

**BEFORE THE
PUBLIC SERVICE COMMISSION OF UTAH**

In the Matter of the Application of Rocky Mountain Power for Approval of a Significant Energy Resource Decision and Request to Construct Wind Resource and Transmission Facilities

Docket No. 17-035-40

**DIRECT TESTIMONY OF BRADLEY G. MULLINS
ON BEHALF OF
THE UTAH ASSOCIATION OF ENERGY USERS
AND
THE UTAH INDUSTRIAL ENERGY CONSUMERS**

December 5, 2017

REDACTED VERSION

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EXHIBIT LIST

UAE-UIEC Exhibit 1.1: Regulatory Appearances of Bradley G. Mullins

UAE-UIEC Exhibit 1.2 (Conf.): Company Responses to Data Requests

UAE-UIEC Exhibit 1.3 (Conf.): Forward Curve Forecast Error Analysis (2007 – 2016)

UAE-UIEC Exhibit 1.4 (Conf.): Forward Curve Forecast Error Analysis (2010 – 2016)

1 **I. INTRODUCTION AND SUMMARY**

2 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

3 A. My name is Bradley G. Mullins, and my business address is 333 SW Taylor Street, Suite
4 400, Portland, Oregon 97204.

5 **Q. PLEASE STATE YOUR OCCUPATION AND ON WHOSE BEHALF YOU ARE**
6 **TESTIFYING.**

7 A. I am an independent energy and utilities consultant representing large energy consumers
8 throughout the United States, with a focus in the West. I am testifying on behalf of the
9 Utah Association of Energy Users (“UAE”) and the Utah Industrial Energy Consumers
10 (“UIEC”). UAE and UIEC, as more specifically stated in their respective petitions for
11 intervention in this docket, represent large electric customers served by Rocky Mountain
12 Power (“PacifiCorp”) in Utah.

13 **Q. PLEASE SUMMARIZE YOUR EDUCATION AND WORK EXPERIENCE.**

14 A. I have a Master of Accounting degree from the University of Utah. After obtaining my
15 Master’s degree, I worked at Deloitte in San Jose, California, where I specialized in
16 performing research and development tax credit studies. I later worked at PacifiCorp as
17 an analyst involved in power supply cost forecasting and began working independently as
18 an energy and utilities consultant in 2013. I currently provide services to utility
19 customers on matters such as revenue requirements, power costs, utility planning, rate
20 spread, and rate design. I have sponsored testimony in regulatory jurisdictions
21 throughout the United States, including before the Public Service Commission of Utah

1 (“Commission”). A list of cases in which I have submitted testimony can be found in
2 UAE-UIEC Exhibit 1.1.

3 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

4 A. The purpose of my testimony is to respond to PacifiCorp's request for approval of a
5 significant energy resource decision to procure 860 MW of wind resources (collectively,
6 the "Wind Projects").¹ I also respond to PacifiCorp's voluntary request for approval of
7 resource decisions concerning its proposal to construct the "Aeolus-to-Bridger/Anticline
8 Line" and associated network upgrades (collectively, the "Transmission Projects").² I
9 refer to the Wind Projects and Transmission Projects collectively as “Energy Vision
10 2020.”³

11 As a threshold matter, there is uncertainty as to what precisely the Company is
12 requesting the Commission approve in this docket because the Company's request has
13 been something of a moving target, as discussed below. For example, while PacifiCorp's
14 filing has proposed the Wind Projects and the Transmission Projects as largely
15 inseparable investments, since filing testimony in this matter, PacifiCorp modified its
16 ongoing request for proposal (“RFP”) for the Wind Projects, pursuant to the
17 Commission's September 22, 2017 Order in Docket No. 17-035-23.⁴ One of the

1 Application at 1-2.

2 *Id.*

3 The “Energy Vision 2020” name is sometimes used in a broader sense to describe the Wind Projects, the
Transmission Projects, and the Repowering Projects (currently under discussion in Docket No. 17-035-
039). In this testimony, I use the name more narrowly to describe just the Wind Projects and Transmission
Projects.

4 *Application of Rocky Mountain Power for Approval of Solicitation Process for Wind Resources*, Docket
No. 17-035-23, Order Approving RFP with Suggested Modification at 7 (Sep. 22, 2017).

1 modifications was to allow the RFP to consider procuring wind resources in geographic
2 locations that do not require construction of the associated Transmission Projects.⁵ In
3 addition, PacifiCorp's application in this matter contemplates addition of only 860 MW
4 of new wind resources.⁶ The RFP, however, is seeking cost-competitive bids for up to
5 1,270 MW of wind resources.⁷ These are sources of ambiguity in PacifiCorp's
6 application, since it is unclear how one might determine whether Energy Vision 2020 is
7 in the public interest if it is possible that PacifiCorp might procure resources other than
8 the Wyoming wind and transmission assets described and analyzed in its application. I
9 am aware of nothing presented in this matter that would demonstrate whether these other
10 potential alternatives might be in the public interest.

