Exh. CGK-4T

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

DOCKET NO. UE-170485

DOCKET NO. UG-170486

REBUTTAL TESTIMONY OF

CLINT G. KALICH

REPRESENTING AVISTA CORPORATION

I. INTRODUCTION

Q. Please state your name, the name of your employer, and your business address.

A. My name is Clint Kalich. I am employed by Avista Corporation at 1411 East Mission Avenue, Spokane, Washington.

Q. Are you the same Clint Kalich that provided direct and supplemental testimony in this case?

A. Yes. I sponsored Exh. CGK-1T, Exh. CGK-2, and Exh. CGK-3T.

Q. Why are you providing rebuttal testimony in this case?

A. The Staff of the Washington Utilities and Transportation Commission (Staff), the Industrial Customers of Northwest Utilities (ICNU), and the Public Counsel Unit of the Washington State Attorney General's Office, filed testimony in this case asserting the calculations from the Company's power supply modeling are inaccurate, and as a result the Commission should completely reject the Company's power supply adjustment.

Q. Please summarize your rebuttal testimony.

A. No other party to this case has provided modeled results of what they believe to be a correct power supply adjustment, even though all of the tools (AURORA$_{XMP}$ model, or "Dispatch Model") and data have been provided. In the end, if one made the adjustments recommended by Staff witness Mr. Gomez, it would actually serve to *increase* total system power supply costs by ***$2.7 million***. The same could be said of Public Counsel witness Ms. Wilson; when she asked the Company to rerun the power supply model with her suggested inputs, it actually *increased* total system power supply costs by ***$5.6 million***. As for ICNU witness Mr. Mullins, he was unable to identify any specific concerns with our modeling.

My rebuttal testimony will focus on refuting specific Dispatch Model-related concerns raised by the parties, and show why the Company's case provides an appropriate level of increase, and that an outright rejection of the power supply adjustment is unreasonable.

Q. Are you sponsoring any exhibits that accompany your testimony?

A. Yes. I am sponsoring Exh. CGK-5, which are Avista's responses to certain data requests asked by Staff and Public Counsel. As I will note when referencing these data request responses, they reference a number of electronic files that are voluminous in nature (i.e., Dispatch Model input files and model runs). The Company is providing these attachments as workpapers filed simultaneously with this testimony. They can be made available as a part of the record if the Commission or any party desires.

A table of contents for my testimony is as follows:

II. GENERAL OBSERVATIONS AND DISCUSSION

Q. Did Staff, Public Counsel or ICNU provide independent analyses of their own to determine alternative power supply proposals in this case?

A. No. Instead of offering the Commission calculations for arriving at alternative power supply costs, these parties only offer scattershot criticisms without actually rerunning the model themselves to produce a result.

Q. Did Commission Staff have access to the software and the associated files the Company used for this filing?

A. Yes. The Company pays for Staff to hold a license for using the AURORA$_{XMP}$ software. Staff was provided with working papers that contained all of the database and other files necessary to run the software.

Q. With the software and data files, could Staff have provided an alternative power supply proposal?

A. Yes. With the provided software and data files, Staff could have prepared an alternative power supply proposal; but, they did not.

Q. Did the Company offer to assist Staff to run the software?

A. Yes. In conversations, both in person and over the phone, we offered to assist Staff in running the software. We even arranged a two-day training session with the software vendor to help Staff understand better how to operate the model. I personally attended the training to be available to Staff for questions, both generally about how we use the software, as well as about any specific questions in our case. I also offered the use of our case files as a basis for the training.

Q. Did Mr. Gomez attend the vendor training?

A. Yes. Mr. Gomez attended the full two-day training.

Q. Did Mr. Gomez run the Dispatch Model software in support of his testimony?

A. I do not know for certain, but given that he offers no alternative analysis, or otherwise discusses the specific financial impacts of the changes he recommends, I assume not.

Q. Were you asked by the parties to perform analysis using the Dispatch Model?

A. Yes. In total, the parties, including Public Counsel and Staff, requested that the Company perform a significant amount of additional analysis for them involving the creation of 23 additional Dispatch Model studies, including the following:

1) Staff requested an update to natural gas prices. Nine studies were required to understand the impact to specific components of the cost changes. The end result of the study is a reduction in the total system power cost of $43,516.[1]

2) Staff requested three historical studies removing market adjustments designed to align Dispatch Model prices to forward markets from cases UE-160228, UE-150204, and UE-140188.[2] These three requests did not involve a total cost calculation, but were necessary to illustrate how actual prices were different from both forwards and fundamental prices in average water conditions.

3) Staff requested removal of the assumption that Dispatch Model prices should align with three month average forward prices. Not aligning to forward prices results in $731,073 higher total system costs (see response to Staff DR 225, included in Exh. CGK-5, p.4)[3];

4) Staff requested analyses using a different load shape methodology and levels without the Dispatch Model matching its results to forward market prices (see

[1] Provided in response to Staff Data Request 094 and 095, included in Exh. CGK-5, p. 1-3. This data request response has attachments that are electronic model runs and are voluminous. They have been provided in my workpapers as "Kalich Model Run DR 095" for ease of reference. While the data request references a confidential version of the response, it is only the electronic models that are confidential; the language in the response is not.

