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BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

Application of Rocky Mountain Power for Approval of a Significant Resource Decision and Request to Construct Wind Resources and Transmission Facilities	Docket No. 17-035-40

PREFILED SECOND SURREBUTTAL TESTIMONY OF

NANCY L. KELLY

ON BEHALF OF

WESTERN RESOURCE ADVOCATES

May 15, 2018

I INTRODUCTION AND SUMMARY

Q: Please state your name, employer, and present position.

A: My name is Nancy L. Kelly. I am employed by Western Resource Advocates (WRA) in its Clean Energy Program as a Senior Policy Advisor.

Q: Have you previously filed testimony in this docket?

A: Yes. On behalf of WRA, I filed direct testimony on December 5, 2017, surrebuttal testimony on March 16, 2018, and responsive testimony to PacifiCorp's January and February filings on April 17, 2018.

Q: What is the purpose of your testimony?

A: I respond to the supplemental rebuttal testimony filed April 17 by witnesses opposing the Commission's approval of the Combined Projects as unnecessary, overly risky, and not in the public interest. Specifically, I respond to the testimony of Mr. Daniel Peaco and Dr. Joni S. Zenger for the Division of Public Utilities (DPU), Mr. Bela Vastag and Mr. Phil Hayet for the Office of Consumer Services (OCS), and Mr. Bradly Mullins for the Utah Association of Energy Users (UAE) and the Utah Industrial Energy Consumers (UIEC).[1]

[1] "Supplemental Rebuttal and Surrebuttal Testimony of Daniel Peaco on Behalf of the Division of Public Utilities, April 17, 2018; "Supplemental Rebuttal Testimony and Surrebuttal Testimony of Dr. Joni S. Zenger," April 17, 2018; "Second Rebuttal Testimony of Bela Vastag for the Office of Consumer Services, April 17, 2018, "Second Rebuttal Testimony of Phil Hayet for the Office of Consumer Services," April 17, 2018; "Supplemental Rebuttal Testimony of Bradley G. Mullins on Behalf of the Utah Association of Energy Users and the Utah Industrial Energy Consumers," April 17 2018.

Q: What issues do you address?

A: I address three issues: (1) whether the Combined Projects are needed; (2) whether the Combined Projects are likely to result in customer benefits; and (3) whether Commission approval of the projects should be conditioned on customer protections, and, if so, the structure of those protections.

II COMBINED PROJECTS ARE NEEDED

Q: Which witnesses claim the Combined Projects are not needed?

A: Mr. Peaco, Dr. Zenger, Mr. Hayet, and Mr. Mullins claim the projects are unneeded.[2] Mr. Peaco says the Company has not provided sufficient evidence supporting the claim of need and there are lower cost and lower risk alternatives than the Combined Projects.[3] Dr. Zenger states "the Company can continue to meet its capacity [and] energy needs reliably over the next ten years with a combination of demand-side management resources and front office transactions."[4] Mr. Hayet says, "the Company does not have a capacity need driving the decision to acquire the new projects."[5] Mr. Mullins argues that PacifiCorp should not disregard market access "when considering the adequacy of existing resources."[6] He further claims PacifiCorp is resource long, prior to making use of the short-term market to meet firm capacity requirements.[7]

[2] See: Hayet, p. 3 at 59-60 and pp. 39 at 844-847; Peaco, pp. 6-9 at 105-173; Zenger, p 4 at 54-59 and pp. 24-26 at 474-504; Mullins, pp. 37-40 at 755-815.
[3] Peaco at 151-154.
[4] Zenger at 54-57.
[5] Hayet at 59-60.
[6] Mullins at 767-770.
[7] Mullins at 790-797 and Confidential UAE-UIEC Exhibit 3.2.

Q: What is the basis for these claims?

These witnesses take one of two positions: they (1) either overtly or implicitly claim that market access should be treated as an existing resource when determining resource need, or, (2) implicitly claim that future short-term wholesale market transactions are lower cost and lower risk than are investments in the Combined Projects.

Q: Do you agree that market access should be treated as an existing resource when determining PacifiCorp's capacity position?

A: No. I do not. While I believe short-term market purchases can be a cost effective component of a preferred portfolio, I do not agree that these future and uncertain purchases should be treated as "existing" in determining the Company's capacity position. Front office transactions are a resource option to be considered as part of an optimal portfolio; they are not an existing resource akin to a long-term firm contract or "steel-in-the-ground."

Q: Please explain how the level of front office transactions is determined.

PacifiCorp assumes the availability of 318 MW of future short-term purchases on its east side and 1,352 MW on its west side for a system total of 1,670 MW. The actual level of front office transactions included in any portfolio resulting from the simulation of PacifiCorp's system using the System Optimizer (SO) model is a modeling output; the underlying assumptions determine the portfolio selection.

Q: Do you agree with Mr. Mullins' contention that Tables 5.14 and 5.15 on pages 91 and 92 of the 2017 IRP demonstrate resource sufficiency?

A: No. I do not. Tables 5.14 and 5.15 demonstrate insufficiency. Without the addition of future short-term transactions, PacifiCorp is capacity short 527 MW on summer peak in 2017. This shortage grows to over 1200 MW by 2026.

Q: In its order acknowledging the 2017 IRP, did the Commission recognize a capacity shortage?

A: Yes. On page 2 of the March 2 Order, the Commission summarizes PacifiCorp's resource need. It identifies a shortage of 527 MW in 2017 growing to 1,223 MW by 2026.[8]

Q: The economic analysis included in PacifiCorp's supplemental testimony uses an updated, reduced, load forecast. How does Mr. Mullins address the reduced load forecast?

