Department of Energy

Bonneville Power Administration
P.O. Box 3621

Portland, Oregon 97208-3621

POWER SERVICES

April 12, 2016

In reply refer to: PTL-5

To: Regional Customers, Stakeholders, and Other Interested Parties

RE: Request for Comment: Bonneville Power Administration Proposal regarding Amendment No. 3 to Power Sales Agreement with Alcoa, Inc.

Bonneville Power Administration (Bonneville) is considering entering into proposed Amendment No. 3 to Power Sales Agreement 13PM-10978 (Agreement) between Bonneville and Alcoa, Inc. The term of the Amendment would begin on July 1, 2016, and expire by its terms on February 14, 2018. Prior to making a final decision, the Administrator is seeking comments from regional customers, stakeholders, and other interested parties that would assist the Administrator in determining whether entering into Amendment No. 3 is consistent with sound business principle, as compared to the alternative of Alcoa exercising its curtailment rights and reducing its total Intalco plant load to no more than 10 MW at the IP rate.

In addition to negotiating the terms of proposed Amendment No. 3 with Alcoa, Bonneville has discussed the proposed amendatory terms and conditions on two occasions with representatives of Bonneville's preference customers, first on March 22, 2016 and then again on April 4, 2016. Bonneville values the input provided in these two discussions and has considered these comments in negotiation and drafting this proposal.

Commenters should bear in mind that there are only two alternatives under consideration: proposed Amendment No. 3 or Alcoa Intalco operations to 10 MW during the period covered by Amendment No. 3.

You may view and comment on the proposed Amendment No.3 online at www.bpa.gov/goto/DSI until noon. April 22, 2016. Comments may be submitted to Bonneville at:

1. Online at: www.bpa.gov/comment;
2. By mail: to Bonneville Power Administration, Public Affairs Office – DKE-7, P.O. Box 14428, Portland, OR
3. By fax: (503) 230-4019.

Please feel free to provide any additional insights regarding the benefits that would be achieved by entering into Amendment No. 3, any risks that may not have been accounted for in the documents provided, or any other information that would assist the Administrator in coming to a sound business decision.

Sincerely,

/s/ Suzanne B. Cooper

Suzanne B. Cooper

ATTACHMENTS:

Proposed Alcoa Amendment No. 3 – Summary & Discussion

Amendment No. 3 (Draft)

PROPOSED ALCOA AMENDMENT No. 3
SUMMARY AND DISCUSSION

I. Overview

Bonneville is considering entering into proposed Amendment No. 3 to Alcoa, Inc.'s (Alcoa) current Power Sales Agreement 13PM-10978 (Agreement). The Amendment No. 3 would be effective on July 1, 2016, and expire by its terms on February 14, 2018. The fundamental purpose of the proposed Amendment No. 3 is that, in exchange for Alcoa providing the positive benefits described in this analysis, Bonneville will waive its contractual right to require Alcoa to purchase 75 MW of power at the IP rate prior to Alcoa making purchases on the open market to operate its Intalco aluminum smelting facility in Ferndale, Washington.

The benefit to Alcoa of this arrangement is that it would be able to maintain operations at their current level of two and one-half pot lines with approximately 350 MW of power, purchased mostly on the market, rather than curtailing production to only its cast house operations and purchasing a maximum of 10 MW from Bonneville under its current contract for the period of time covered by Amendment No. 3.

The proposed Amendment allows Bonneville to obtain substantially greater immediate benefits during its term than it would achieve if Alcoa were to exercise its curtailment rights under the contract and purchase 10 MW of power from Bonneville at the IP rate. Bonneville's analysis estimates the total additional value of entering into Amendment No. 3 to be slightly over $5.29 million. These benefits include: 1) $1.5 million cash payment, 2) $635K market sale ($0.75 price adder), 3) $2.03 million in Avoided Transmission and Ancillary Service Expenses, 4) $572K of potential Oversupply Reduction Cost, and 5) $548K in free additional Contingency Reserves offered. As described below, $5.29 million represents the net financial benefit over the alternative of a curtailment only to 10 MW purchased at the IP Rate.