11 **Q. WHAT WAS THE SCOPE OF YOUR REVIEW?**

12 A. I reviewed the confidential, and non-confidential, filing and workpapers of PacifiCorp. I
13 also conducted discovery, and reviewed PacifiCorp's responses to discovery requests
14 submitted in this matter. Responses to data requests relevant to my testimony may be
15 found in UAE-UIEC Exhibit 1.2. Finally, I conducted supplemental analytics
16 surrounding the economics of the Energy Vision 2020 assets, such as an analysis
17 reviewing of the accuracy of previously issued official forward price curves.

5 *Id.*

6 Application at 1-2.

7 PacifiCorp, *Renewable Request for Proposals (2017R RFP)* at 1 (Sep. 27, 2017). Some, but not all, of the difference between the quantity of wind in the Application and in the RFP appears to be a result of 240 MW of committed qualifying facility resources. See Direct Testimony of Rick T. Link at 479-494.

1 **Q. WHAT ARE YOUR PRIMARY CONCLUSIONS AND RECOMMENDATIONS?**

2 A. Based on my review, I have concluded the following:

3 • The Energy Vision 2020 assets are not necessary for reliability purposes or to
4 meet a demonstrated capacity need.

5 • Rather, the Energy Visions 2020 assets are being justified in comparison to
6 PacifiCorp's forecasts of future power, natural gas, and carbon prices.

7 • I demonstrate that the forward prices in PacifiCorp's Official Forward Price
8 Curve ("OFPC") have historically overestimated actual spot market prices for
9 wholesale electricity and natural gas.

10 • I also demonstrate how that the potential for any ratepayer benefits from the
11 Energy Vision 2020 assets will be eliminated upon the potential resolution of
12 H. Res. 1, the Tax Cuts and Jobs Act of 2017—which, at the time of preparing
13 this testimony, had passed the Senate and was in committee.

14 • Finally, I demonstrate the degree of uncertainty surrounding capital costs, as
15 well as a number of other speculative, unjustified assumptions, embedded in
16 PacifiCorp's economic case for acquiring the Energy Vision 2020 assets.

17 Based on the conclusions reached above, I believe it is unlikely that the
18 acquisition of the Energy Vision 2020 assets will provide any financial benefit to Utah
19 ratepayers. Accordingly, I recommend that the Commission not approve of the resource
20 decisions underlying the proposed Energy Vision 2020 assets and find that it would not
21 be in the public interest to proceed with such a significant, \$ [REDACTED] billion investment using
22 ratepayer monies.

23 **II. BACKGROUND ON THE PROPOSAL**

24 **Q. IS THE CONCEPT BEHIND ENERGY VISION 2020 NEW?**

25 A. No. The concept behind Energy Vision 2020, of building new transmission facilities into
26 Wyoming in order to access low cost wind resources there, has been under discussion for

1 a long time. The Transmission Projects proposed in this matter include sub-segment D2
2 of Energy Gateway, a proposed transmission project discussed at least as far back as
3 PacifiCorp’s 2008 Integrated Resource Plan (“IRP”).⁸ The idea behind the Energy
4 Gateway was to rely on a ‘hub and spoke’ configuration, to efficiently integrate
5 transmission lines with resources and load centers. When it proposed Energy Gateway,
6 PacifiCorp claimed that it was designed to “facilitate needed infrastructure to integrate
7 and deliver large volumes of renewable energy in the west.”⁹ Subsequent to the Energy
8 Gateway proposal, however, many stakeholders have questioned the need to make such
9 significant transmission additions.

10 **Q. HAVE PARTS OF THE ENERGY GATEWAY BEEN CONSTRUCTED?**

11 A. Yes. Both the ‘Populous to Terminal’ and ‘Sigurd to Red Butte’ Energy Gateway
12 segments have been constructed. Both were expensive and controversial. In a docket
13 before the Idaho Public Utility Commission, the record established that the Populous to
14 Terminal line was originally estimated to cost \$78 million, but in fact cost \$801 million,
15 the amount requested by PacifiCorp for inclusion in rate base.¹⁰ The Idaho Commission
16 found that 27% of those costs—equaling \$216.4 million of the \$801 million PacifiCorp
17 sought to rate base—was not used and useful, and was plant held for future use.¹¹

⁸ See PacifiCorp, 2008 Integrated Resource Plan at 60-66 (May 28, 2009).

⁹ *Id.* at 63.

¹⁰ Id.PUC Case No. PAC-E-10-07, Direct Testimony of Randy Lobb at 20:12-22.

¹¹ *In re the Application of PacifiCorp dba Rocky Mountain Power For Approval of Changes to Its Electric Service Schedules*, Id.PUC Case No. PAC-E-10-07, Order No. 32196 at 35.