A: Mr. Mullins claims that once this lower load forecast is taken into account "even before considering front office transactions, PacifiCorp is forecast to be in a capacity surplus position." Therefore, "PacifiCorp's concerns about whether front office transactions should be considered in valuing resource needs is moot."[9]

[8] Public Service Commission of Utah, PacifiCorp's 2017 Integrated Resource Plan, Report and Order, Docket No. 17-035-16, March 2, 2018, p. 2.
[9] Mullins at 790-797.

Q: Do you agree?

A: No. I do not agree. I investigated this issue and came to the opposite conclusion. In response to my request for PacifiCorp's most recent load and resource balance using the updated load forecast, PacifiCorp provided the data underlying Table 8.2 on page 109 of PacifiCorp's 2017 IRP Update, filed May 1.[10] Table 8.2 displays PacifiCorp's summer capacity balance including its planned resources.[11]

Exhibit E displays PacifiCorp's load and resource balance with planned resources removed. PacifiCorp's capacity deficit grows from 338 MW in 2018 to 599 MW in 2021. By 2028, the deficit has grown to 1,384 MW. By 2036, the deficit is more than 1600 MW. This deficit is despite the growth in private generation, interruptibility of load, and Class 2 DSM calculated as a decrement to PacifiCorp's load obligation.

Q: Mr. Mullins further claims that "[r]atepayers are already in a tenuous position of having more resources than needed, and building the Combined Projects will only exacerbate the problem."[12] How do you respond?

A: PacifiCorp is capacity short in every year of the 20-year planning period. This is a fact. The issue for the Commission is not whether PacifiCorp has a capacity need, but whether the acquisition of the Combined Projects reduces PacifiCorp's cost and risk relative to

[10] PacifiCorp response to WRA 5.2; attached as Exhibit C.
[11] Planned resources include 207 MW of additional peak capacity from the Wind Projects and just under 6 MW of additional peak capacity from the Repowering projects beginning in 2021 (PacifiCorp response to WRA Data Request 6.1; attached as Exhibit D). To meet capacity requirements, 338 MW of front office transactions are included in 2018. FRONT OFFICE TRANSACTIONSs grow to more than 1500 MW by 2028 and to more than 1600 by 2036. FRONT OFFICE TRANSACTIONSS account for roughly 73% of planned resource additions.
[12] Mullins at 800-801.

purchasing the full extent of its capacity requirements in the short-term market at future prices.

Q: What is the risk associated with using future short-term purchases to meet capacity needs?

A: As long as there is sufficient surplus and the surplus is priced near cost, use of this surplus is sensible and can be cost effective. The risk lies in the possibility that the fundamentals of the market may change and wholesale market prices climb sharply. If PacifiCorp buys in an expensive market, customers will pay 100% of these higher prices, costs they would not have borne had firm resources with known costs been acquired in a timely manner.[13]

Q: Does PacifiCorp's cost/benefit analysis account for changes in market fundamentals?

A: No. PacifiCorp's analysis of risk accounts for stochastic risk – the potential for prices to vary from their long-run forecasts based on the variation of prices in the recent past.[14] The possibility that energy could disappear from the market, or that the liquidity in the market could be insufficient to meet unexpectedly high demand, is not evaluated.

Q: Under what types of circumstances could a change in market fundamentals become an issue?

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[13] 100% of purchased power costs are passed through the Energy Balancing Account.

[14] In undertaking stochastic analysis, forecasts of load, whole sale electricity prices, natural gas prices, thermal unit outages, and hydro generation are subjected to a Monte Carlo sampling. Four years of historical data are used to develop the parameters in which load, wholesale electricity prices, natural gas prices, and thermal unit outages are allowed to vary. Five years of historical data are used to develop the variance for hydro. Source: IRP 2017, Vol 1, p. 156; IRP 2017 Vol 2, Appendix J, p.

A: An industry in transition generates a great deal of uncertainty regarding the best long-run acquisition strategy. A common way of addressing uncertainty is to defer resource acquisition by planning to meet capacity needs with market purchases, and this strategy may appear particularly attractive when wholesale market prices are near historic lows as they are today. However, when multiple utilities take the same approach, market resources become scarce and prices increase.

Q: Has this happened in the West previously?

A: Yes. In the late 1990's the western wholesale market was surplus and wholesale market prices and natural gas prices were historically low.[15] Responding to changing technologies,[16] low wholesale power and natural gas prices, and other influences, California deregulated its retail electricity market. Large customer groups advocated for retail access, and many state legislatures were evaluating whether and how to allow retail competition.

The uncertainty regarding the impact of deregulation on utility loads and assets led many utilities, including PacifiCorp, to defer acquiring new resources. The market surplus rapidly disappeared, and combined with other events, in May of 2000, wholesale market prices skyrocketed and extremely high prices lasted for more than a year.[17]

Q: Were PacifiCorp and its customers harmed by these events?

[15] Coal-fired generation had been overbuilt in the 1980s when demand was thought to double roughly every decade.
[16] Combined-cycle-combustion-turbine technology was relatively new; because of its smaller scale relative to coal-fired and nuclear units, it was thought that the rise of this technology could support independent power producers in a competitive market.
[17] Loss of the surplus through load growth, a severe drought that significantly restricted hydro availability, the flawed structure of California's newly formed power market, and the unscrupulous tactics of market traders all played a role in the western market crisis.

A: Yes. PacifiCorp had deferred adding a new combined-cycle-combustion-turbine (CCCT), identified as needed in 2000, and it had gone from net long to net short with the sale of its coal-fired Centralia plant which was finalized May 1, just prior to the price climb. In addition, a lengthy unexpected outage at a Hunter unit forced the Company to buy replacement power at exorbitant prices.[18] The Company moved as quickly as it could to firm its power supply, adding the Gadsby Peakers in 2002, followed by the Current Creek CCCT in 2005.