II. Background

On November 16, 2015, Alcoa notified Bonneville that it was exercising its right to curtail its purchase amount from 75 MW to 10 MW starting February 15, 2016, through August 14, 2017 (Curtailment Period). Then on January 11, 2016, Alcoa requested that the parties engage in discussions regarding under what conditions Bonneville would allow Alcoa to purchase market power from February 15, 2016 through June 30, 2016.

Pursuant to Section 5.5 of the Agreement, Alcoa cannot make any market purchases from third-party suppliers to replace any portion of the amount curtailed. Section 5.5 states:

> During any period of curtailment, Alcoa shall not make any market purchases from third party suppliers to replace all or any portion of the amount curtailed.

Thus, Bonneville was faced with the alternative of selling 10 MW of firm power at the IP Rate during the 18 month curtailment period, or considering other options that would include suspending the restriction under Section 5.5 of the Agreement while providing Bonneville with benefits in excess of those it would otherwise achieve if it did not waive the restriction.

On February 10, 2016, Bonneville entered into Amendment No. 2 to the Agreement which suspended operation of Section 5.5 in consideration for Alcoa purchasing 300 MW of surplus power from Bonneville at an above market price. From Alcoa's perspective, Amendment No. 2 allowed continuation of plant operations at the pre-curtailment operating level of 2.5 pot lines. Amendment No. 2 also made it possible for Bonneville to receive financial and secondary benefits that it would otherwise not have obtained. For more details regarding Amendment No. 2, see Bonneville's letter to the region dated March 9, 2016.

The short term of Amendment No. 2 permits Alcoa to continue its current level of operations at the Intalco plant, in Ferndale Washington, only through June 30, 2016. Proposed Amendment No. 3 would allow Alcoa to operate beyond June 30, 2016, until the 24 months of curtailment permitted under its contract have been exhausted on February 14, 2018. As with Amendment No. 2 Bonneville will, in return, receive significant benefits beyond what it would otherwise receive if Alcoa actually curtailed its operations to no more than 10 MW during the same period. The terms of proposed Amendment No. 3 and the benefits that would accrue to Bonneville are described in more detail below.

To determine if Amendment No. 3 is consistent with sound business principles, Bonneville is using the following analysis to compare the forecasted economic value of two alternatives: (1) curtailment 10 MW IP Firm Power through the remainder of Alcoa's curtailment rights, (Alternative 1); or (2) execution Amendment No.3 (Alternative 2).

III. Structure of Amendment No 3

The structure of proposed Amendment No. 3 essentially involves four different features that provide value to Bonneville:

- An upfront cash payment.
- An IP Firm Power Sale of 10 MW with the possibility of increasing above 10 MW.
- A Surplus Power Sale with an adder above Market Index Price[1] .
- The incremental provision of Contingency Reserves.

This structure allows Bonneville to limit perceived risk, but also realize operational benefits associated with additional Contingency Reserves, Avoided Transmission and Ancillary Service Expenses, and a reduced likelihood of Oversupply Costs during the spring run-off period. The following sections describe the approach BPA took to evaluate these components and other considerations in assessing the benefits and risks of Amendment No. 3. The remaining sections are as follows:

[1] "Market Index Price" means the Intercontinental Exchange (ICE) Mid C Peak Day Ahead and ICE Mid C Off-Peak Day Ahead index for Heavy Load Hours and Light Load Hours. The Market Index Price shall have a floor of zero.

- Section IV, Description of Quantitative Benefits, describes the methodology used to evaluate tangible benefits provided by components of Amendment No. 3.
- Section V, Description of Qualitative Benefits, describes intangible benefits presented by Amendment No. 3.
- Section VI, Economic Comparison of the Alternatives, presents the values of quantitative benefits for those components addressed in Section IV. These results are also further summarized in Attachment A, Economic Value of Alternatives.
- Section VII, Features of the Amendments, walks through a number of new contract features in Amendment No. 3.
- Section VIII presents Bonneville's preliminary conclusion.