1 **Q. WHEN DID PACIFICORP FIRST ANNOUNCE ITS INTENTION OF**
2 **PROCEEDING WITH ENERGY GATEWAY SUB-SEGMENT D2?**

3 A. The idea was introduced late in the public process leading up to the 2017 IRP. Over the
4 course of the 2017 IRP process, parties were given the impression that no further Energy
5 Gateway segments would be proposed to be built in the 2017 IRP action plan. In the
6 January 26-27, 2017 General Public Meeting, for example, the preferred regional haze
7 portfolio did not include any Energy Gateway additions, and there was no discussion
8 indicating that PacifiCorp was still considering the inclusion of additional Energy
9 Gateway segments in the 2017 IRP.

10 It was not until the very last General Public Meeting on March 2-3, 2017, held
11 approximately one month before PacifiCorp submitted the 2017 IRP filing, when
12 PacifiCorp announced its intention to include construction of Energy Gateway sub-
13 segment D2 in the action plan, in conjunction with 1,100 MW of new wind resources.

14 **Q. WHY WAS THIS TIMING SURPRISING?**

15 A. This timing was surprising to many because PacifiCorp apparently made much of the
16 financial commitment underlying the newly proposed wind resources in December 2016,
17 to qualify for the production tax credit. It wasn't until March 2017, however, that
18 PacifiCorp disclosed this financial commitment to stakeholders, which raises questions as
19 to the purpose for the delay in disclosure.

20 **Q. DID PACIFICORP UPDATE ITS ANALYSIS OF ENERGY VISION 2020 AFTER**
21 **FILING THE 2017 IRP?**

22 A. Yes. On or around July 28, 2017, PacifiCorp updated its analysis of Energy Vision 2020.
23 The July update contained supplemental studies that further considered the economic

1 benefits of Energy Vision 2020, using the System Optimizer (“SO”) and Planning and-
2 Risk (“PaR”) dispatch models. PacifiCorp filed an Energy Vision 2020 Update with this
3 Commission on August 31, 2017 in Docket No. 17-035-23 as Exhibit RMP___(RTL-S1)
4 along with the Supplemental Testimony of Rick T. Link, which contained the results of
5 its July Update. Table 4.1 of Exhibit RMP___(RTL-S1) summarized the results of the
6 July update for the Wind Projects and Transmission Projects.

7 **Q. WHAT CHANGES DID PACIFICORP MAKE IN ITS UPDATED ANALYSIS?**

8 A. In its update, PacifiCorp filed a summary that detailed the specific changes in the July 28,
9 2017 analysis, relative to the 2017 IRP.¹² These changes included incorporating new
10 modeling adjustments designed to improve the forecast economics of Energy Vision
11 2020, which were claimed to account for energy imbalance market (“EIM”) benefits, line
12 losses benefits, and reliability benefits.¹³ PacifiCorp confirmed in discovery in the
13 Oregon docket that, in the 2017 IRP, it had previously made these additional adjustments
14 outside of the models in a way that increased the projected benefits of Energy Vision
15 2020, but has since incorporated those adjustments into the SO and PaR models.¹⁴

16 **Q. WHAT WERE THE RESULTS OF PACIFICORP’S SUPPLEMENTAL**
17 **STUDIES?**

18 A. The supplemental studies suggested that the Energy Vision 2020 projects might produce
19 a wide range of economic outcomes, depending on uncertain future natural gas and

12 Docket No. 17-035-23, Exhibit RMP___(RTL-S1) at 16-17.

13 *Id.*

14 UAE-UIEC Exhibit 1.2 at 3-4 (PacifiCorp’s Response to PacifiCorp Idaho Industrial Customers (“PIIC”)
2nd Set Data Request (“DR”) 10).

1 electric market prices and carbon price assumptions. The analysis suggested there was a
2 \$530 million range of potential economic outcomes, between (-)\$121 million and \$409
3 million, depending on the natural gas market price and carbon assumptions used.¹⁵ After
4 considering some of the speculative modeling assumptions that went into developing
5 these studies, however, and as discussed later in my testimony, it is clear that the
6 likelihood for a detrimental outcome is much greater than PacifiCorp represents.

7 **Q. HOW MUCH CAPITAL WOULD PACIFICORP DEPLOY FOR ENERGY**
8 **VISION 2020?**

9 A. PacifiCorp's proposal would represent a staggering commitment of ratepayer capital of
10 over \$█ billion. Confidential Table 1, below, details the projected capital cost of the
11 respective aspects of the Energy Vision 2020 projects, based on my review of the
12 Company's confidential workpapers. These expenditure amounts are inclusive of an
13 allowance for funds used during construction.

¹⁵ Direct Testimony of Rick T. Link at 36, Table 2.