Q: Do you see a parallel with current conditions?

A: I do see some common threads. The industry is in transition today as it was in the late 1990s, with attendant uncertainties, and some of the uncertainties of today are similar to the past.

An overriding uncertainty associated with this transition pertains to the potential costs of carbon regulation and its implications for resource retirements and dispatch. More than 9,300 MW of name-plate, coal-fired generation in the West is already closed or announced to close by the end of 2025[19] with more planned thereafter, and the potential for still further plant closures, including additional PacifiCorp units, depending on future EPA actions. The extent to which utilities will replace this shuttered generation by

[18] PacifiCorp did not have an EBA in Utah during this time period. Shortly after the acquisition of Utah Power and Light by PacifiCorp in 1989, PacifiCorp had requested that the former EBA be discontinued.

[19] More than 9,300 MW of name-plate, coal-fired generation is already closed or announced to close by the end of 2025. San Juan Unit 2 (369 MW) and San Juan Unit 3(555 MW) closed in 2017; Navajo Unit 1 (803 MW) will close in 2019; Navajo Unit 2 (803 MW) and Centralia Unit 1 (730 MW) will close in 2020; Navajo Unit 3 (803 MW) will close in 2021; San Juan Units 1 & 4 (924 MW), the Nucla Generating Station (114 MW), Craig Unit 1 (446.4 MW), and Colstrip Units 1 & 2 (614 MW) will close in 2022. Comanche Unit 1 (382.5 MW) is proposed to close in 2023; the Intermountain Power Plant (820) will close in 2024; Cholla Units 1, 3, & 4 (840 MW) is scheduled to close in April of 2025, although Units 3 and 4 (712 MW) can convert to natural gas; and Comanche 2 (396) MW and Centralia 2 (730 MW) are slated for closure in 2025.

purchasing resources already in existence, or with new supply is not yet clear. If utilities purchase existing plants or adopt a short-term market strategy as they did in the late 1990s, the wholesale power market could tighten sharply and prices could rise significantly.

In addition, while the availability of northwest hydro power is not a concern this year, it is most certain a concern for the future. A severe drought would reduce hydro power availability, and the excessive temperatures would likely increase demand, even as supply tightens. Both would exert upward pressure on prices.

Wholesale market and natural gas prices that are again near historic lows, appear to me to be, at least in part, fueling parties' desires to avoid the acquisition of the Combined Projects and to meet PacifiCorp's capacity needs in the interim with future market purchases, the actual cost of which cannot be known.

Q: Why are you raising these concerns?

The testimony of witnesses for the DPU, Office and UAE/UIEC have highlighted various risks they believe the Commission should consider in its decision to pre-approve PacifiCorp's acquisition of the Combined Projects.[20] They argue the Commission should reject the projects as overly risky and at least as likely to result in costs as in benefits.

My purpose is to underscore that a decision to forgo the Combined Projects in lieu of the short-term market is not without risks of its own, and in my opinion greater risk. Future

[20] As I discuss in section IV below, I believe these risks can be mitigated through approval conditions.

wholesale market prices cannot be known today, and a strategy of meeting capacity needs with future market purchases could be costly.

Certainty has value. The acquisition of the Combined Projects, if conditioned with hard cost caps and performance guarantees,[21] provides low cost certainty that market reliance alone cannot.

The Combined Projects hedge not only future wholesale market prices, but also future natural gas prices, and significantly, the potential imposition of environmental regulations that could impose a CO2 cost on fossil fuel generation that has not been adequately captured in the Company's analysis.[22] In my opinion the hedging attribute of the Combined Projects against unknowable but possible futures is a central and important benefit that has not been fully captured in the Company's analysis.

Q: In the context of this discussion of need, would you like to address Mr. Hayet's statement regarding PacifiCorp's purpose in promoting these projects?

A: Yes. In his introduction, Mr. Hayet observes that PacifiCorp's purpose in "promoting these projects wholeheartedly" is to "build the Company's rate base and increase its earnings."[23] While Mr. Hayet's observation may be valid (PacifiCorp is a for-profit entity with a duty to its shareholders), these projects are also in PacifiCorp customers' interest. Firmed supply has value.

[21] See Section IV.
[22] See Section III.
[23] Hayet at 36-38.

Given PacifiCorp's current capacity shortage and the potential for markets to tighten as large units are closed across the West, I appreciate PacifiCorp's proactive approach in taking advantage of the PTC to cost-effectively add resource depth ahead of a potential market tightening.[24]

Q: In your opinion, are the Combined Projects needed?

A: Yes. The Combined Projects address an existing resource insufficiency in a manner superior to front office transactions alone. As an energy resource, they provide a hedge against the possibility of escalating wholesale market prices as well as natural gas price increases and the potential cost impact of environmental regulation.

III ACQUISTION OF THE COMBINED PROJECTS IS LIKELY TO RESULT IN BENEFITS TO CUSTOMERS

Overview

Q: Which witnesses claim the economic case for the Combined Project does not support Commission approval?

A: Mr. Vastag and Mr. Hayet for OCS, Mr. Mullins for UAE and UIEC, and Mr. Peaco and Dr. Zenger for DPU.

[24] This is in contrast to the Company's decision-making of 20 years ago when PacifiCorp elected to defer the CCCT it had identified as needed in 2000 but did not add until 2005. The decision to defer was driven in part by Company fears that Oregon and Washington would disallow costs perceived to be driven by Utah's load growth. PacifiCorp and its customers paid dearly.

Q: Please summarize their position.