[2] Provided in response to Staff Data Request 224, included in Exh. CGK-5, p. 4-5. This data request response has attachments that are electronic model runs and are voluminous. They have been provided in my workpapers as "Kalich Model Run DR 224" for ease of reference. While the data request references a confidential version of the response, it is only the electronic models that are confidential; the language in the response is not.

[3] Provided in response to Staff Data Request 225, included in Exh. CGK-5, p. 6. This data request response has attachments that are electronic model runs and are voluminous. They have been provided in my workpapers as "Kalich Model Run DR 225" for ease of reference. While the data request references a confidential version of the response, it is only the electronic models that are confidential; the language in the response is not.

response to Staff DRs 247 and 248, included in Exh. CGK-5, pp. 7-10).[4] Nine studies were necessary to understand the impact of specific components of this cost increase.[5] Staff's load assumptions increase system power supply costs by $2,048,000.

5) Public Counsel requested a study to determine power costs using the most recent assumptions for variable O&M, forced outage rates, maintenance schedules, natural gas and other fuel prices, forecasted loads, and remove matching modeled prices to forward prices (see response to Public Counsel DR 16, included in Exh. CGK-5, p. 13). This study showed the modifications would increase costs by $5,583,640.[6]

Q. Could Mr. Gomez for Staff, or Ms. Wilson on behalf of Public Counsel, have used the results of their data requests in testimony to support an adjustment to power supply costs?

A. Yes. Each data request provides the specific impacts of their recommendations. Using these results Mr. Gomez and Ms. Wilson could have adjusted power supply costs to determine an alternative to the Company's filing.

Q. Do you have any idea why Mr. Gomez and Ms. Wilson did not use the results of the data requests?

[4] Provided in response to Staff Data Request 247 and 248, included in Exh. CGK-5, p. 7-10. These data request responses have attachments that are electronic model runs and are voluminous. They have been provided in my workpapers as "Kalich Model Run DR 247" and "Kalich Model Run DR 248" for ease of reference. While the data request references a confidential version of the response, it is only the electronic models that are confidential; the language in the response is not.

[5] This adjustment is $1.655 million (system) above the Company's filed cost, after considering a correction to the hourly load shapes as described in response to Staff Data Request 151, included in Exh. CGK-5, pp. 11-12. This data request response has attachments that are electronic model runs and are voluminous. They have been provided in my workpapers as "Kalich Model Run DR 151" for ease of reference. While the data request references a confidential version of the response, it is only the electronic models that are confidential; the language in the response is not.

[6] Provided in response to Public Counsel Data Request 016, included in Exh. CGK-5, p. 13. This data request response has attachments that are electronic model runs and are voluminous. They have been provided in my workpapers as "Kalich Model Run DR 016" for ease of reference. While the data request references a confidential version of the response, it is only the electronic models that are confidential; the language in the response is not.

A. I do not know with certainty, but the results of their adjustments would significantly *increase* power supply costs relative to the Company's filed case; their adjustments would certainly not show the Company overstated or inaccurately modeled power supply expenses as they assert.

Q. Did Mr. Gomez, in his testimony, make recommendations not included in his data requests?

A. Yes. He made a number of recommendations that did not correlate with any specific Data Request.

Q. Did the Company analyze the impact of these additional recommendations, and if so what were the results?

A. Yes, and as I will explain later, his additional recommendations also served to increase power supply costs relative to the Company's filed case.

Q. Did Public Counsel and ICNU have access to the software and the associated files the Company used for this filing?

A. Yes. Although our software license does not provide access for non-Staff intervenors in our case, the Company provided a computer loaded with the software to ICNU. Public Counsel did not request access.

Q. With this arrangement, could Public Counsel and ICNU also provide alternative power supply proposals?

A. Yes. With access to the software and data files, both parties could have prepared alternative power supply proposals.

Q. Did the Company offer to assist Public Counsel and ICNU to run the software?

A. Yes. We offered to assist them in running the software.

Q. Did Public Counsel or ICNU run the Dispatch Model software in support of testimony?

A. I do not know for certain, but given that no analysis or specific financial impacts of the changes they recommend were included in testimony, I assume not.

Q. Were you asked by either Public Counsel or ICNU to perform analysis for them?

A. Yes. Public Counsel requested one study through Data Request 16, included as p. 13 of Exh. CGK-5.[7] No requests were made by ICNU. Neither Public Counsel nor ICNU used any of the Data Request responses in their testimony.

Q. Could Public Counsel or ICNU have used any of these Data Request responses in this proceeding to support an adjustment to power supply costs?

A. Yes, Data Request 16 provided the specific monetary impacts of the recommendation; an alternative power supply cost proposal backed with this evidence could have been presented to the Commission.

Q. Do you have any idea why Public Counsel and ICNU did not use the results of the data requests?

A. I do not know with certainty, but as with Mr. Gomez, I assume that because the results of the adjustments would significantly ***increase*** power supply costs relative to the Company's filed case it was not in their interest to use the results. The adjustments would be

[7] Provided in response to Public Counsel Data Request 016, included in Exh. CGK-5, p. 13. This data request response has attachments that are electronic model runs and are voluminous. They have been provided in my workpapers as "Kalich Model Run DR 016" for ease of reference. While the data request references a confidential version of the response, it is only the electronic models that are confidential; the language in the response is not.

evidence against their argument that the Company overstated or inaccurately modeled power supply expenses.

