UNITED STATES OF AMERICA
DEPARTMENT OF ENERGY
BEFORE THE
BONNEVILLE POWER ADMINISTRATION

Fiscal Year 2020-2021 Proposed Power and Transmission Rate Adjustments	)))	**BPA File No.: BP-20**

REBUTTAL TESTIMONY OF:
Public Power Council

SUBJECT:
BPA Southern Intertie Hourly Rates

WITNESSES:
Michael Deen

March 28, 2019

INTRODUCTION

Q: Please state your name and qualifications.

A: My name is Michael Deen. My qualifications are shown at BP-20-Q-PP-01.

Q: What is the purpose of your testimony?

A: The purpose of this testimony is to address the testimony of Joint Party 1 (BP-20-E-JP01-02 authored by Jeffrey A. Parker and Lon L. Peters, and BP-20-E-JP01-01 authored by Lon L. Peters) in this proceeding regarding BPA's proposed rates for hourly service on BPA's Southern Intertie segment (hereinafter the "Southern Intertie"). Joint Party 1 ("JP01") consists of Sacramento Municipal Utility District (SMUD), Turlock Irrigation District (TID), and the Transmission Agency of Northern California (TANC). The testimony of JP01 alleges various harms and unintended consequences from the Southern Intertie hourly rates BPA adopted in BP-18 and recommends discounting the rates going forward.

Q: Please summarize your overall conclusions.

A: The analysis that underlies JP01's conclusions and recommendations is so fundamentally flawed that JP01's testimony has no probative value and should be given no weight in this proceeding. The rates BPA adopted in BP-18 are functioning appropriately without the unintended consequences JP01 alleged. The proposed BP-20 rates are reasonable and should be adopted.

Q: How is your testimony organized?

A: Section 1 is this introduction. Section 2 addresses the economic theories and analysis presented in *Parker and Peters*, BP-20-E-JP01-02. Section 3 addresses the analysis and recommendations presented in *Peters*, BP-20-E-JP01-01.

JP01's ECONOMIC THEORY AND ECONOMETRIC ANALYSIS

Q: What is the purpose of this section of your testimony?

A: The purpose of this section is to address the testimony submitted as exhibit BP-20-E-JP01-02 and its associated attachments. That testimony purports to apply economic theory and analysis to quantify the effects of BPA's Southern Intertie hourly rates on regional energy markets.

Q: Please summarize your conclusions regarding Parker and Peters, *BP-20-E-JP01-02.*

A: The economic theory that tariffs on exports are barriers to trade cited by JP01 as the basis for their analysis has no relevance to BPA's Southern Intertie hourly rates. Given that there is no plausible economic reason for the level of Southern Intertie hourly rates to have a substantial impact on regional prices, its inclusion as an explanatory variable in the JP01 econometric analysis has no causal meaning. Therefore, conclusions drawn from the analysis regarding the effect of Southern Intertie hourly rates are not only meaningless but are used to support highly misleading conclusions. In fact, the analysis is so flawed that it should be given no weight in this proceeding and undermines the credibility of all aspects of the JP01 case.

Q: Please describe in more detail the economic theory that JP01 attempts to apply to analysis of the hourly rates for service on BPA's Southern Intertie segment.

A: The basic premise of JP01's analysis in this proceeding is that the increase in rates for hourly service on BPA's Southern Intertie functions as a "tax" or "tariff" on exports from the Pacific Northwest to California and thus acts as a "barrier to trade" in hourly or real time markets. Under this theory, energy is inhibited from export from north to south, meaning more energy is sold in the Northwest Mid-C market and less supply is available in California markets.

All else equal, greater supply at Mid-C will lower those prices and less supply in California would raise those market prices.

Q: Is this application appropriate?

A: No. The Southern Intertie hourly rates do not constitute a barrier to trade in any significant degree, if at all. First, the full capacity of the BPA Southern Intertie segment is subscribed on a long-term firm basis. This means that there is zero marginal cost or "hurdle rate" for exports. To the extent there is any net margin between the Pacific Northwest and California markets, long-term firm customers on the segment are incented to either make transactions using their rights or resell them to another party.

In actuality, only approximately one percent of net flows from North to South are original hourly reservations. In FY 2018, this represented 57 aMW. This amount is extremely minimal not only in the context of the intertie itself, but even more so relative to the overall size of the Pacific Northwest and California markets. There is no rational basis to conclude that a change in price affecting this small volume of transactions could have a substantial effect on the underlying market fundamentals either in the Northwest or California.