A: These witnesses argue that when adjusted to remove modeling changes that the Company made between filing direct testimony and filing supplemental testimony, the net benefits of the Combined Projects, measured as the difference in PVRR with and without the Combined Projects are, at best, marginal. Future scenarios that could result in net costs to customers from the projects include low natural gas prices, no action on CO2 regulation, capital cost overruns, delays in operation, and underproduction. The witnesses argue that the probability of experiencing low gas prices is more likely than experiencing high natural gas prices, and the marginality of the potential benefits with medium natural gas prices does not support an investment of the magnitude the Company proposes.

Q: How do you respond?

A: While I agree with witnesses testifying that PacifiCorp should either levelize both capital costs and production tax credits or nominalize both in estimating net benefits, even accounting for that change, I continue to believe the economic case for the Combined Projects is conservative and their acquisition is in the public interest.

I strongly disagree that the probability of experiencing low natural gas prices is greater than the probability of experiencing high natural gas prices, given that we are near historic lows. I also believe that future carbon regulation is likely, given the broad scientific consensus on the cause of climate change and that the impacts of ocean rise and severe weather are already imposing costs on sectors of the economy. Ignoring or taking a dismissive approach to that likelihood is analytically flawed.

Finally, I believe the risks posed by the potential for cost overruns, delays in project construction, and project underproduction can be mitigated with appropriate approval conditions, and are not a reason to disapprove the project.

I continue to support approval of the Combined Projects as a least-cost, least risk resource that meets statutory requirements.

Modeling Issues

Q: Which witnesses dispute PacifiCorp's inclusion of a terminal value benefit?

A: Messrs. Hayet, Peaco and Mullins.[25]

Q: Please summarize their positions.

A: Mr. Peaco and Mr. Hayet argue the value is newly introduced, speculative, and should be removed from the benefits evaluation. Mr. Mullins recognizes that there might be some longer-term value associated with a utility-owned wind site over a power purchase agreement, but he claims that in order to include this value, an estimate of the ongoing capital maintenance and investment is necessary to identify an appropriate terminal value. Since ongoing capital was not considered, he also claims the value should not be included.

Q: How do you respond?

The components of the terminal value: "development rights, transmissions assets, and non-transmission infrastructure such as roads"[26] clearly have value and should be

[25] See: Peaco, p. 44 at 773-785; Hayet, p. 8-9 at 166-186 and pp. 22-23 at 467-490; Mullins, pp. 23-24 at 475-496.
[26] Peaco at 765-766.

included in the economic evaluation supporting a request for the approval of Company-owned and build/transfer assets.

In my opinion, having failed to include this analysis in the original filing is not a reason to exclude it from the current analysis. The original analysis was developed out of the 2017 IRP in which the use of terminal values would not have been appropriate, since the resources modeled in an IRP are proxies and may be filled with PPAs or Company-owned resources.

Neither is the argument that the value is speculative reason enough to exclude it from the analysis. All forecasts are speculative, especially those farther out in time. While it is difficult to precisely forecast terminal values 30 years out, this value is clearly greater than zero. If witnesses have better values, they should offer those values rather than claiming that no, or zero, value should be used which we know is wrong.

Q: Which witnesses contest PacifiCorp's changed method of modeling production tax credits?

A: Messrs. Peaco, Hayet, and Mullins.[27]

Q: Please summarize their positions.

A: Mr. Peaco states that PacifiCorp's 20-year methodology now includes a "front-loading of the benefits," and, as now presented, "provides an inflated analysis of the project economics and does not provide a meaningful economic metric to use as a basis for

[27] See Peaco, pp. 36-37, at 638-672; Hayet, pp. 14-21 at 303-448; Mullins, pp. 21-23 at 437-474.

decision-making on the overall project economics." He bases his observations of the project economics on the 30-year analysis which is a nominal analysis.

Mr. Hayet and Mr. Mullins dispute treating PTCs nominally while levelizing capital costs. Mr. Hayet calculates the change in cost/benefit estimate if both PTCs and capital cost are levelized, as was done in PacifiCorp's direct testimony, or nominalized as he proposes. Mr. Mullins argues that the 20-year studies include a mismatch of levelized and nominal values. He states that "if production tax credits are to be considered on a nominal basis it is more appropriate to consider all costs and benefit on a nominal basis."

Q: How do you respond?

A: I agree there needs to be symmetry in treatment and analysis. In my April testimony, I argued that "it is not appropriate to nominalize PTCs while levelizing capital costs."[28] I explained that "credits are an offset to capital costs and they should therefore be treated comparably. Either costs and credits should both be levelized as they are in the IRP or neither should be levelized and nominal values should be used for both." I further explained that since this is a resource acquisition approval docket, rather than an IRP, the use of levelized values is unnecessary. I recommended nominalizing both.[29] I testified, "The use of nominal values for both PTCs and capital costs would treat PTCs and capital costs comparably, would better align with the rate impact on customers, and would address Mr. Link's expressed concerns with using levelized PTCs."[30]

[28] "Prefiled Response Testimony of Nancy L. Kelly on Behalf of Western Resource Advocates," April 17, 2018, p. 13 at 214-217.
[29] Id at 218-222.
[30] Id at 243-246.

Q: Does this remain your position?

A: It does.

Q: Did your April testimony include a table showing your estimation of the cost impact of a 20-year nominal analysis?

A: Yes. Table 3 of my April testimony provided rough estimates.[31] I had hoped to refine my estimate prior to filing testimony but was unable to get the necessary clarity of response I was seeking from discovery WRA submitted to PacifiCorp.

Q: Was your estimate correct?

A: No, it was not. Table 1 updates that information.