Q. How long has the Company used the Dispatch Model software here at issue?

A. The Company has used the AURORA$_{XMP}$ Dispatch Model software for approximately 17 years. I was involved with the original software acquisition and have been involved in all rate filings since its acquisition.

Q. Who else uses this software in the industry?

A. It has been used for many years by most utilities and organizations modeling power supply costs in the Northwest. It is similarly used by many electric utilities outside of the Northwest. In the Northwest, it is used by the Bonneville Power Administration, Seattle City Light, Puget Sound Energy, PacifiCorp, Idaho Power, and the Northwest Power and Conservation Counsel.

Q. Have you worked with Staff and other parties in past rate case proceedings to refine, as necessary, the methodology used today to set power supply costs?

A. Yes. The methodology is the result of Commission orders and collaboration with Staff and other intervenors in our prior rate cases. We worked with Staff witness Mr. Alan Buckley and ICNU witness Mr. Donald Schoenbeck over several prior years to refine the model. As explained below, a customer-benefitting recommendation from ICNU witness Mr. Brad Mullins in our last filed case has been adopted for this proceeding.

Q. Based on this long history of rate case power supply modeling, do you have any other observations to share with the Commission?

A. Yes. Power supply modeling prior to this case, even when the Dispatch Model was newly introduced years ago, was never as contentious as it has been here. Moreover, it is essential the methodology remain consistent over time, and not change just because current conditions seem to favor one party over another. The methodologies used in this case, while the same as our last filings, are only modestly different from that initial case using the Dispatch Model filed by the Company more than a decade ago. But each change was made after consulting with Staff or other intervenors, or after extensive debate when the issue was decided by the Commission. Before each change was made, informed and detailed analyses were completed and debated on the merits. No such analyses were provided by the parties in this proceeding to support their recommendations.

Q. Please describe some of the larger changes made to the methodology over time?

A. The Company worked with Staff witness Mr. Buckley and ICNU witness Mr. Schoenbeck over the past decade, and the methodology used today was refined in subsequent cases – not simply discarded as it is being recommended by the parties here. Examples of these include five-year averaging of forced outage rates, five-year matching of on- and off-peak hydro generation shaping, and matching forward electricity and natural prices in the Dispatch Model. Moreover, in its final order in Docket No. UE-050482, the Commission weighed the evidence of the Company, Staff, and ICNU and "strongly supported" the full water record be used for the proforma period.[8] We also worked with ICNU witness Mr. Mullins to modify logic in the Dispatch Model reflecting that our Noxon facility can spill

[8] Order No. 5, at paragraph 126.

water during oversupply events, while other facilities cannot by virtue of their respective licenses. Each of these refinements has carried through to the next case, with the issue having been settled.

The point I am making here is simply this: the Company has consistently applied its modeling methodology over time, and adjusted it only after informed debate had occurred or as the result of a Commission order. And the methodology has remained thereafter the same. Many of the arguments being made by the parties in this case ignore this history.

We have witnessed a dramatic decrease in power supply costs in the recent past because of falling natural gas and power prices, and above-average hydro conditions. This was not due to any actions by the Company, and all participants in the marketplace experienced these results. We cannot assume that these conditions will continue, and normalized power supply costs should be expected to rise. Further, the Company lost a lucrative contract in 2016 with Portland General Electric, the benefits of which are still embedded in the Company's rates. The loss of this contract alone increases total system power supply costs by $16 million.

Q. Do you agree that authorized power supply costs based on your modeling have come in at levels above historical actual costs, but this is not due to inaccurate modeling?

A. Absolutely. Power supply modeling is based on then-current market conditions and normalized conditions. Since 2011, conditions were very favorable, with higher-than-average hydro generation and falling natural gas and electricity prices. This trend was not something that could be forecasted. But it should be no surprise that these conditions would lead to below-authorized costs. However when conditions were reversed, as witnessed in the

previous 2003-10 period, costs were substantially higher than authorized based using the same Dispatch Model.

Q. Is it reasonable to expect modeled power supply costs to match actuals in a given year?

A. No. The Company uses power cost calculation assumptions and methodologies when setting the authorized power cost, based on normalized conditions, not based on a forecast. These normalization assumptions include an 80-year hydro record, a three-month average of natural gas and electricity forwards, historical test year weather-adjusted loads, five-year averages for energy delivery from long-term resource contracts, and five-year average maintenance and forced outage rates for large thermal plants.[9]

Q. Please describe how power supply costs are sensitive to natural gas prices and hydro conditions?

A. The impact of rising and falling natural gas prices is significant. A one dollar increase (decrease) to natural gas prices at Henry Hub results in system power costs rising (falling) by approximately $12 million, or seven percent, in this case.[10] For example in 2016, Stanfield natural gas prices were 54 cents less than the price included in authorized power costs, using the same relationship would result in costs being $7.4 million less in this rate period.[11]