BPA's BP-18 rate design change did not create a barrier to trade; ironically, it helped prevent that exact outcome. By better incenting investment in long-term firm, the rate change increased the probability of full subscription of the segment, which minimizes the amount of transactions that would face an incremental transmission cost.

Q: Have members of JP01 attempted to use this theory previously to argue harm from the Southern Intertie hourly rates?

A: Yes. A presentation titled "Impacts of BPA Southern Intertie Rate Increase" was given in a pre-rate case workshop on July 25, 2018. *See* Exhibit 1. That analysis attempted to use the production cost model AURORA to demonstrate harm to BPA and its customers by applying the hourly rate change as a hurdle rate to all transactions using the Southern Intertie despite a complete lack of logical or factual basis to do so. BPA staff filed a response appropriately rejecting the assumptions, methodology, and results of that analysis. *See* Exhibit 2. The present JP01 analysis, while using different tools, suffers from the same basic conceptual flaw and its conclusions are equally irrelevant.

Q: Please describe the econometric analysis conducted by JP01.

A: JP01 conducted a series of multiple regression analyses to attempt to show the effect of the BP-18 rate change on various market prices and trading volumes in the Northwest and California during FY 2018. These analyses incorporated a variety of explanatory variables, including the hourly rate change.

Q: Given the issues you have identified in the application of underlying economic theory by JP01, what are the implications for including the hourly rate change as an explanatory variable in these regression analyses?

A: Because there is not a valid economic reason for the hourly rate change to have a substantial effect on the dependent variables, its inclusion as an explanatory variable has no causal meaning. The alleged relationship between BPA's rate change and market prices is simply a correlational artifact of these particular multiple regression formulations. Therefore, conclusions from the analysis regarding the effects of the BPA Southern Intertie hourly rates are meaningless at best. At worst, they could provide a misleading basis to promote unfounded changes in policy.

Q: Are there aspects of JP01's own analysis that further undermine their theory of the causal relationship between the rate change and market prices?

A: Yes. JP01's hypothesized mechanism for market price effects is that the change in hourly rate would inhibit exports from the Northwest to California. By JP01's own admission, changes in volume at all three hubs from their analysis were either statistically insignificant or economically insignificant. This means that JP01's analysis does not support the application of economic theory that is the foundation of their case.

Q: Are there other serious issues with the JP01 econometric analysis beyond this foundational fault in logic?

A: Yes. The implementation of the regression analyses has a number of other issues that further degrade their probative value. Perhaps the most problematic of these is inclusion of other explanatory variables that have no plausible economic meaning.

Q: Please discuss the variable "powerexeimentry" and its implications in the JP01 econometric analysis.

A: The most egregious of these is the variable "powerexeimentry" that represents the date that Powerex began participation in the Western Energy Imbalance Market (EIM), April 4, 2018. This variable is never mentioned or explained in the JP01 testimony. Despite this lack of explanation, in JP01's analysis, "powerexeimentry" variable accounts for $15.77 per MWh of upward pressure on Mid-C day-ahead prices and $11.34 per MWh on Mid-C real time prices. Given the circumstances of Powerex's participation in the EIM, the magnitude of this alleged increase is implausible. Powerex's participation in the EIM is limited in scope and could not plausibly have this level of effect on Mid-C prices. Further, Powerex is a long-time participant in California markets. JP01 has presented no evidence that Powerex or any other entity's participation in the EIM has substantively changed the underlying fundamentals for market prices in the Northwest or in California. Removing the "powerexeimentry" variable from the

JP01 models eliminates even the statistically significant correlation of the variable for the BPA hourly transmission rate and Mid-C prices. As discussed previously, the correlation of the hourly rate variable to prices had no economic meaning in any case.

Q: What are some other concerns with the JP01 regression analysis?

A: JP01's decision to calculate market prices using a subset of market participants is problematic. First, there is a basic question of whether this subset is an accurate representation of the overall market. Second, using EQR data for only a subset of sellers makes the various "buyer concentration" and "seller concentration" variables included in the JP01 regression models meaningless. These calculated concentrations, by definition, cannot reliably represent the full range of buyers and sellers transacting in the market. Further, just because an entity did not end up executing a transaction during a given interval does not mean that it was not active as a prospective buyer or seller.