Table 1

Cost / (Benefit) of Combined Projects PVRR (d)				
	PaR Mean Results - Through 2036			Through 2050
Price Policy Scenario	February Results: Nominal PTCs, Levelized Capital Costs	Febraruy Results: Levelized PTC, Levelized Capital Costs	February Results: Nominal PTCs, Nominal Capital Costs	February Results: Nominal PTCs, Nominal Capital Costs
Low Gas, Zero CO2	($150.00)	$64.00	$156.00	$184.00
Low Gas, Medium CO2	($179.00)	$35.00	$127.00	$127.00
Low Gas, High CO2	($337.00)	($123.00)	($30.00)	($147.00)
Medium Gas, Zero CO2	($319.00)	($105.00)	($13.00)	($92.00)
Medium Gas, Medium CO2	($357.00)	($143.00)	($51.00)	($167.00)
Medium Gas, High CO2	($448.00)	($234.00)	($141.00)	($304.00)
High Gas, Zero CO2	($568.00)	($354.00)	($262.00)	($448.00)
High Gas, Medium CO2	($603.00)	($389.00)	($297.00)	($499.00)
High Gas, High CO2	($694.00)	($480.00)	($388.00)	($635.00)

[31] Id at 236.

The first column (through 2036) displays the results from Mr. Rick Link's Second Supplemental Direct Testimony, Tables 2SS. The second column shows the updated case with PTCs and capital costs levelized.[32] The third column displays the updated case with both PTCs and capital costs nominalized.[33]

With consistent treatment of both PTCs and capital costs, calculated benefits are reduced. Nevertheless, the Combined Projects are forecast to benefit customers in all but the low-gas/zero CO2 and low-gas/medium CO2 scenarios.[34]

Q: Does this updated information change your view of whether the Commission should preapprove the acquisition of the Combined Projects?

A: No. It does not. The Combined Projects are beneficial in all but the two lowest price/policy scenarios and, as I argue in my response below, I believe no action on CO2 is highly improbable; the "medium" CO2 case should be considered "low," and the "high" should be considered a "medium," particularly, since the CO2 prices were calculated as real 2012 values. Because wholesale market and natural-gas prices are near historic lows, the likelihood of them declining significantly is low and, as I show below, it appears that actual natural-gas prices are trending upward. Therefore, in my opinion, the benefit customers are likely to receive from the Combined Projects is greater than the Table suggests.

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[32] PacifiCorp Response to WRA Data 3.1 (attached as Exhibit F) states that levelizing PTCs adds approximately $214 million in costs across all price policy scenarios.

[33] Derived from confidential work paper supporting the second supplemental direct testimony of Company witness, Rick T. Link, specifically file "EV2020 Second Supplemental Results Summary File - VOM adjusted", tab "PaR - RFP FSLW Studies", and then specifically the "red" blocks of data "PVRR(d) (Benefit)/Cost: Nom 2050."

[34] I would note that my calculation using nominal PTCs and nominal capital costs now matches Mr. Hayet's, although our calculation of the benefits with levelized values differ by $19 million.

As I have previously testified, we are in the midst of an industry transition, and these projects are well suited for positioning and protecting PacifiCorp and its customers from market tightening, future regulations, and other industry shifts.

Q: Does the updated table change any other aspect of the testimony you filed on April 17?

A: It changes my statement that the economic case for the Project had clearly improved, but my conclusions that the Combined Projects are beneficial to customers and should be approved remains unchanged.

- The economic case for the Combined Projects supports approval of the acquisition of 1,311 MW of new wind and the new transmission needed to access that wind and reliably operate it.
- Modeling sensitivities demonstrate that it is cheaper to replace transactions in the wholesale market and energy from existing resources with clean, renewable energy than it is to continue to operate the existing system and purchase short-term market products.
- The acquisition of clean, renewable energy, beyond that included in the current filing, would assist PacifiCorp in meeting the challenges inherent in a transitioning industry and position its customers to continue to benefit from low cost, reliable~~,~~ energy. The acquisition of renewable energy resources constitutes a robust resource decision given future industry uncertainties.
- Given the magnitude of the capital investment and the potential for mismatch in the stream of benefits and costs, WRA supports ratepayer protections.[35]

Natural Gas Prices

Q: Which witnesses argue that low natural-gas-price scenarios are more likely than medium or high scenarios?

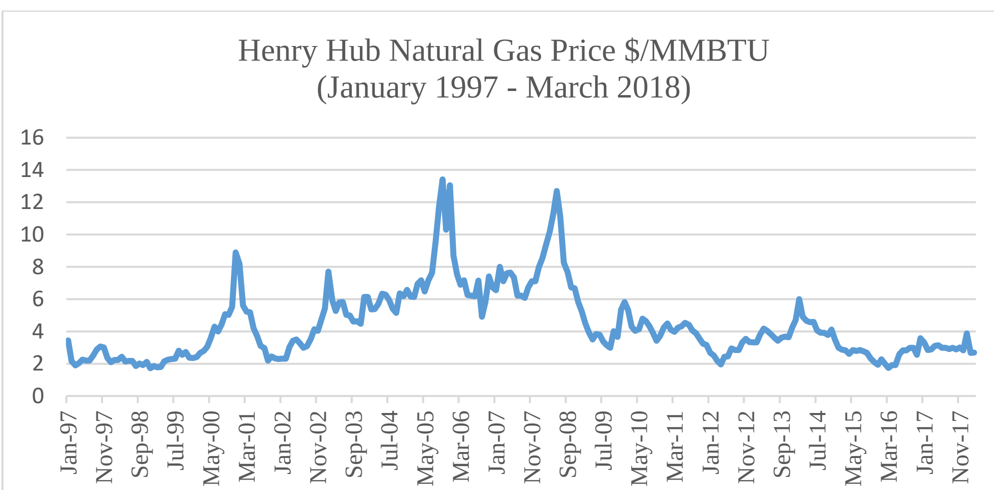
[35] Kelly, April 17 at 42-56.