Regarding hydro conditions, the Company's filing includes the entire 80-year water record. Over these water years, costs will vary by nearly $50 million (more than 30%) of our

[9] For Colstrip the model uses a six-year historical average to reflect its unique six-year maintenance cycle.
[10] A one dollar increase in gas prices was found to increase costs by $11.233 million (+6.4%); a one dollar decrease in gas prices was found to lower costs by $12.659 million (-7.3%). These dispatch model runs are included in workpapers "Kalich Model Run HH NG Prices".
[11] 0.54/0.92 (Stanfield adjustment) x $12.659 million = $7.43 million

filed power supply cost estimate. For every average megawatt change in hydro output it results in a power costs change by $125,000 (on average). For example a change in 28 aMW change in hydro production, as we have experienced during 2017, costs would be $3.5 million lower. The point being made here is that even just a small change in natural gas costs or hydro conditions can have a significant effect on the Company's power supply costs.

III. RESPONSE TO COMMISSION STAFF

Q. Staff witness Mr. Gomez outlined a number of issues in his testimony related to Dispatch Model inputs, settings, and out-of-model adjustments. In order, will you please provide the Company's response?

A. Yes. Mr. Gomez identified the following areas:

1. Rate Year Loads (Gomez p. 14)
2. Hourly Shapes (Gomez p. 16)
3. Forced Outage Rates (Gomez p. 18)
4. Variable Operating and Maintenance Values (Gomez p. 22)
5. Marginal Cost Adders (Gomez p. 23)
6. Resource Dispatch (Gomez p. 27)
7. Model Settings (Gomez p. 32)
8. Out of Model Adjustments (Gomez p. 33)

Q. Before you begin to address Mr. Gomez's testimony, will you please address his statement at page 27, lines 10-12 of Exh. DCG-1T that the Company's "…lack of transparency….projects serious doubt as to the accuracy of…the Company's requested increase ERM baseline."

A. Yes. All data files in this case can be evaluated with the Dispatch Model software. The software has powerful tools to do comparative analyses between datasets, such as comparing our filed case with the original dataset packaged with the Dispatch Model

software. Input data resulting from intermediate calculations are provided in spreadsheet format so that the parties can evaluate not only the final input data, but also the calculations to arrive at the input data.

The Company has provided this information as in prior cases before the Commission. Previous evaluations by Staff witnesses have never suggested that information supporting our case was insufficient or lacked transparency. Mr. Mullins, on behalf of ICNU, a party to this and previous Company cases, has not suggested the Company was not transparent in its filing. Ms. Wilson, on behalf of Public Counsel, did not make any such accusation over a lack of transparency.

Q. For Item No. 1, Rate Year Loads, did the Company use rate year loads in its modeling?

A. No, the Company did not use projected rate year loads in this filing. We use weather-adjusted historical loads, consistent with past practice and the methodology approved by the Commission. Mr. Gomez states the Company should set power supply expenses using his forecasted load estimate.[12] He is simply mistaken in his belief that the Company uses forecasted rate year loads (see pages 15 and 16 of Exh. DCG-1T).

Agreeing in part with Staff, Public Counsel witness Ms. Wilson on page 19, beginning at line 2 (Exh. RSW-1CT), suggests the Company should use forecasted loads instead of historical loads. While the Company could set power supply costs using forecasted loads, it would not result in a material change in customer costs because where loads differ from the historical test year adjustments due to the retail revenue credit which provides an offset.

[12] Exh. DCG-1T, page 15 beginning at line 14.

Further, if the Company used forecasted loads in the proforma year, as recommended by Mr. Gomez, billing determinants also would change.

Q. Regarding Item No. 2, Hourly Shapes, what is the Company's response to Mr. Gomez's argument on page 17 of his testimony Exh. DCG-1CT, starting at line 5, that the approach is unreasonable?

A. Mr. Gomez is incorrect in his assessment that the methodology used to shape hourly loads contributes to an inaccurate representation of power supply costs. He proposes moving away from the methodology used in previous rate proceedings in favor of using weather-adjusted monthly loads and test-year hourly shapes. Mr. Gomez does not offer any justification, however, for changing hourly load assumptions. The Company also does not believe there is adequate data to perform a statistically-significant analysis based on the methodology Mr. Gomez proposes.

Mr. Gomez himself provided no study or analysis to illustrate the impact of his recommended load change. Nevertheless, the Company was interested in understanding its impact on power supply costs. We found it would reduce total power cost by a mere 0.07%.[13] This result shows that moving from historical precedent would not have a material impact on power supply expense modeling, and is simply unnecessary.

Q. With regards to Item No. 3, please describe Staff's issue with Forced Outage Rates on Company peaker plants. Do you agree with his conclusions?

[13] Calculated by taking the difference in Fuel and Market costs between the correct load shapes as identified in the Company's response to Staff Data Request 151, included in Exh. CGK-5, p. 11-12 (and using staff-provided load shapes applied to test period load levels). Workpapers re included as "Kalich Model Run Staff Load Shape".