IV. Description of Quantitative Benefits

The following section provides an overall description of the quantitative financial benefits Bonneville could realize from Alternative No. 2 compared to Alternative No. 1. Bonneville has used the most recent data available to calculate the value of both alternatives. As such, this analysis identified six quantifiable benefits: 1) cash payment in partial consideration, 2) Net Benefits of 10 MW Sale at the IP Rate (IP minus Market), 3) Net Benefits of Surplus Sale (Price Adder from Market Sale, 4) savings from Avoided Transmission and Ancillary Services Expenses, 5) Oversupply Reduction Cost, and 6) additional Contingency Reserves provided at no cost. The methodology employed in evaluating these benefits is described below.

1. **Cash Payment as Partial Consideration.** Cash compensation is provided from Alcoa to Bonneville in partial consideration for Bonneville waiving its contractual right to require Alcoa to purchase 75 MW of power at the IP rate prior to Alcoa making purchases on the open market. Bonneville considers the cash payment as an essential component of the overall value of the arrangement.

2. **Net Benefits of 10 MW Sale at the IP Rate (IP minus Market).** Bonneville routinely shapes its inventory to meet the needs of its portfolio of contracts and sells its surplus inventory in the Pacific Northwest power market as described in Bonneville's BP-16 Administrator's Final Record of Decision. Additionally, Bonneville routinely forecasts Mid-Columbia trading hub (Mid-C) electricity prices consistent with the methodology described in the BP-16 Administrator's Final Record of Decision to value these purchases and sales. Bonneville calculates the net benefit of serving Alcoa at the IP rate for each month by subtracting the revenues for the same amount of power at forecasted market prices from the projected IP revenues.

3. **Net Benefits of Surplus Sale (Price Adder from Market Sale).** As part of the negotiations Alcoa has agreed to purchase surplus power from Bonneville to meet some of its load at the Intalco Facility. The surplus power sale is shaped across the period, reflecting two different quantities during three separate time periods based on seasonal

variation in Bonneville's surplus inventory. All surplus sales include a price adder of $0.75 per MWh above the Market Index Price, which translates directly into positive net revenue regardless of market price levels.

Time Period	Volume
July 1, 2016 – March 31, 2017	25 MW
April 1, 2017 – June 30, 2017	250 MW
July 1, 2017– February 14, 2018	25 MW

4. **Avoided Transmission and Ancillary Services Expenses.** When purchasing power, DSI customers cover the cost of transmission and ancillary services through their own transmission contracts. Wholesale electricity market prices, on the other hand, assume power is delivered by the seller to the Mid-Columbia trading hub (Mid-C); thus, the seller pays for the cost of transmission and ancillary services to that delivery point.

   Power Services (PS), the organization within Bonneville that is responsible for the marketing of federal power, must pay the transmission and ancillary services costs to move surplus power to the Mid-C delivery point in order to realize the full market value for its surplus sales. PS maintains an inventory of transmission products and services to deliver the surplus power to market. However, this transmission product inventory is not sufficient to deliver all of the surplus power PS might sell under all load and resource conditions, especially during periods of high stream flows. As a result, there is a subset of load and resource conditions under which PS would incur incremental costs for transmission and ancillary services to deliver incremental surplus energy sales. The incremental transmission and ancillary services costs are avoided when Bonneville sells power to the DSIs because DSIs contract for their own transmission and ancillary services. The PS transmission and ancillary services expenses, both the expected expenses and their uncertainty, were addressed in the BP-16 Final Rate Proposal and are expected to be similarly addressed in each subsequent Bonneville rate proceeding.

   PS valued these avoided transmission and ancillary services expenses from July 1, 2016 through February 14, 2018, using the same methodology employed in the BP-16 Final Rate Proposal to establish the total costs and risks associated with PS's inventory of transmission products and services. For this analysis, Bonneville used transmission rates established in the BP16 Final Rate Proposal and a forecast of the changes in the transmission tariff rates from October 1, 2017 through February 14, 2018. The transmission tariff rates used beyond the BP-16 rate period reflect the best estimates available at the time of this analysis.