CONFIDENTIAL TABLE 1
Energy Vision 2020 Capital Investment Detail (\$000)



1 **Q. DOES PACIFICORP HAVE AN INCENTIVE TO DEPLOY THIS CAPITAL?**

2 A. Yes. It has been widely documented that utilities subject to rate of return regulation have
3 an incentive to over-invest in capital in order to increase earnings.¹⁶ This phenomenon is
4 often referred to as the Averch-Johnson Effect—based on the economists who first
5 developed the model to describe it back in the 1960s—and has a real and significant
6 impact on how utility operations are managed. As the saying goes, the utility earns on
7 what it builds. Accordingly, when considering the capital investments identified in

¹⁶ See Harvey Averch & Leland L. Johnson, *Behavior of the Firm Under Regulatory Constraint*, 52 AM. ECON. REV. 996, 1052 (1962).

1 Confidential Table 1, it is important to recognize that the shareholder has the potential to
2 benefit hugely if it is deployed.

3 In addition, the shareholder benefits associated with the proposed Energy Vision
4 2020 capital investment accrue without regard to whether the alleged ratepayer benefits
5 materialize. Thus, with economic investments such as Energy Vision 2020, there is a
6 fundamental asymmetry in that ratepayers bear all of the risks associated with the
7 investment while the shareholder receives financial benefits that would be practically
8 guaranteed from a ratemaking perspective.

9 **Q. DO YOU KNOW WHETHER AND WHY MOST RATEPAYER ADVOCATES**
10 **OPPOSE THE PROJECT?**

11 A. The renewable aspects of Energy Vision 2020 are appealing to many. Notwithstanding
12 those potential environmental benefits, comments and testimony filed by ratepayer
13 advocates throughout the PacifiCorp system show that they almost uniformly view
14 Energy Vision 2020 as a very risky investment proposal that is likely to be detrimental to
15 ratepayers. It is clear that there might be some limited scenarios in which Energy Vision
16 2020 might produce some ratepayer benefits. From a ratepayer perspective, however,
17 Energy Vision 2020 appears more likely to harm ratepayers than to benefit them. If
18 Energy Vision 2020 were based on a demonstrated resource or reliability need, it might
19 provide a better justification for taking on the additional risks of the investment.
20 However, the Energy Vision 2020 project is discretionary and not necessary, based
21 largely on speculative assumptions of future prices meant to benefit shareholders rather
22 than ratepayers. In the past, bets like Energy Vision 2020 have harmed ratepayers, and I

1 believe it is for that reason that most ratepayer advocates, including myself, recommend
2 against approval of the proposed investment.

3 **III. THE NEW WIND AND TRANSMISSION RESOURCES ARE NOT NECESSARY**

4 **Q. WHY IS THE ISSUE OF RESOURCE NEED CENTRAL TO DETERMINING**
5 **WHETHER ENERGY VISION 2020 IS IN THE PUBLIC INTEREST?**

6 A. Fundamental to public utility regulation is the concept that ratepayers should be required
7 to pay only for utility investments necessary to provide utility services. It was recognized
8 more than 25 years ago “that the basis of all calculations as to the reasonableness of rates
9 to be charged ... must be the fair value of the property being used by it for the
10 convenience of the public.”¹⁷

11 **Q. HOW HAS THE NOTION OF RESOURCE NECESSITY BEEN EMBODIED IN**
12 **PUBLIC UTILITY REGULATION IN UTAH?**

13 A. My understanding is that Utah has a relatively strong used and useful standard that must
14 be met in order to include investments in utility plant. In many other states, used and
15 useful standards have been established explicitly through statute.¹⁸ In Utah, however, the
16 used and useful standards have primarily been implemented in the courts. In *Terra*
17 *Utilities, Inc. v. Public Serv. Com’n*, for example, the Utah Supreme Court affirmed the
18 Commission’s decision to exclude from rate base costs related to the portions of a water
19 and sewer plant that the Commission found not to be used and useful.¹⁹

¹⁸ See, e.g., Revised Code of Washington § 80.4.250.

¹⁹ 575 P.2d 1029 (Utah 1978).

1 **Q. IS ENERGY VISION 2020 PROPERLY CHARACTERIZED AS ADDRESSING A**
2 **RESOURCE NEED?**

3 A. No. Table 5.14 of the 2017 IRP shows—without the Energy Vision 2020 investments—
4 available front office transactions of 1,670 MW exceed the system requirements by a
5 wide margin through the first ten years of the study period.²⁰ In 2026, PacifiCorp expects
6 that currently available resources and front office transactions will exceed total system
7 requirements, including a 13% planning reserve, by approximately 447 MW. This means
8 that, without acquiring any new generating resources or transmission lines, PacifiCorp
9 will continue to be capable of providing adequate services to customers in Utah, inclusive
10 of a material reserve margin. As such, the proposal cannot reasonably be characterized as
11 addressing a resource need. Rather, the proposal is more reasonably characterized as an
12 economic opportunity based on the current relationship between projected forward prices
13 and the projected costs of the new resources.

14 In addition, the Company has confirmed on the record in Oregon that “there is no
15 reliability need to put [the Transmission Projects] in place absent the wind.”²¹ The
16 Company also confirmed that it is “currently compliant with North American Electric
17 Reliability Corporation reliability standards and expect[s] to be going forward”²²

²⁰ *PacifiCorp 2017 IRP*, Volume I at 91.