A. No I do not. Beginning on page 18 of his testimony Exh. DCG-1T, at line 8, Mr. Gomez expresses concern about the forced outage rates used in the Dispatch Model. More specifically, on page 21 of his testimony, beginning at line 18, Mr. Gomez concludes that "the Company failed to rely on accurate data for forced outage rates. The methodology being used, a five-year historical average for larger facilities, and a fixed five percent for Rathdrum, Northeast, and Kettle Falls CT, is the same as used in prior filings. Further, the five-percent level is lower than the rate for similar resources in the GADS database.[14]

Based on these statements, Staff nevertheless concludes that these assumptions contribute to inaccurate power supply modeling. This conclusion was not based on any evidence or analysis provided by Mr. Gomez.

Q. Do you have any other concerns with Mr. Gomez's claims on Forced Outage Rates?

A. Yes. Beginning on line 4 of page 21 of his testimony (Exh. DCG-1T), Mr. Gomez asserts that "the Company's modeling of its rate year power costs does not reflect any benefit resulting from the capital project[s], which ratepayers have been funding." Again, he does not define the impact on power costs. As explained above, Company forced outage rates on these plants are *lower* than for similar plants operated by our industry peers. This is confirmed by comparing our peaker plant forced outage rates with the GADS database for similar projects. Further, and as is pointed out by Ms. Wilson for Public Counsel at page 15, line 1 of Exh. RSW-1T, our peaking plants operate at levels higher than in history, even with

[14] Provided in response to Staff Data Request 200, included in Exh. CGK-5, p. 14-15. This data request response has attachments that are electronic files and are voluminous. They have been provided in my workpapers as "Kalich Electronic Files DR 200" for ease of reference. While the data request references a confidential version of the response, it is only the electronic models that are confidential; the language in the response is not.

the forced outage rate levels used. Forced outage rates used in the Dispatch Model do not limit their benefits to customers.

Q. Turning now to Item No. 4, Mr. Gomez first claims on page 22, at line 12 (Exh. DCG-1T) that, "… total VOM [variable operating and maintenance costs] operating costs of all 8760 hours is a key component of the ERM baseline." Does the Company include VOM costs in its power supply cost calculation, and in the ERM?

A. VOM costs are not included in power supply cost or ERM calculations.

Q. Then why are VOM costs being discussed here?

A. VOM rates affect the dispatch of thermal resources in the Dispatch Model. Though Mr. Gomez correctly points out the Dispatch Model was not updated to the Company's most recent estimates, he fails to show any material impact to power costs. And there are none because the values aren't used in our calculation of power supply costs.

Q. Turning now to Item No. 5, Marginal Cost Adders, please describe what this is and why it is important.

A. In this case, Mr. Gomez beginning at page 23 of Exh. DCG-1T is referring to an adjustment made to both Company and non-Company resources in the Dispatch Model to change some of their dispatch orders in the marketplace. These adjustments are necessary because resources dispatch is not based only on marginal fuel price and VOM. For example, the Company includes an adjustment to account for production tax credits at wind facilities and renewable energy credit (REC) values for wind, solar and biomass resources, such as our Kettle Falls and Palouse Wind projects. The main concern Mr. Gomez has with the adjustment appears to be those made to hydro resources. The adjustment is necessary and changes to the dispatch order of hydro are meant to ensure these resources dispatched ahead of other

resources, including renewable resources benefitting from production tax credits and RECs. Because they don't affect overall costs, the level of marginal cost adder does not matter so long as it ensures hydro resources dispatch first in the stack.[15]

Q. Why is modeling oversupply events and negative pricing important?

A. Negative prices are now part of our power market. To reflect market fundamentals, a power supply model must recognize system impacts during oversupply events. In spring months with high wind and hydro conditions, market prices fall below zero. This is a result of hydro operators being prevented by their license conditions from spilling water for economics. Legislation in Washington law has even codified the importance of considering oversupply events in utility Integrated Resource Plans.[16] We cannot ignore this reality when doing power supply modeling.

Q. How frequently do prices go negative, and how do these statistics compare to modeled results?

A. The Table No. 1 shows the number of hours the Mid-Columbia trading hub power prices were below zero since 2008 as tracked by the Company's real time trading desk.[17]

Table No.1: Historical Count of Hourly Negative Prices at Mid-Columbia

Year	Count	Year	Count
2008	80	2013	56
2009	53	2014	223
2010	132	2015	26
2011	240	2016	42
2012	569	YTD 2017	408

[15] The value used in the Dispatch Model, -$75/ MWh, therefore could be any number as long as it is sufficient to prevent the plant from not running in the event of oversupply of resources in the market.
[16] RCW 19.280.030-1(f)
[17] Data used in Table No. 1 is included as workpaper Kalich Mid-C price history confidential.

The average number of negative price hours across the 80 water years modeled for this case was 201; the median is 173 hours, as shown in Table No. 2. These amounts are well within the recent history of negative prices, indicating the Company's modeling methodology is sound.

Table No. 2: Hourly Negative Prices Included in This Rate Filing

Median	Average	Minimum	Maximum
173	201	0	670

Q. After this explanation of the importance of modeling oversupply conditions in the Dispatch Model, do you agree with Mr. Gomez's assertion on p. 27, beginning at line 8, that the Company's negative marginal adders "are not supported by facts" and that there is a "lack of transparency."