Q: Please discuss the explanatory capability of the JP01 regression results.

A: In addition to all the logical reasons why the JP01 analysis cannot be used to support a cause and effect relationship between the BP-18 hourly rate change, the level of explanatory capability is not high enough to support confident decision-making. The key result that JP01 uses to assert harm to BPA and its customers is the alleged effect of the hourly rate change on day-ahead Mid-C prices. However, this model overall has an R-squared value of 0.189. This means that the model, including all 26 explanatory variables, can only explain 18.9% of the observed variance in the dependent variable (i.e. day-ahead Mid-C prices).

JP01 provided a hyperlink to a Harvard Business Review article titled "A Refresher on Regression Analysis" as part of their testimony. *Parker and Peters*, BP-20-E-JP01-02 at 9, line 16. A section with the heading "What mistakes do people make when working with regression analysis?" appears at the end of the article. Amy Gallo, *A Refresher on Regression Analysis*, HARVARD BUSINESS REVIEW, Nov. 4, 2015, *available at* https://hbr.org/2015/11/a-refresher-on-regression-analysis. It states that one mistake is not recognizing when a model explains only a small part of the relationship between variables. *Id.* The article concludes that under this circumstance, it is a mistake to claim results with a great degree of precision. *Id.* Yet, this is exactly what JP01 has done in confidently alleging a precise point estimate of harm to BPA and other Northwest entities.

Q: Given the foregoing analysis, what are your conclusions regarding the econometric analysis presented in Parker and Peters*, BP-20-E-JP01-02?*

A: The econometric analysis presented by JP01 in this testimony is deeply flawed. The fundamental economic premise for including the change in hourly rate as an explanatory variable is unsupported. As such, the results have no economic or causal value in explaining market price levels, resulting in a textbook example of the truism "correlation is not causation." Further, even the statistically significant correlation of the hourly rate change to market prices rests on the inclusion of other arbitrary variables in the analysis that are not supported by economics.

As discussed elsewhere, the econometric analysis in *Parker and Peters*, BP-20-E-JP01-02 represents the foundation for all of JP01's most important conclusions and recommendations. However, that analysis is so flawed and misleading that it undermines the credibility of all JP01 arguments in this proceeding.

Simply put, the JP01 econometric analysis has no probative value in determining the effect of the BP-18 hourly rate change on market prices and any conclusions or recommendations drawn from it should be given no weight in this proceeding.

JP01 RATE IMPACT ANALYSIS AND RECOMMENDATIONS

Q: What is the purpose of this section of your testimony?

A: This section of testimony addresses the analysis and recommendations presented in *Peters*, BP-20-E-JP01-01 and associated attachments. This includes allegations of harm from the BP-18 Southern Intertie hourly rates to BPA and Northwest public power entities as well as to members of JP01. It ultimately recommends discounting the rates for hourly service on the Southern Intertie segment.

Q: Please summarize your conclusions.

A: JP01's allegations of harm and unintended consequences resulting from the BP-18 rates for Southern Intertie hourly service are baseless, misleading, and should be given no weight in this proceeding. There is no rationale for discounting hourly service on the Southern Intertie from North to South. On the contrary, the BP-18 rate change is working as intended to incent investment in long-term firm service on the Southern Intertie segment, which remains fully subscribed on long-term basis. The seams issues and market conditions that the BP-18 rates were designed to address will almost certainly persist in the BP-20 rate period. The proposed rates for Southern Intertie hourly service in BP-20 are justified and should not be discounted.

Q: What allegations has JP01 made regarding harm or unintended consequences as a result of the BP-18 changes in hourly rates for service on the Southern Intertie Segment?

A: Based on its econometric analysis, JP01 is alleging that BPA Power Services suffered a net harm of approximately $44.1 million in FY 2018 as a result of the Southern Intertie hourly rate change in BP-18. Additionally, JP01 alleges that Seattle City Light, Tacoma Power, Snohomish PUD, and Eugene Water and Electric Board suffered combined revenue loss of $17.4 million.

Q: Are these conclusions of harm to BPA and Northwest public power entities credible?

A: No. These calculations are based on the deeply flawed econometric analysis presented in *Parker and Peters*, BP-20-E-JP01-02. As discussed previously, this analysis is so deeply flawed and misleading that any conclusions drawn from it regarding the effect of the BP-18 Southern Intertie hourly rates are meaningless and should be given no weight in this proceeding.