²¹ Or.PUC Docket No. LC 67, Staff Final Comments at 19 (Oct. 6 2017).

²² *Id.*

1 **Q. WHY IS THE ISSUE OF RESOURCE NEED IMPORTANT WHEN**
2 **CONSIDERING SUCH SIGNIFICANT UTILITY INVESTMENTS?**

3 A. When a legitimate reliability-based resource need has been established, a resource must
4 be acquired whether or not the resource produces financial benefits to ratepayers or
5 increases overall financial risk to ratepayers. Thus, when a reliability need has been
6 established, the pertinent inquiry is to determine which type of resource best fulfills the
7 resource need at the least cost and least risk to ratepayers. In the case of a project
8 justified on the basis of such a resource need, ratepayers appropriately take on the risk
9 that the project might be uneconomic, since the project must be completed in order for
10 the utility to continue to provide adequate utility service.

11 I am not a lawyer and I do not know whether or under what circumstances a
12 discretionary investment justified, not on the basis of a reliability need, but rather on a
13 purely economic basis, can or should properly be approved under Utah's Resource
14 Procurement Act. From an economic and policy perspective, however, in the absence of
15 a resource need, a potential resource acquisition might appropriately be considered as a
16 utility investment, but only to the degree that it can be clearly and unambiguously shown
17 to produce significant economic benefits or rents to ratepayers through reduced rates, in a
18 manner commensurate with the risk of the investment. From this ratepayer perspective,
19 the decision of whether to proceed with a resource acquisition is fundamentally different,
20 depending on whether or not a clear resource reliability need has been established. In the
21 case of an investment justified on the basis of economic benefits, the threshold for
22 proceeding with the investment has to be sufficiently higher and—to ensure ratepayers

1 will recognize positive economic rents associated with the project—should not be risky
2 or speculative.

3 **Q. CAN YOU PROVIDE AN ANALOGY TO ILLUSTRATE YOUR POINT?**

4 A. The distinction between a resource constructed to fulfill a clear resource need, versus a
5 project justified on the basis of economics, can be analogized to the considerations one
6 might make when deciding whether to acquire a home as a primary residence, versus
7 acquiring a home as a rental property. When making the decision to acquire a home as a
8 primary residence, there are many risks that are not necessary to consider, simply because
9 one needs a place to live. In contrast, when considering whether to invest in a rental
10 property, one performs a fundamentally different analysis. One must determine, for
11 example, whether the rents forecasted to be received are sufficient to cover the costs and
12 risks, with a reasonable margin to justify the investment. In addition, one would only
13 proceed with investing in a rental property if one has sufficient capital, the timing is right,
14 and if other relevant factors support the investment. An investment in a rental property
15 would also only occur if the investor had strong confidence in its rent forecast.
16 Moreover, when an investment is being made with funds that will be provided or
17 guaranteed by others, there is a compelling fiduciary-type obligation to ensure that those
18 ultimately bearing the risk of the investment will reap clear benefits, and not just those
19 promoting the acquisition.

1 **Q. PACIFICORP CLAIMS THAT THESE RESOURCES WILL DISPLACE FRONT**
2 **OFFICE TRANSACTIONS. DOES THAT REPRESENT FILLING OF A**
3 **RESOURCE NEED?**

4 A. No. Front office transactions are market resources to which customers have access today,
5 without capital risk. Moreover, existing access to market resources is not without
6 significant ratepayer cost. Customers have invested significantly in PacifiCorp's
7 extensive transmission system in order to have access to bilateral markets. The fact that
8 these markets exist demonstrates that there is surplus power in the West. Surplus power
9 is derived from load diversity among utilities, allowing them to buy and sell power and
10 energy among each other. Also, a large amount of energy from independent power and
11 qualifying facilities contributes to surplus power available in bilateral markets. These
12 markets are viable and should not be ignored when evaluating whether a utility has a
13 "need" to make significant capital investments.

14 When accessing these bilateral markets, no incremental ratepayer supplied capital
15 is required. For that reason, it is generally preferred from a ratepayer perspective that
16 PacifiCorp rely on front office transactions when available, rather than making
17 significantly more risky capital investments. Finally, to the extent PacifiCorp ceases to
18 rely on the supply of energy in bilateral markets, and instead acquires its own resources,
19 it will have the effect of increasing regional supply, thus reducing market prices and
20 further reducing the likely economic benefits of its proposed acquisitions.

21 **Q. IS THERE RISK IN RELYING ON FRONT OFFICE TRANSACTIONS?**

22 A. Reliance on front office transactions is not without risk. It is possible that markets may
23 change in the future making front office transactions more, or less, expensive. The same

1 sort of risks, however, are present with all of PacifiCorp's resources. Hydro resources
2 bear risks associated with hydrological conditions. Gas plants bear risks associated with
3 gas prices. Coal plants are subjected to coal price and environmental risks. This is why
4 PacifiCorp's system has been built over the years as a diverse portfolio, so that the risks
5 of these different types of resources are combined to make an overall less risky system
6 than if any one type of resource were relied upon too heavily. Relying on front office
7 transactions is a key part of this diverse portfolio and that resource, and the diversity it
8 represents, should not be minimized in an effort to justify the investment in the proposed
9 Energy Vision 2020 assets.