A. As previously mentioned, these "inputs" are meant to change the dispatch order of resources. The reason we must do this adjustment is to simulate the conditions of negative pricing during oversupply events. This is not a new methodology and has been employed in past rate filings by the Company. Importantly, without the adjustments prices would not go negative in the Dispatch Model and would grossly overstate the value of Company hydro and other renewable facilities. The Company has been consistently clear in testimony, data responses, and discussion with the parties as to why we make these adjustments.

Q. Did Staff provide any alternatives to the Company's approach to reflect oversupply conditions?

A. No. Mr.Gomez provides no suggestions or alternatives to reflect oversupply events in the Dispatch Model. Based on a simple reading of his testimony Exh DCG-1CT, he

appears to suggest on page 26, at lines 9 through 12, that the Company should spill water in negative price conditions; this recommendation would violate our federal operating licenses.

Q. Mr. Gomez also mentions the marginal cost adder for Kettle Falls beginning on page 14 of his testimony Exh. DCG-1CT. Please explain this issue.

A. The Company lowers the dispatch price of Kettle Falls to account for the value of RECs. Customers currently benefit from the RECs its generation creates. Without this adjustment, the plant would not operate in the model at predicted levels in the future when the plant is needed to comply with the Energy Independence Act, causing filed power supply costs to be higher. In short, the Company used a negative marginal cost adder to ensure the plant generated enough energy in the Dispatch Model to account for this renewable energy need. If the Company had to include a value higher than the actual value of Kettle Falls RECs, such as an approximate doubling of its REC values to $15 per MWh as recommended by Mr. Gomez, the dispatch of Kettle Falls would increase and the plant would run additional hours when it is operating at a loss. This would only serve to increase power supply expenses.

Q. Please describe Mr. Gomez's concerns with Resource Dispatch margins covered in his Item No. 6.

A. Mr. Gomez's concern with resource dispatch margin here is how it adjusts the Dispatch Model to align prices with forward prices. On page 28 Exh. DCG-1CT, at line 11, Mr. Gomez suggests the Commission reject this modeling practice. Besides going against well-documented precedent and Commission orders accepting the practice, Mr. Gomez does not recommend any specific adjustment to power supply costs to reflect his recommendation. In Data Request No. 225 Mr. Gomez asked the Company to determine the impact of his

recommendations on resource dispatch margins. The response to that data request in Exh. CGK-5 p. 6, shows the result was a $731,073 *increase* in power supply costs. [18]

Q. Please summarize the adjustment to power supply costs that would be necessary were the Commission to accept all of the changes Mr. Gomez advocated in his testimony as described above.

A. Mr. Gomez's adjustments would *increase* total power supply cost by $2.7 million.[19]

Q. Regarding Item No. 7, Model Settings, please describe their importance.

A. The Company made changes to Dispatch Model settings affecting how it emulates resource operations. The specifics of these adjustments were described in supplemental testimony (Exh. CGK-3T, beginning on page 16 at line 15). Mr. Gomez claims it was difficult to validate these adjustments and suggests they be rejected by the Commission. Yet he makes this recommendation without any specific analysis to support it, or specific changes to the methodology that would otherwise ensure the Dispatch Model appropriately models power supply expenses. On page 17 of my supplemental testimony (Exh. CGK-3T), at lines 14 and 15, I explain that, together, these adjustments change power supply cost by only $44,850; they are immaterial.

[18] Provided in response to Staff Data Request 225, included in Exh. CGK-5, p. 6. This data request response has attachments that are electronic model runs and are voluminous. They have been provided in my workpapers as "Kalich Model Run DR 225" for ease of reference. While the data request references a confidential version of the response, it is only the electronic models that are confidential; the language in the response is not.

[19] Like the data request responses referred to earlier in my testimony, the calculation is based on electronic model runs and are voluminous in nature. The model run has been provided in my workpapers as "Kalich Model Run Staff Rebuttal" for ease of reference. This study assumes the following: Staff's monthly loads, Staff's hourly load shapes, all peaker forced outage rates at zero, variable O&M rates consistent with Public Counsel's suggestion, and removes the adjustments made to align prices with forward Mid-C prices. This analysis does not include removal of any market oversupply events.

Given that there is less than a $50,000 cost change, this wouldn't support his claim on page 28, at line 12, that "…inaccurate and unsupported inputs that the Company relies on casts serious doubt on the accuracy and usefulness…of the [Dispatch M]odel." To the contrary, the adjustments ensure that Company resources are dispatched properly to prevent inaccurate modeling of the power supply costs customers pay.

Q. Regarding Item No. 8, Out-of-Model adjustments, please discuss how Mr. Gomez is incorrect on the Nichols Pumping and WNP-3 contracts from page 34 of his direct testimony.

A. Mr. Gomez appears to not understand that these are entered into the Dispatch Model in accordance with each contract's obligations; they are not dispatched by the Dispatch Model. Further, and as explained in my Supplemental Testimony (Exh. CGK-3T, page 21 beginning at line 11), these contracts costs are not used by the Dispatch Model, but are only included for purposes of the Integrated Resource Plan, a process entirely separate from this proceeding but that uses the same Dispatch Model software and database. The cost of these contracts is accounted for outside the Dispatch Model as part of Company witness Mr. Johnson's work. I will point out that Mr. Gomez confuses the price in the Dispatch Model for Nichols Pumping of $2.14 per MWh as the contract price, when it is actually a $2.14 per MWh discount to the index price of power. But again, the price in the Dispatch Model is immaterial since the resource is scheduled per contract obligations and is not dispatched based on prices.