A: Messrs. Peaco, Hayet and Mullins make this argument. Mr. Peaco argues that natural gas prices are "skewed high" when compared to forward prices, and he believes PacifiCorp's natural gas price forecasts are "generally overstated."[36] Mr. Hayet references a downward trend in natural gas prices as reason to believe a low natural gas price forecast is more likely than a medium or high.[37] Mr. Mullins references both forward prices and a downward trend in natural gas prices and argues that "historical data" justifies placing greater weight on the low-gas price scenarios."[38]

Q: How do you respond to these arguments?

A: While it is *possible* that natural gas prices will further decline and remain in the "low" range over the 30-year life of the project, I believe it is unlikely based on "historical data." In addition, as a matter of simple math, there is much more room for gas prices to go up than down.

Table 2.



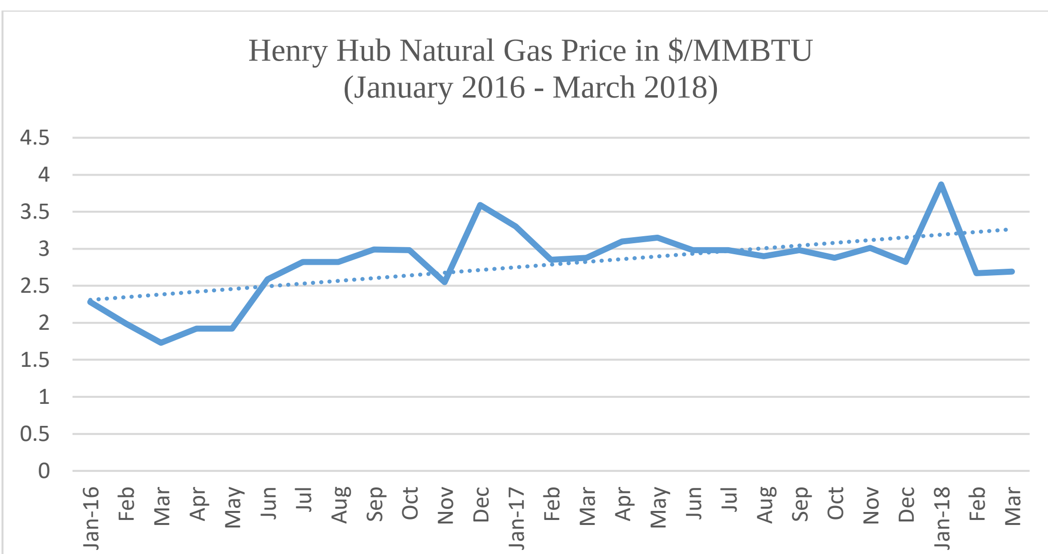
[36] Peaco at 1221-1230.
[37] Hayet at 455-457.
[38] Mullins at 531-597.

Table 2, created using EIA data, displays twenty years of Henry Hub Natural Gas Spot Prices. It documents the extent and rapidity with which the planning environment can change, and it also demonstrates that natural gas price are near historic lows. However, based on historic natural gas price behavior, 30 more years of low and steady prices appears unlikely.

Q: Mr. Hayet and Mr. Mullins reference a downward trend in natural gas price forecasts. Do you agree with that characterization?

A: Yes, natural gas price *forecasts* have been declining. However, I believe it is instructive to review *actual* natural gas prices. Whether the trend is downward or upward depends on the time period considered. While the trend has been generally downward since 2008, more recent data shows it turning upward. Beginning with either January 2015 data or January 2016 data, the trend in actual natural gas prices is upward. Table 3 shows this trend beginning with January 2016 data.

Table 3



Q: Messrs. Peaco, Hayet and Mullins argue low natural gas prices are most likely. What is your opinion? How much weight do you believe should be placed on the "low" natural gas price scenarios?

A: Given the history of actual natural gas prices, that actual natural-gas prices are near historic lows, the asymmetry in the natural gas market from where prices are today, and the recent upward trend in *actual* natural-gas prices, it is my opinion that medium or high natural gas prices are at least as likely, if not more likely, than low natural gas prices. In my opinion, the Combined Projects, if conditioned with hard cost caps and production guarantees, provide a hedge against changes in wholesale market and natural-gas market fundamental that cannot be forecast with any certainty over a 30-year future.

CO2 Prices

Q: Which witness addresses CO2 prices?

A: Mr. Hayet comments on CO2 prices; the other witnesses were notably silent regarding carbon regulation as a potential risk to be considered in the economic evaluation.

Q: What is Mr. Hayet's position with regard to CO2 price risk?

A: I will quote him. Mr. Hayet says "it is quite possible that there may be no CO2 requirements at all in the to-2036 study horizon, and it is certainly possible that there may be no CO2 requirements in the to-2050 study horizon. Therefore, I continue to believe that there is a high probability that natural gas and CO2 costs will be in the low to medium price forecast range, and I believe that substantial consideration should be given to the Low to Medium Gas/Zero CO2 result found…above."[39]

Q: Did Mr. Hayet provide any evidence for his opinion regarding inaction on CO2 through 2036 or through 2050?

A: No.

Q: Did Mr. Hayet address the impact on the study results of using CO2 values denominated in 2012 real dollars rather than in nominal terms?

A: No, he did not.

Q: In your opinion, how likely is lack of action on CO2?

A: In my opinion, it is highly improbable. Aside from scientific research and conclusions, ocean rise and severe weather, attributed to climate change and carbon emission, are already having economic consequences.

In my direct testimony, I testified that climate change is a risk that Moody's Investor Service considers when assigning ratings to local governments and that a new report from Moody's stated that the "growing effects of climate change, including climbing global temperatures, and rising sea levels, are forecast to have an increasing economic impact on US state and local issuers."[40] Economic impact on the real estate market is already being felt in Miami. A *Wall Street Journal* article titled "Rising Sea Levels Reshape Miami's Housing Market" and published April 2, 2018 reports that rising sea levels are negatively

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[39] Hayet at 461-466.
[40] "Prefiled Direct Testimony of Nancy L Kelly on Behalf of Western Resource Advocates," December 5, 2017, p. 13 at 220-227.

impacting real estate values in the Miami area and coastal property is trading at a discount. The article is attached as Exhibit G.