   In these computations, both fixed, take-or-pay costs and variable incremental transmission and ancillary services costs were computed under 3,200 monthly load and resource conditions that did not include augmentation purchases. The augmentation purchases were removed to reflect that under most system load and resource conditions Bonneville would not need to purchase power to serve Alcoa's IP load and surplus energy sales. Incremental transmission and ancillary services costs were computed by comparing the amount of surplus energy available to the monthly excess amount of firm transmission products in the PS inventory and applying tariff rates to the amount of surplus energy in excess of the PS transmission products inventory. For additional information regarding the computations of the Amendment No.3, monthly transmission and ancillary services costs, refer to the footnote provided in the Economic Value of the Alternatives located in Attachment A at the end of this document.

5. **Oversupply Cost Protection.** At times, during the spring months, Bonneville may experience a situation of oversupply. When snow melt is high, seasonal rains continue through the spring, and the wind fleet is at high production, Bonneville seeks to avoid impacts on threatened and endangered salmon due to spill and thus moves water through turbines which results in oversupply conditions. Consequently, there is a probability that Bonneville may face additional costs to the extent it curtails and compensates wind generation for their lost revenue. Even though oversupply does not occur every spring, having Alcoa's load in place in the coming spring is good insurance for mitigating such costs should they arise.

6. **Additional Contingency Reserves.** When Bonneville self-supplies Contingency Reserves from the Federal Columbia River Power System (FCRPS), it de-optimizes water use, effectively shifting a portion of the generation profile from higher-value periods into lower-value periods. When a new source of Contingency Reserves is added to the system from outside the FCRPS, the value of those reserves are measured in terms of improved optimization of FCRPS generation stemming from the reduction in self-supplied reserves.

V. Description of Qualitative Benefits

Qualitative Benefits are those benefits Bonneville recognizes to have positive financial impact to the agency whether directly or indirectly. Because they are more qualitative in nature than the benefits described in the previous section, Bonneville has elected not to place a monetary value on them at this time. Bonneville has identified three qualitative benefits: 1), Demand Shift, 2), Continued participation in Bonneville's third party supply program 3) and Future Net Benefits.

1. **Demand Shift:** When large regional loads including Alcoa's operate, as opposed to not operating, Bonneville will receive indirect benefits due to upward pressure on market prices. Bonneville's surplus sales will realize increased revenues because the mean value of prices for electricity in Western power markets are higher than they would otherwise be had the Alcoa loads not consumed electricity from Western power markets. See 2009 Alcoa ROD at 44, 68–70.

In some previous benefit analyses Bonneville elected not to include Demand Shift as a contributing benefit because there was no clear indication whether Alcoa's load would or would not continue to exist had a contract not been executed. Considering Alcoa will be required to curtail its load significantly if Amendment No. 3 is not agreed to, Bonneville determined it would be appropriate to acknowledge the effect on the market (and potential upside benefits to Bonneville) from having Alcoa's load in the region. Although Bonneville sees value in the Demand Shift, it has elected not to include a quantitative value to this analysis.

2. **Continued participation in Bonneville's third party supply program:** Alcoa has been an active participant in Bonneville's third party supply program. Participation in the program requires that the bidder have significant electrical load that can reliably be reduced on short notice. When more bidders can participate in the program, Bonneville benefits from the enhanced competition.

3. **Future Net Benefits:** Alcoa's IP Firm Power commitment to take-or-pay increases to 75 MW on February 15, 2018 and will continue through the remainder of the Agreement, that is September 30, 2022. If prices in the power market continue to remain at their current depressed levels Bonneville could realize substantial future net benefits, provided the market for aluminum produced in the U.S. remains viable.