IV. RESPONSE TO PUBLIC COUNSEL

Q. Do you have any specific observations about Public Counsel witness Ms. Wilson's testimony in this case?

A. Yes. Ms. Wilson, beginning at page 4, line 7, of Exh. RSW-1T, notes as Mr. Gomez did that the Company's historical power supply costs are lower than authorized since 2011. Again similarly to Mr. Gomez, she suggests Company inputs, assumptions and forecasts must therefore be flawed. The only evidence is Ms. Wilson's personal conclusion water availability and natural gas prices have been "relatively stable."[20] Yet this is not the case and the lack of stability supports the Company's position that baseline modeling is appropriately tracking normalized expenses.

From 2011 to 2016, average hydro conditions were 22 aMW above average and varied as high as 633 aMW to a low of 490 aMW (143 aMW range) on an average of approximately 556 aMW, or more than 26 percent over the 14 year period from 2003 to 2016.[21] This impact is magnified by the fact that hydro generation is essentially free. Twenty-two aMW of hydro power equates to a favorable $2.8 million per year using the data presented above; in past years, where wholesale prices were higher, this favorable amount could be as high as $5.8 million, if $30 per MWh is the average power price. The 143 aMW range of hydro power variability at an average price of $23 per MWh equates to nearly $29 million per year.

Though ignored by Ms. Wilson, the opposite condition existed prior to 2011. From 2003 to 2010, hydro was actually *less* volatile than from 2011-2016, ranging from a low of 475 aMW to a high of 560 aMW (85 aMW range), and on average was 17 aMW below the

[20] Exh No. RSW-1CT, page 8, line 10
[21] This data is included in the confidential workpaper "Kalich Hydro History".

average hydro experienced between 2003 and 2016. The 17 aMW deficiency at $30 per MWh equates to $4.5 million in annual lost revenue.

There are two key take-away points for hydro: 1) hydro conditions have been above-average since 2011 and were below average for the period 2003-2010; and 2) hydro conditions have not been stable as reported by Ms. Wilson, in fact having been more volatile over the past seven years than in the preceding eight years.

Ms. Wilson on page 8, beginning at line 9, of her Exh. RSW-1T, suggests natural gas prices have been stable as well. Yet natural gas prices are not materially less volatile over the 2011-2016 period than in the 8 years prior. In the recent 2011-2016 period, the standard deviation of natural gas prices as a percent of the average price was 32.6 percent. From 2003-2010, this same calculation is 33 percent. So natural gas prices in recent years is no less volatile than the 2003-2010 period.[22]

As pointed out in my supplemental testimony (Exh CGK-3T, beginning at line 7 on page 27), by Mr. Johnson in his rebuttal (Exh. WGJ-XT, pp. 11-12), and in my rebuttal here today, both natural gas and hydroelectricity have contributed to the variation in the ERM balances. And only in recent years, where their conditions have been favorable, have power supply costs been below authorized. These two variables provide an explanation for why power costs have been above and below authorized levels over the ERM history. It is <u>not</u> flawed inputs, assumptions, and forecasts, as suggested by Ms. Wilson or Mr. Gomez.

[22] This calculation is provided in workpaper "Kalich Natural Gas Prices".

Q. Throughout much of her testimony, Ms. Wilson implies that Company power supply costs are problematic, and part of this is due to matching forward natural gas and electricity prices in the Dispatch Model. Is her concern misplaced?

A. Yes. I do not agree at all with Ms. Wilson. Matching Dispatch Model to forward prices is best for customers, and matches precedent from prior adjudicated cases before this Commission. This matching *is not* the cause of costs being lower than authorized. In fact, the opposite is true. Not matching forward natural gas and electricity prices would distort the ERM results that Ms. Wilson is so concerned about, raising our requested increase in this filing.

As the Company has done for more than a decade, using a methodology approved by this Commission, forward natural gas *and* electricity prices are matched in the Dispatch Model. Overall this provides the most realistic outcome for normalized power supply expenses. The Company matches prices because the Dispatch Model database does not have all market information to align with forward market prices. And, it would be an impossible task to correctly reflect all assumptions. For example, making adjustments to the many thousands of generating units of the Western Interconnect, to account for maintenance schedules and forced outage rates, would be an impossible task. Precisely accounting for 39 balancing authority load levels and profiles, and the plethora of fuel and transmission hubs, further illustrate the impossibility of such a task. Instead, the Company's approach ensures that precision in these areas is not necessary.

Ms. Wilson may unwittingly provide the strongest support for the Company's methodology. Her testimony Exh. RSW-1CT, on page 10 beginning at line 15 states that:

> Mid-C energy futures prices are set based on actual expectations about what future electricity prices will, and should, look like at some future date given current, specific expectations about the market. While market participants cannot say with certainty what hydro output will look like in May 2018, their expectation is informed by current conditions.