10 **Q. COULD THE ENERGY VISION 2020 ASSETS BE VIEWED AS A HEDGE?**

11 A. The cost of a wind resource is relatively fixed, meaning that a wind resource becomes
12 more expensive to ratepayers if market prices decline, and less expensive if market prices
13 increase. From this perspective, a wind plant could be viewed as a hedge against market
14 prices. Whether the Energy Vision 2020 might appropriately be justified for inclusion in
15 utility rates on the basis that it constitutes a long-term hedge, however, is a separate
16 discussion. When selecting portfolios of resources necessary to provide services, it is
17 appropriate for the utility to consider the impact of new resource additions on the overall
18 risk of its portfolio. It is not appropriate, however, for a utility to begin making
19 discretionary investments in unneeded facilities that are acquired solely for hedging
20 value. PacifiCorp already has complex policies and strategies designed to hedge the
21 impacts of changing market prices, and constructing a resource on the sole basis that it

1 constitutes a hedge, would upset the controversial hedging framework that is already in
2 place.

3 **Q. IS THE IRP AN APPROPRIATE FRAMEWORK FOR EVALUATING**
4 **ECONOMIC RESOURCE ACQUISITIONS?**

5 A. No. While an IRP analysis may be useful for selecting among available resources when a
6 clear resource need has been established, it is not useful in evaluating potential economic
7 investments. Since the IRP process is designed to identify the best resource to fill an
8 identified resource need, it can and does ignore many of the risks associated with
9 acquiring new resources. When a resource is necessary from a reliability or supply
10 perspective, many risks must be assumed without regard to the resource acquired. When
11 dealing with a discretionary, economic investment, however, many additional risks must
12 be considered.

13 **IV. THERE ARE MANY RISKS PACIFICORP HAS NOT CONSIDERED**

14 **Q. WHAT ADDITIONAL RISKS ASSOCIATED WITH ENERGY VISION 2020 HAS**
15 **PACIFICORP NOT ADEQUATELY CONSIDERED?**

16 A. Among specific risks that I have identified with the Energy Vision 2020 investments that
17 PacifiCorp has not adequately addressed are 1) the current status of the Multi-State
18 Protocol; 2) forecasted regional oversupply conditions; 3) movement towards
19 regionalized transmission; and, 4) changes to the tax law. This is not meant to be an
20 exhaustive list, as there are many more of these types of risks which are not normally
21 considered in the context of an IRP analysis, but are appropriately considered in the
22 context of a discretionary economic investment.

1 **Q. WHAT IS THE CURRENT STATUS OF THE MULTI-STATE PROCESS?**

2 A. The 2017 Multi-State Protocol will expire on December 31, 2019, and stakeholders are
3 currently in the process of trying to develop a replacement interjurisdictional allocation
4 methodology. In place of the current framework, PacifiCorp has proposed sweeping
5 changes to the way that the cost of generation will be allocated amongst the states.
6 PacifiCorp's current proposal is to effectively split up the system, assign each state a
7 fixed allocation of existing resources, move to a subscription-based method for assigning
8 new resources to each state, and utilize locational marginal pricing for valuing transfers
9 and transactions among the jurisdictions.

10 **Q. HOW WOULD A FIXED-SLICE/SUBSCRIPTION FRAMEWORK IMPACT**
11 **THE ECONOMICS OF ENERGY VISION 2020?**

12 A. It is far from clear how the Energy Vision 2020 resources would fit within a fixed
13 allocation/subscription framework, and this source of uncertainty is a serious risk to
14 ratepayers. Indeed, in my view, the very fact that PacifiCorp is attempting to cram down
15 the Energy Vision 2020 resources despite widespread opposition and skepticism from
16 ratepayer advocates and regulators creates significant doubt and uncertainty about the
17 viability of PacifiCorp's proposed Multi-State Process "solutions."

18 **Q. MIGHT ENERGY VISION 2020 CREATE DISPARATE IMPACTS AMONGST**
19 **THE STATES IN A SUBSCRIPTION FRAMEWORK?**

20 A. Yes. What is clear, with respect to a subscription framework, is that there is the potential
21 for disparate impacts amongst the states if the Energy Vision 2020 investment is made.
22 The new generation and transmission would influence locational marginal pricing in a
23 subscription framework, which in turn would impact how generation costs would be

1 allocated to each state under PacifiCorp's Multi-State Process proposal. Needless to say,
2 it can hardly be considered wise, from a ratepayer perspective, to begin making
3 significant, irreversible financial decisions immediately prior to splitting up the system
4 into a fixed slice/subscription model. It is akin to a couple buying an expensive house
5 after they have decided to divorce. It makes the allocation of assets and risks much more
6 complicated.