VI. Economic Comparison of the Alternatives

The following is a comparison between Alternative No.1 and Alternative No. 2 using the methods referenced in Section IV of this analysis. Under Alternative No. 1, Bonneville sells 10 MW IP Firm Power at the IP Rate from July 1, 2016 through February 14, 2018 (Remaining Curtailment Period). With Alternative No. 2 Alcoa provides to Bonneville a cash payment in the amount of $1.5 million; Bonneville sells Alcoa 10 MW IP firm power for the Remaining Curtailment Period; Bonneville sells Alcoa 25 MW of surplus firm power flat for the Remaining Curtailment Period (356,425 MWh); Bonneville sells an additional 225 MW of surplus firm power for the period beginning April 1, 2017 through June 30, 2017 ("Spring Period"); all surplus firm power sales to Alcoa Power Market, LLC, to be priced at Market Index Price + $0.75/MWh. Alcoa provides, at no cost to Bonneville, an additional 30 MW of Contingency Reserves for the Remaining Curtailment Period, with the exception of the Spring Period.

- **Alternative No.1 (10 MW IP Sale Only)**
    - No Cash Payment: $0
    - Net Revenue: $3 million (IP minus Market).
    - Avoided Transmission Cost: $207K (when compared to a surplus sale).
    - Oversupply Reduction Cost: $23K.
    - **Total benefit: $3,263,188.**

- **Alternative No. 2 (Long-Term Amendment)**[2]
    - Cash Payment: $1.5 million.
    - Net Revenue: $3 million (IP minus Market).
    - Surplus Power Sale: $635K net revenue
    - Avoided Transmission Cost: $2.2 million
    - Additional Contingency Reserves: $548K.
    - Oversupply Reduction Cost: $595K in potential Oversupply Reduction.
    - **Total benefit as much as $8,554,098**

The analysis demonstrates that the expected financial benefits of Alternative No.2 exceed what Bonneville would receive under Alternative No.1, especially when operational benefits are considered.

Bonneville estimates the overall benefit of Alternative No.2 minus the benefits of Alternative No.1 to be slightly more than **$5.29 million.**

VII. Features of the Amendments

There are a number of new contract features that are introduced into Amendment No. 3, as well as features that will remain in effect from Amendment No. 2 and after Amendment No. 3 is executed.

1. **Suspension of Section 5.5.** In the original Agreement, Alcoa is prevented from purchasing market power from third party suppliers to replace all or any portion of the amount curtailed of IP Firm Power. In order to allow Alcoa to acquire any power during their 24 month curtailment period, Bonneville must first agree to suspend this provision. The purpose of the provision is to prevent Alcoa from obtaining access to lower market priced power by triggering its right to curtail Bonneville does not believe Alcoa is using its right to curtail simply to access lower power. Instead, Bonneville understands Alcoa's business predicament of needing to respond to deep and continuing unfavorable conditions in the global aluminum market. Thus, in these circumstances, it is reasonable given Bonneville's expected economic benefits under proposed Amendment No.3 to suspend Section 5.5's restrict on Alcoa and allow it to make market purchases as needed to maintain operation of the Intalco Facility. Amendment No. 3 clarifies that Alcoa will have no remaining rights to curtail after February 14, 2018 (provided Trigger Event does not occur, as described in Section 4.5.2 of proposed Amendment No. 3) and will then be required to purchase 75 MW of Firm Power.

2. **Payment in Partial Consideration for Suspending Section 5.5.** As part of the overall benefits supplied to Bonneville for suspending Section 5.5, Alcoa has agreed to provide a cash payment of $1,500,000 to Bonneville. This amount shall be due no later than the

[2] Includes values from Alternative No. 1.

due date specified on Alcoa's June 2016 invoice and will not be counted against Alcoa's Make Whole Amount obligation revised in Amendment No. 2.

3. **IP Firm Power Increase During Curtailment – Wind Fall Protection.** Alcoa and Bonneville understand the importance of aluminum prices to the viability of Alcoa's smelter. As such, Alcoa agrees to increase the level of IP Firm Power it will purchase during the curtailment period if Alcoa sees increased revenue due to aluminum price increases. If the London Metal Exchange Price of aluminum rises to a specified price per ton then the power sale will revert to an increase of IP Firm Power. The requirements placed on Alcoa to increase the level of IP Firm Power during curtailment are specified in Section 2 (a) of Amendment No. 3. Although this feature can provide additional value with little to no risk, it was not a determining factor in Bonneville's negotiations with Alcoa but simply a way of insuring that the purpose of Section 5.5 of preventing a windfall, as stated previously, would be preserved in the event of unexpected events in the aluminum market.