Q: Has JP01 alleged harm to the members of its joint party?

A: Yes. The JP01 testimony alleges a range of likely harm to SMUD of $7.7 million to $14.7 million annually. This is based on a separate linear regression analysis including the BPA hourly rate as an explanatory variable. Additionally, JP01 alleges that TID lost $2 million in revenues from Northwest market sales.

Q: Are these allegations of harm to JP01 members credible?

A: No. Similar to the flaws with JP01's econometric analysis of market prices, there is no economic basis provided for inclusion of the Southern Intertie hourly rate as an explanatory variable in the regression analysis. As such, the coefficient has no meaning from a causal perspective. The allegations of harm to TID are baseless in the same manner as the alleged harm to BPA and Northwest entities.

It is particularly telling that the econometric analysis presented in *Parker and Peters*, BP-20-E-JP01-02 contradicts the analysis presented by one of the same witnesses in *Peters*, BP-20-E-JP01-01. The previous econometric analysis alleged that day-ahead prices at COB were actually lowered by $5.41 per MWh, while COB real-time prices rose by only $0.35 per MWh (although neither were statistically significant). Even assuming SMUD did all purchasing from COB in real time markets, to reach a harm of $11.2 million (the middle of JP01's range), SMUD would have needed to purchase approximately 3,653 aMW of power. SMUD's retail load in 2017, the most recently available year from the Energy Information Administration, was 1,230 aMW. In other words, by the analysis in *Parker and Peters*, BP-20-E-JP01-02, SMUD would have needed to purchase three times its total retail load from COB to achieve the harm alleged in *Peters*, BP-20-E-JP01-01.

In summary, JP01's allegations of harm to its members are based on flawed economic and statistical analysis, are not internally consistent, and lack the credibility necessary to be given any evidentiary weight in this proceeding.

Q: Why were changes made to the Southern Intertie hourly rate in BP-18?

A: In BP-18, following an extensive public process discussing the seams issues that exist between BPA's Open Access Transmission Tariff (OATT) paradigm and California markets, the Administrator determined that these seams issues "provided a basis for changing the design of Southern Intertie rates." Administrator's Final Record of Decision, BP-18 Rate Proceeding, BP-18-A-04 ("BP-18 ROD"), at 135 (July 2017).

Q: Please describe these seams issues.

A: The seams issues occur between BPA's OATT framework for transmission service and the California Independent System Operator's (CAISO) organized market. Specifically, the CAISO market does not consider the firmness of transmission when awarding bids. This creates an opportunity for non-firm users of BPA's Southern Intertie segment to flow ahead of firm users even in hours when customers with long-term firm service are attempting to use their transmission rights.

Q: Were there other factors exacerbating these seams issues?

A: Yes. In recent years California has integrated a large and increasing amount of renewable resources, particularly solar, that generate large quantities in the middle of the day.

During traditional heavy load hours, this non-dispatchable generation has reduced the net load in California that must be met through dispatchable generation and imports. The new net load shape, often referred to as the "duck curve," means high demand for imports into California are concentrated into fewer hours.

Q: Was this change incompatible with BPA's rate design for Southern Intertie hourly products prior to BP-18?

A: Yes. The rate design that BPA had used for Southern Intertie hourly firm prior to BP-18 is a widely adopted methodology which assumes that there are 16 heavy load hours per day, five days per week. This means that there would be 80 hours a week where transmission services would be in high demand to meet heavy load needs. That rate design "ensured that a customer that wished to use hourly transmission only during the heavy load hours, when transmission demand was historically the highest, contributed as much to recovery of the Southern Intertie costs as a customer with long-term service." BP-18 ROD at 3. For customers that use transmission 80 hours or more per week, this created an incentive to purchase long-term firm service. Because market changes in California resulted in significantly fewer than 80 hours per week of high demand for imports, that rate no longer created an incentive to purchase long-term service.

Q: How did these factors impact the incentive to invest in long-term firm service on the Southern Intertie?

A: These factors substantially eroded the incentive to invest in long-term service on the Southern Intertie. When a customer commits to a long-term firm transmission purchase, the customer generally considers three factors. First, purchasing long-term rights secures access to service on a long-term basis, reducing or eliminating the risk of procuring transmission service on an hourly basis. Second, long-term firm service has a higher scheduling priority than hourly non-firm service, meaning in times of congestion firm service flows ahead of non-firm service. Lastly, depending on how frequently a customer uses transmission service, long-term firm service may have a lower total cost than hourly service. Due to the seams issues and market changes discussed above, all three drivers for purchasing long-term service on the Southern Intertie were weakened and reduced demand for long-term service.