7 **Q. YOU ALSO MENTIONED THE RISK OF OVERSUPPLY CONDITIONS IN THE**
8 **WEST. PLEASE EXPLAIN.**

9 A. One of the more pressing issues currently affecting electric utilities in the West has to do
10 with persistent oversupply conditions. Most in the industry are aware of the implications
11 of the "duck curve," and the impact that surplus renewables are having on supply,
12 including reduced prices in bilateral markets. Faced with this influx of renewables on the
13 system, PacifiCorp is not the only entity in the West aware of the low cost of renewable
14 resources, and giving thoughts to building them.

15 **Q. ARE OVERSUPPLY CONDITIONS LIKELY TO PERSIST?**

16 A. Given current price trajectories for renewables, it is reasonable to expect that oversupply
17 conditions will get worse, not better. For example, PacifiCorp has indicated in
18 presentations to large customers that it is already experiencing negative EIM prices in
19 Wyoming. There is no reason not to expect that this negative pricing caused by
20 oversupply conditions will persist, and likely worsen, particularly if PacifiCorp constructs
21 the Wind Projects. PacifiCorp has not considered this risk associated with oversupply of

1 renewables. At a minimum, the potential that current conditions may persist is a reason
2 to put greater weight on the low gas price scenarios in the economic analyses.

3 **Q. DO CURRENT QUALIFYING FACILITY DEVELOPMENTS INFLUENCE THE**
4 **OVERSUPPLY CONDITIONS?**

5 A. Yes. In its Q2 2017 avoided-cost update filing with this Commission, PacifiCorp
6 indicated that potential qualifying facility (“QF”) resources in its pricing queue include
7 total nameplate capacity of approximately 5,775 MW, with total contribution to capacity
8 of approximately 2,920 MW.²³ When added to the approximately 860 MW of new wind
9 proposed in this docket, Utah ratepayers might be looking at paying for several thousand
10 megawatts of renewable and QF resource additions. Despite this, PacifiCorp’s analyses
11 in this docket do not consider how the dramatic influx of QF contracts and other sources
12 of supply might impact the economics of its proposal—another risk that weighs against
13 approval of the Energy Vision 2020 resources at this time.

14 **Q. HOW MIGHT FURTHER REGIONALIZATION OF THE TRANSMISSION**
15 **SYSTEM IMPOSE RISKS WITH RESPECT TO ENERGY VISION 2020?**

16 A. The recent regionalization efforts undertaken through the CAISO appear to have ended
17 suddenly, and might be forgotten as quickly as was Grid West. Notwithstanding, it is
18 reasonable to expect continued movement towards regionalization of the transmission
19 system. The Energy Gateway was a controversial aspect of recent regionalization efforts,
20 as PacifiCorp insisted on being able to complete the projects outside of CAISO’s regional
21 transmission planning process. Many parties were not supportive of PacifiCorp’s

²³ *Rocky Mountain Power’s 2017 Avoided Cost Input Changes Quarterly Compliance Filing*, Docket No. 17-035-37, Rocky Mountain Power Q2 Compliance Filing at 6.

1 proposal to build Energy Gateway outside of the regional planning process, which would
2 otherwise require competitive bidding with respect to new transmission investments.²⁴

3 Under Order 1000, FERC has expressed a preference for utilities to perform inter-
4 regional transmission planning. Moreover, Section K of PacifiCorp's own OATT
5 contemplates regional and sub-regional planning efforts to inform transmission
6 expansion. From an inter-regional perspective, segment D2 of the Energy Gateway may
7 not be the best solution for addressing transmission needs in the West. Ratepayer capital
8 is limited and would be better deployed for the purpose of improving reliability
9 throughout the West, not for the purpose of pursuing transmission investments driven by
10 speculative economic investment opportunities.

11 **Q. WHAT RISKS MIGHT CHANGES TO THE TAX CODE POSE FOR THE**
12 **ENERGY VISION 2020 INVESTMENT?**

13 A. Changes to the tax code have the potential to produce dramatic impacts on the purported
14 ratepayer benefits of the Energy Vision 2020 project. Much of the ratepayer benefit
15 purported by the Company with respect to Energy Vision 2020 comes in the form of tax
16 benefits. Yet, we know that in the long run, the availability of these tax benefits can be
17 moderated or eliminated through changes in the tax code and regulations. Accordingly,
18 it is inherently risky to rely on particularities of the tax code as the primary basis for
19 justifying a long-lived investment, as those benefits can disappear overnight.

²⁴ *In re Transmission Access Charge Options*, California Independent System Operator, ICNU Comments on Revised Straw Proposal at 2-3.