4. **Additional Contingency Reserves.** The original Agreement requires Alcoa to provide Contingency Reserves in a manner consistent with the Minimum DSI Operating Reserve – Supplemental specified Exhibit H. Section 2(d) of Amendment No. 3 requires Alcoa to provide additional Contingency Reserves on top of its current obligations under the Agreement. The level of additional Contingency Reserves provided by Alcoa will be 30 MW, which will be supplied during certain periods of the amendment. In the event Alcoa fails to meet this obligation then Bonneville shall determine the value of those reserves for the purpose of compensating Bonneville for any lost value.

5. **Surplus Power Sale.** Alcoa agrees to purchase 250 MW of Surplus Power from Bonneville in the Spring Period. This Surplus Power Sale contributes benefits in the form of 1) price adder over Market Index Price, 2) oversupply protection, and 3) avoided transmission and ancillary services expenses.

6. **Credit Assurance.** Alcoa will continue to provide current credit assurance arrangements through the duration of the Amendment No. 3 in the form of an ongoing letter of credit. Bonneville can also seek other performance assurance if Alcoa's viability becomes unsatisfactory.

7. **Make Whole Amount:** The Make Whole Amount obligation established in Amendment No. 1 and revised in Amendment No. 2 will remain unchanged.

VIII. Conclusion

Bonneville's preliminary analysis indicates that Bonneville would obtain greater value by entering into Amendment No. 3, as opposed to the alternative of receiving IP revenues for a 10 MW sale during the period of curtailment. The Administrator looks forward to receiving comments from interested parties that would assist in evaluating those options and reaching a final decision regarding whether to move forward with signing the Amendment.

Attachment A
Economic Value of the Alternatives

Quantitative Direct Financial Benefits	Alternative No. 1 (10 MW IP Only)	Alternative No. 2 (Amendment No. 3)	Incremental Value of Alternatives No.2
IP Sale Net Revenue	$3,032,715	$3,032,715	$0
Cash Payment	$0	$1,500,000	$1,500,000
Market Sale	$0	$635,869	$635,869
Avoided TX Purchase	$207,576	$2,241,548	$2,033,972
Oversupply Reduction	$22,897	$595,316	$572,419
Contingency Reserves	$0	$548,650	$548,650
Total	**$3,263,188**	**$8,554,098**	**$5,290,910**

Note 1: *IP Sale Net Revenue refers to revenue above the value of the power if it were sold at the market price. Market value assumes forward market settlement prices as of 3/7/2016.*

Note 2: *Market Sale estimate based on 25 MW sale for the period covered by Amendment No. 3, plus an additional 225 MW in the calendar year 2017 Q2 period. Value based on the $0.75/MWh adder specified in Amendment No. 3. Current internal studies indicate Bonneville is surplus all year at the median, as well as under a variety of water conditions, load conditions, and thermal generation outage scenarios.*

Note 3: *FY16 inventory numbers based on FY16 Q2 Financial Review numbers using HOSS 16 Study; FY17 inventory numbers based on BP16 Rate Case values adjusted from 75 MW to 10 MW of Alcoa IP load and augmentation purchases removed; FY18 inventory values based on 2015 White Book vintage data adjusted from 75 MW to 10 MW of Alcoa IP load and augmentation purchases removed; FY16 and FY17 transmission rates based on BP16 rate case values; FY18 transmission rates are based an internal long-term transmission rate forecast made at the time of the FY16 IPR2 process.*

Note 4: *Oversupply Reduction value assumes 9 days of oversupply during the April-June period, in graveyard hours only, with cost of $65/MWh. The $/MWh cost of oversupply is derived from a polynomial curve approximation of the oversupply cost curve; actual costs of oversupply will vary widely with hydrological conditions and geographic concentration of wind generation at the time oversupply conditions occur.*

Note 5*: Contingency Reserve value estimated as potential additional energy shaping capability in months outside of calendar year 2017 Q2. Assumes forward market settlement prices as of 3/7/2016.*