecast shown in the *Financial Consequences of Termination to the Balancing Pool* section.

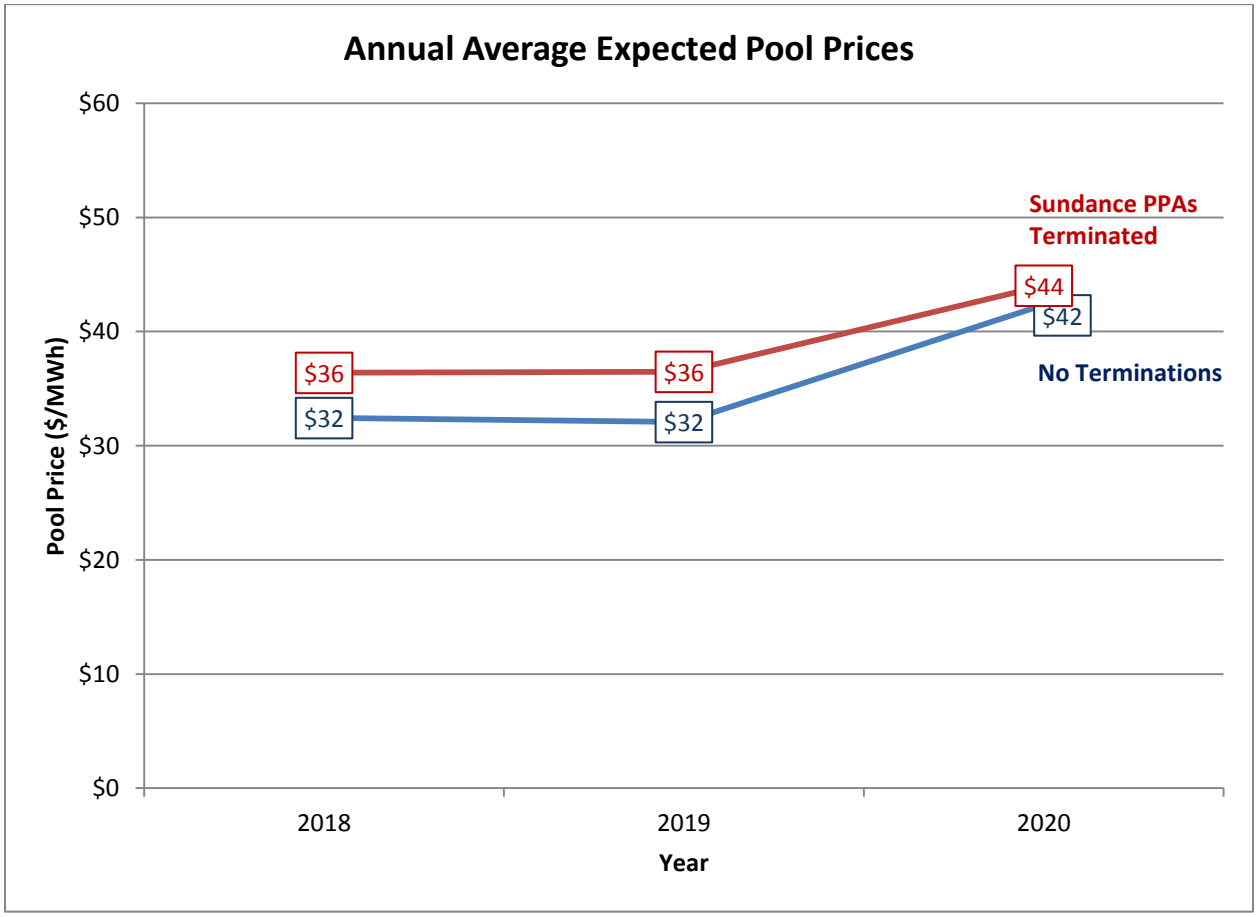
- The lowermost line in the graph is the mean, or expected, average monthly pool price over the relevant time horizon assuming the Sundance PPAs *are not* terminated.

- The yellow (and overlapping green) shaded area represents the new range between the 10th and 90th percentile pool price for a given month assuming the Sundance PPAs *are* terminated.

- The uppermost line in the graph is the mean, or expected, average monthly pool price over the relevant time horizon assuming the Sundance PPAs *are* terminated.

With the PPA terminations in effect, overall price levels and price volatility have the potential to increase should the Owners employ more aggressive offer strategies with the units underlying the terminated PPAs and as some of the less economical PPA units are decommissioned or mothballed.

The next chart looks at the price impact of terminating the Sundance PPAs in terms of annual averages.



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 Sundance PPAs into the market whereas the red line shows the annual price averages assuming the Sundance PPAs are terminated.

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 Balancing Pool's PPAs could provide a small offset as the Balancing Pool may have less need to collect from consumers via a 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 Sundance PPAs to be terminated.

The financial analysis suggests the Balancing Pool could significantly mitigate its PPA losses if it were to terminate the Sundance PPAs. The net benefit of terminating the Sundance PPAs is expected to be $475 to $518 million after making the required $171 in termination payments to the Owner.

The Balancing Pool examined the implications of terminating the Sundance PPAs 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 terminations on wholesale electricity prices and the Balancing Pool charge. Forecasts suggest that terminating the Sundance PPAs may result in an increase in prices once the PPAs are no longer with the Balancing Pool. The higher prices following the PPA terminations should increase the value of the PPAs retained by the Balancing Pool, providing a partial offset for consumers.