Q: Did the decreased incentive to invest in long-term firm service affect BPA?

A: Yes. From September 2014 until BPA made its BP-18 Initial Proposal in November 2016, the queue of requests for new long-term service on the Southern Intertie segment shrunk dramatically from 6,228 MW to 1,002 MW. Additionally, in FY 2015, after years of customers choosing to execute their full renewal rights on Southern Intertie service, 31% of the total MW that were up for renewal chose to discontinue service. Because BPA recovers the vast majority of the embedded costs of the Southern Intertie from the sale of long-term firm transmission service, a reduction in demand for long-term services put stable cost recovery in jeopardy.

Q: Please describe the pattern of renewal of long-term firm service on the Southern Intertie segment since BPA committed to examine and address these issues.

A: The Administrator acknowledged in the BP-16 Final Record of Decision "that seams issues exist and must be addressed." Administrator's Final Record of Decision, BP-16 Power and Transmission Rate Proceeding, BP-16-A-02, at P-2 (July 2015). The Administrator committed to a public process to examine alternatives for resolving this problem. Since the rate design change was adopted in the BP-18 Final Record of Decision, 100% of the 2,683 MW up for renewal continued their service in FY 2018.

Q: Please describe the rate design that BPA adopted for the Southern Intertie hourly products in BP-18.

A: The rate design adopted in BP-18 is based on the same theory as the rate design used prior to BP-18: that a customer buying hourly transmission in all of the highest demand hours should contribute to the cost of the system equal to a customer purchasing transmission on a long-term basis. BPA updated the rate design to assume "hours of high use" that better reflected the current demand for imports into California. As stated above, these hours have been reduced as net load has dropped in the middle of the day and are now concentrated in the late afternoon and early evening. In BP-18, BPA determined that there are approximately five "hours of high use" five days a week in California based on their review of net load data. BP-18 ROD at 157-161.

Q: What was the result of this rate change?

A: This rate design results in a cost-based rate that addresses the specific market dynamics within California. The updated rate design creates a sharing of costs between hourly and long-term users based on those dynamics. This sharing of costs alleviates the impacts of the seams issues between the Northwest and California that in turn were adversely affecting the incentive to invest in long-term firm Southern Intertie service.

Q: Should BPA discount the cost of hourly service on the Southern Intertie from North to South as recommended by JP01?

A: No. There is no justification for a discount on North to South Southern Intertie hourly service. The underlying seams issues, which diminished incentive for long-term service, still exist. If anything, these issues are only being further exacerbated. As shown in BPA's Southern Intertie Data Report, since the rate design was established in BP-18, the net load in California has continued to drop and there is high demand for imports to serve load in fewer hours. *See* Exhibit 3. That means if BPA were to update the rate methodology based on recent CAISO net load data, the hourly rate could potentially be even higher. As discussed above, JP01's claims of harm and unintended consequences are unfounded, based on flawed theory and analysis, and do not justify a discount for North to South hourly service on the Southern Intertie segment.

Q: Is the rate design adopted in BP-18 consistent with sound business principles?

A: Yes. In its testimony JP01 discusses BPA's obligation to provide service consistent with "sound business principles," which it identifies to include "looking at prudent options to save costs, to avoid rate increases if possible and to minimize rate increases." *Peters*, BP-20-E-JP01-01 at 50, lines 19-20. By creating an incentive for customers to invest in long-term service on the Southern Intertie, BPA has reduced its risk of cost under-recovery, thus providing stable rates to a broad base of its customers and minimizing risk of rate volatility and cross-subsidization. A fully-subscribed intertie ensures maximum utilization of the facilities for inter-regional transfers of power.

Q: Does this conclude your testimony?

A: Yes.

EXHIBITS 1, 2, AND 3
TO THIS TESTIMONY WERE FILED SEPARATELY

CERTIFICATE OF SERVICE

I hereby certify that I electronically filed the foregoing on March 28, 2019 by uploading it to the Bonneville Power Administration's secure website. Pursuant to Section 1010.10(a) of the Rules of Procedure of the Bonneville Power Administration, such filing constitutes service on all Litigants.

Submitted by,

/s/ Irene A. Scruggs
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