Given the increasing number of climate-related events, their growing costs, the cost to coastal communities, and the increasing costs of climate adaption, I think no action on carbon emissions in the next 20 to 30 years would be a reckless assumption. I think the "zero" cases should be removed from consideration.

Q: Have you prepared a table with this modification?

A: Yes. Table 4 provides this view. You will see that I also relabeled the "medium" CO2 case as "low." I believe this is justified given that PacifiCorp's cost/benefit analysis used CO2 values denominated in real 2012 dollars, and based on information that was presented last week at the May 8 and 9, 2018 MSP meetings.

Table 4.

Cost / (Benefit) of Combined Projects PVRR (d)				
	PaR Mean Results - Through 2036			Through 2050
Price Policy Scenario	February Results: Nominal PTCs, Levelized Capital Costs	Febraruy Results: Levelized PTC, Levelized Capital Costs	February Results: Nominal PTCs, Nominal Capital Costs	February Results: Nominal PTCs, Nominal Capital Costs
Low Gas, Low CO2	($179.00)	$35.00	$127.00	$127.00
Low Gas, Med CO2	($337.00)	($123.00)	($30.00)	($147.00)
Medium Gas, Low CO2	($357.00)	($143.00)	($51.00)	($167.00)
Medium Gas, Med CO2	($448.00)	($234.00)	($141.00)	($304.00)
High Gas, Low CO2	($603.00)	($389.00)	($297.00)	($499.00)
High Gas, Med CO2	($694.00)	($480.00)	($388.00)	($635.00)

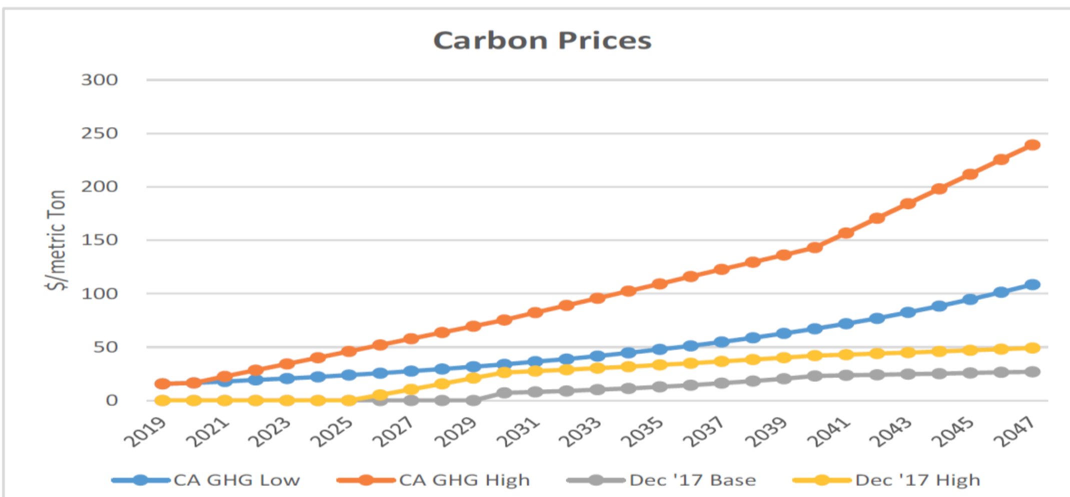
The meeting presentation included a chart that compared PacifiCorp's December CO2 price forecasts with California's; page 49 of the presentation is included as Exhibit H.

The graphic is reproduced below in Table 5. As can be seen, California's low CO2 price exceeds PacifiCorp's high.

In my opinion, without a credible CO2 high price, the analysis is imbalanced and does not demonstrate the value to customers from the Combined Projects if meaningful action is taken to regulate carbon-dioxide emissions.

In its decision to approve the Combined Projects, I recommend the Commission recognize that the cost/benefit analysis does not adequately evaluate this significant risk.

Table 5



Solar Sensitivity

Q: Which witnesses argue that the Solar PPAs are lower cost and risk than the Combined Projects and therefore that the Combined Projects are not needed?

A: Messrs. Peaco, Hayet and Mullins.[41]

[41] See: Peaco, pp. 52-52 at 921-947; Hayet, pp. 23-28 at 492-585; Mullins, pp. 18-21 at 352-434.

Q: Please summarize their position.

A: The witnesses claim that once PTCs and capital costs are nominalized, the solar PPAs are lower cost than the Combined Projects. They therefore argue that the Combined Projects are not needed. Mr. Mullins argues that neither are needed.

Q: How do you respond?

A: The results demonstrate the benefit of doing both. The benefits achieved by adding solar, both with and without the Combined Projects demonstrate the value to PacifiCorp's system of replacing existing generation and front office transactions with new renewable generation.

In addition, in my opinion, resource diversity has value as does dispersing generation geographically.

Finally, I believe serving customers through Company-owned resources as well as through PPAs has value, and allowing PacifiCorp to earn a return on new investment, if cost effective, is good policy.

IV CUSTOMER PROTECTIONS ARE REASONABLE

Q: Have you previously discussed customer protections?

A: Yes. In my surrebuttal testimony filed March 16, I suggested the risks posed by cost overruns, construction delays, and underproduction were not a reason to reject the Combined Projects; instead, these risks should be addressed with approval conditions.[42]

[42] "Prefiled Surrebuttal Testimony of Nancy L. Kelly on Behalf of Western Resource Advocates," March 16, 2018, p. 15-16 at 238-255 and p. 18 at 312-315.