Ms. Wilson's own testimony recognized that the Dispatch Model, AURORA$_{XMP}$, requires modifications to correctly set prices.

Q. Would changing methodologies to move away from matching forward pricing serve to lower normalized power supply costs?

A. No. Because the Company operates or controls more generation assets than would be expected to be used except under extreme weather conditions, we therefore are typically surplus. Absent matching both natural gas and electricity prices, modeled market prices in the Dispatch Model would be lower and surplus sales would receive a lower offsetting revenue, leading to over $2.77 million higher costs, as explained in my supplemental testimony.[23]

Q. Ms. Wilson, in Exh. RSW-1T on page 12, starting at line 6, suggests that "if real variability over the hours and days in a month is not captured through the Company's matching of AURORA$_{XMP}$ prices to the average of Mid-C futures, the potential for market sales and purchases cannot be properly forecast by the model." Does the Dispatch Model not include varying hourly prices?

A. Prices in the Dispatch Model, in fact, vary each hour, so I do not understand this assertion by Ms. Wilson. The hourly prices differ across all 80 water years modeled for this case. I agree that varying hourly prices is essential to best estimate power supply costs

[23] Exh. CGK-3T, p. 12, l. 7. Further these adjustments do not include the out of the model adjustments performed by Witness Johnson. As explained earlier the total adjustment to remove this assumption is $731,073.

and I'm not sure how witness Ms. Wilson came to the conclusion we do not include hourly prices in our modeling. While we match to forward electricity prices, we do so by averaging all of the hourly prices to match forward on and off peak prices. Prices are not the same across all hours.

Q. Ms. Wilson at page 14 of Exh. RSW-1T suggests various adjustments made by the Company to match forward prices cause "…significantly higher cost to the utility." Do you agree?

A. No. Ms. Wilson appears to misunderstand how the Company uses the Dispatch Model to estimate power supply expenses. Adjustments made to the Dispatch Model properly adjust the resource stack to dispatch the right mix of resources at the margin with the right overall costs. Adjustments serve to better match modeled operations to expectations of the resources that ultimately will be dispatched. Further, if the Company's methodology did result in higher wholesale market costs, customers would *benefit*. The Dispatch Model dispatches resources "at cost," meaning irrespective of the model's market price forecast, customers pay only the actual costs to generate power. Due to surpluses, higher costs *benefit* customers in the modeling through lower overall power supply expenses due to additional wholesale sales.

Q. Ms. Wilson at page 15, line 1 of Exh. RSW-1T, suggests Company assumptions cause the Dispatch Model to operate higher-cost resources more than they should. Do you share her concern?

A. No. Ms. Wilson is correct that the Dispatch Model operates peaking resources more than in history, but this occurs only when the resources are "in the money," thereby lowering modeled power supply costs. The Dispatch Model dispatches peakers only when their costs are estimated to be higher than the market and reducing overall power supply costs.

This means the Dispatch Model overstates the value of peaking resource. The Company could have adjusted out these values by creating constraints to limit peaker dispatch, but this would have increased costs in this case.

Q. Do you agree with Ms. Wilson at page 16, line 9, of Exh. RSW-1T that thermal over generation is the result of load increases in the model?

A. No. Over-generation is not the result of the load increases input into the model. It is the result of higher electricity prices due to the matching forward prices. And as stated in my previous answer, higher prices only benefit customers in our modeling. In other words, lowering prices (and loads) would increase modeled power supply costs due the fact the Company is a net seller of power in this case.

Q. Did Ms. Wilson request any Dispatch Model analysis to be performed by the Company?

A. Yes. In Data Request No. 16 Ms. Wilson asked the Company to recalculate power supply costs with the recommended changes she describes above, including using current actual forecasts of generator attributes and running costs, not matching forward electricity prices in the model, and using actual load forecasts. These recommendations would *increase* power costs by $5,583,640, as shown in our response to Public Counsel Data Request No. 16 (See Exh. CGK-5, p. 13). [24]

[24] Provided in response to Public Counsel Data Request 016, included in Exh. CGK-5, p. 13. This data request response has attachments that are electronic model runs and are voluminous. They have been provided in my workpapers as "Kalich Model Run DR 016" for ease of reference. While the data request references a confidential version of the response, it is only the electronic models that are confidential; the language in the response is not.

V. RESPONSE TO ICNU

Q. Mr. Mullins states in his testimony (Exh. BGM-1T, page 31, beginning at line 15) that he agrees with Staff and its "evidence" of arbitrary assumptions by the Company intentionally designed to "inflate" power costs. He also shares that the extent of these assumptions is more extensive than he previously understood, and that the Commission therefore should not allow any change to power supply costs. Do you have any thoughts on these statements?

A. Yes. Other than bare assertions, Mr. Mullins provides no evidence or analyses to support his claims. He offers no alternative power supply estimate and adds nothing to the record. My rebuttal testimony already has addressed all of the Staff "evidence" that Mr. Mullins relies on for his recommendation that power supply costs not be adjusted. For these reasons, Mr. Mullins' recommendation should be rejected.

Q. Does this conclude your rebuttal testimony?

A. Yes, it does.