In my testimony filed April 17, I again raised the need for customer protections as an alternative to disapproving the projects.[43]

Q: Is it still you position that customer protections are an appropriate method to address the risk identified by witnesses?

A: Yes, it is. I believe the majority of the risks that witnesses have identified, other than their concern with a low gas/low CO2 price scenario which I have already addressed, can be effectively mitigated through approval conditions.

As I have attempted to stress, the Combined Projects protect customers from changing market fundamentals and the imposition of meaningful carbon regulation which I believe represent the real risk to customers.

Q: Do other witnesses address consumer protections?

A: Yes. The witnesses for OCS address protections. Ms. Ramos addresses whether a new deferral cost recovery mechanism, the Resource Tracking Mechanism (RTM) is necessary or in customers' interests. Mr. Hayet, addresses protections to mitigate against the erosion of economic benefits to customers. Mr. Vastag is the policy witness for OCS; he summarizes both Ms. Ramos and Mr. Hayet's testimony.

Q: What is the Office's position regarding the Company's proposal to implement a new deferral cost recovery mechanism termed the Resource Tracking Mechanism (RTM)?

[43] "Prefiled Response Testimony of Nancy L. Kelly on Behalf of Western Resource Advocates," April 17, 2018, pp. 26-27 at 478-485.

A: Mr. Vastag and Ms. Ramos oppose the RTM as a complex, specialized new tracker that "inappropriately shifts risk to ratepayers." They claim it is unnecessary because the Company can seek a rate increase through a rate case "if the Company finds that the projects hinder its ability to earn a reasonable return."[44]

Q: How do you respond?

A: I agree with Mr. Vastag and Ms. Ramos. I don't believe an additional complex tracking mechanism correctly is necessary, nor do I think it balances customer and shareholder interests appropriately. I believe filing a rate case is sufficient, particularly in light of the Company's ability to forecast a future test year.

In addition, I, like Ms. Ramos, would oppose PacifiCorp's proposal to exclude net power cost benefits from the EBA if not otherwise deferred or reflected in rates.[45] PacifiCorp has the ability to file a rate case if it believes it will not earn its authorized rate of return.

Q: What protections to mitigate against capital cost overruns does Mr. Hayet propose?

A: Mr. Hayet proposes that PacifiCorp be "limited to recovery of capital investment for the Combined Projects to the amounts that it included in its corrected second supplemental direct testimony filing." Cost recovery approval should be limited to the lesser of February 16 filed costs or actual costs.[46]

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[44] "Second Rebuttal Testimony of Bela Vastag for the Office of Consumer Services, April 17, 2018, p. 3 at 57-61.
[45] "Second Rebuttal Testimony of Donna Ramas for the Office of Consumer Services, April 17, 2018, pp. 3-5 at 66-90
[46] Hayet at 958-962.

Q: How do you respond?

A: I agree.

Q: What protections to mitigate against operating and maintenance costs does Mr. Hayet propose?

A: Mr. Hayet proposes that recovery of future O&M and capital expenditures should be limited to the amounts that it included in its corrected second supplemental direct testimony filing.[47]

Q: How do you respond?

A: I agree.

Q: What protections to mitigate against the potential for underproduction does Mr. Hayet propose?

A: He proposes that PTCs and energy benefits should be guaranteed at 95% of those assumed in its corrected second supplemental direct testimony filing for the life of the wind projects.[48]

Q: How do you respond?

A: I agree with guaranteeing PTCs and energy benefits at 95% of those assumed, but I think a ten-year window may be more appropriate. At that point in time, the projects will no

[47] Hayet at 964-968.
[48] Hayet at 970-975.

longer be generating PTCs, and the likely imposition of carbon regulation would increase the relative value of wind energy, compensating for any potential drop in capacity factor.

Q: What protections to limit ratepayers' share of transmission costs does Mr. Hayet propose?

A: PacifiCorp's economic analysis assumed wholesale customers would pay 12% of transmission costs. Mr. Hayet proposes capping the allocation to retail customers at 88% of total.

Q: How do you respond?

A: I agree with the concept of assuring PacifiCorp's retail customers do not pay more for the transmission component of the Combined Projects than modeled in the benefits analysis. I am also aware that transmission use varies with load and resource location and dispatch and that cost causation will change with time. I therefore recommend that if this condition is approved, reopeners be included. To increase the allocation above 88%, PacifiCorp must seek approval from the Commission.

Q: What interjurisdictional cost allocation protections do OCS witnesses propose?

A: Mr. Vastag proposes that "the Commission specify the maximum dollar amount of the project's costs for which Utah ratepayers would be responsible under preapproval." Mr. Hayet calculates the cap at $917 million on a Utah jurisdictional basis.

Q: How do you respond?

A: I agree in limiting Utah's share to its jurisdictional share under the current allocation method. However, I do not support permanently fixing this share. As long as a dynamic allocation method is used for interjurisdictional allocation, Utah's share should be allowed to vary, declining or growing in future years, depending on relative state loads.

Q: Please specify the conditions you recommend the Commission adopt as part of its approval of the Combined Projects.

A: I recommend the Commission:

- Reject the RTM;
- Limit recovery of capital investment and future O&M to the amounts identified in PacifiCorp's corrected second supplemental direct testimony filing;
- Guarantee PTCs and energy benefits at no less than 5% of those assumed in PacifiCorp's corrected second supplemental direct testimony filing for the first ten years of the life of the facilities;
- Limit the allocation of transmission costs to Utah customers to its jurisdictional share of no more than 82% of new transmission costs without first filing with the Commission;
- Cap project costs at Utah's jurisdictional share.

Q: Does this conclude your testimony?

A: Yes. It does.