1 In fact, it is becoming increasingly likely that this risk might materialize. At the
2 time of drafting of this testimony, H. Res. 1, the Tax Cuts and Jobs Act of 2017, had
3 passed both the House and Senate and was in conference to resolve disparities between
4 the resolutions passed by the House and by the Senate. The proposed tax changes would
5 more than eliminate the potential for any ratepayer benefits with respect to Energy Vision
6 2020 by reducing corporate tax rates and eliminating inflationary escalators on the
7 production tax credit. The impacts of these potential changes will be discussed further
8 below.

9 **Q. AFTER CONSIDERING THESE RISKS, DO YOU BELIEVE THE ENERGY**
10 **VISION 2020 PROJECTS ARE IN THE PUBLIC INTEREST?**

11 A. No. Since the Energy Vision 2020 project is driven solely by economic, not reliability or
12 resource concerns, it needs to be shown with relative certainty that the investment will
13 produce ratepayer benefits, through reduced rates. PacifiCorp has failed to make such a
14 showing. In fact, after one considers the speculative nature of many of PacifiCorp's
15 assumptions, including those related to projected market prices, it is likely that Energy
16 Vision 2020 will result in great harm to ratepayers in the long-run.

17 **V. IMPACT OF FORECAST MARKET PRICES**

18 **Q. WHAT IMPACT DOES MARKET PRICE ASSUMPTIONS HAVE ON**
19 **PACIFICORP'S ANALYSES?**

20 A. The economic case underlying the proposed Energy Vision 2020 investment is
21 dependent, almost entirely, on PacifiCorp's assumptions related to future natural gas and
22 power prices. Under PacifiCorp's analyses, if future gas and electric prices are high, the

1 Energy Vision 2020 project could prove to be economical. If prices do not increase to
2 the extent projected by PacifiCorp, however, Energy Vision 2020 will not be economical.
3 As a result, the case for Energy Vision 2020 can be viewed largely as a speculative
4 investment of ratepayer money on PacifiCorp's bet as to future market prices. Because
5 market prices are a key assumption in PacifiCorp's proposal, it is important to have a
6 clear understanding of the likely accuracy of PacifiCorp's forecast.

7 **Q. HOW ACCURATELY HAS PACIFICORP FORECAST MARKET PRICES IN**
8 **THE PAST?**

9 A. PacifiCorp has not done a very good job in the past at predicting future prices. In fact,
10 the analysis I discuss below demonstrates that the forward prices used in PacifiCorp's
11 price curve have systematically over-forecast market prices in the past. While there
12 should be little expectation that anyone can predict future market prices with any degree
13 of accuracy, particularly as far as 20 or 30 years into the future, the significant inaccuracy
14 of PacifiCorp's past projections provides a convincing case why unnecessary, speculative
15 investments based on those projections would be unwise.

16 **Q. DO THE SAME CONCERNS ABOUT THE FORWARD PRICE CURVE APPLY**
17 **TO A PROJECT BUILT BASED ON A RELIABILITY NEED?**

18 A. No. When a project is constructed to meet a demonstrated reliability need, the accuracy
19 of the long-term price forecast is less important. The price forecast may affect which
20 specific types of resource will be selected, but not whether a resource should be acquired
21 at all. Thus, the accuracy of forward price curves is of greater importance in the case of
22 an investment driven by economic factors.

1 **Q. WHAT ANALYSES HAVE YOU PERFORMED SURROUNDING**
2 **PACIFICORP’S PRICE FORECASTING?**

3 A. PacifiCorp issues periodic Official Forward Price Curves (“OFPCs”). These OFPCs are
4 usually issued on a quarterly basis, although at times they are issued at more frequent
5 intervals. The OFPCs contain a schedule of escalating forecast gas and electric market
6 prices sometimes more than forty years into the future. I have performed an analysis to
7 consider the accuracy of previously issued OFPCs. My analysis demonstrates that
8 PacifiCorp’s forecast has tended to overstate future prices, and by significant margins. In
9 addition, I also performed some analysis on PacifiCorp’s 2012 long term gas hedge, a
10 contract that—like Energy Vision 2020—PacifiCorp sought to justify based on forecast
11 market prices, but which has since proved to be detrimental to ratepayers compared to
12 actual market prices.

13 **Q. HOW DOES PACIFICORP DEVELOP ITS OFPC?**

14 A. In the first six years of the OFPC, the forecast prices are based on current forward market
15 prices based on quotes obtained from power and natural gas brokers. Beyond six years,
16 prices transition to a fundamental analysis, with some blending of current forward market
17 rates and broker quotes over a short transition period. For natural gas prices, the
18 fundamental analysis used beyond six years is developed by a third party. For electricity
19 prices, PacifiCorp develops the fundamental analysis using the AuroraXMP model.

1 **a. PacifiCorp’s Forward Price Curves Systematically Overstate Future**
2 **Market Prices**

3 **Q. PLEASE PROVIDE AN OVERVIEW OF THE ANALYSIS YOU PERFORMED**
4 **WITH RESPECT TO PACIFICORP’S PREVIOUSLY ISSUED OFPCS.**

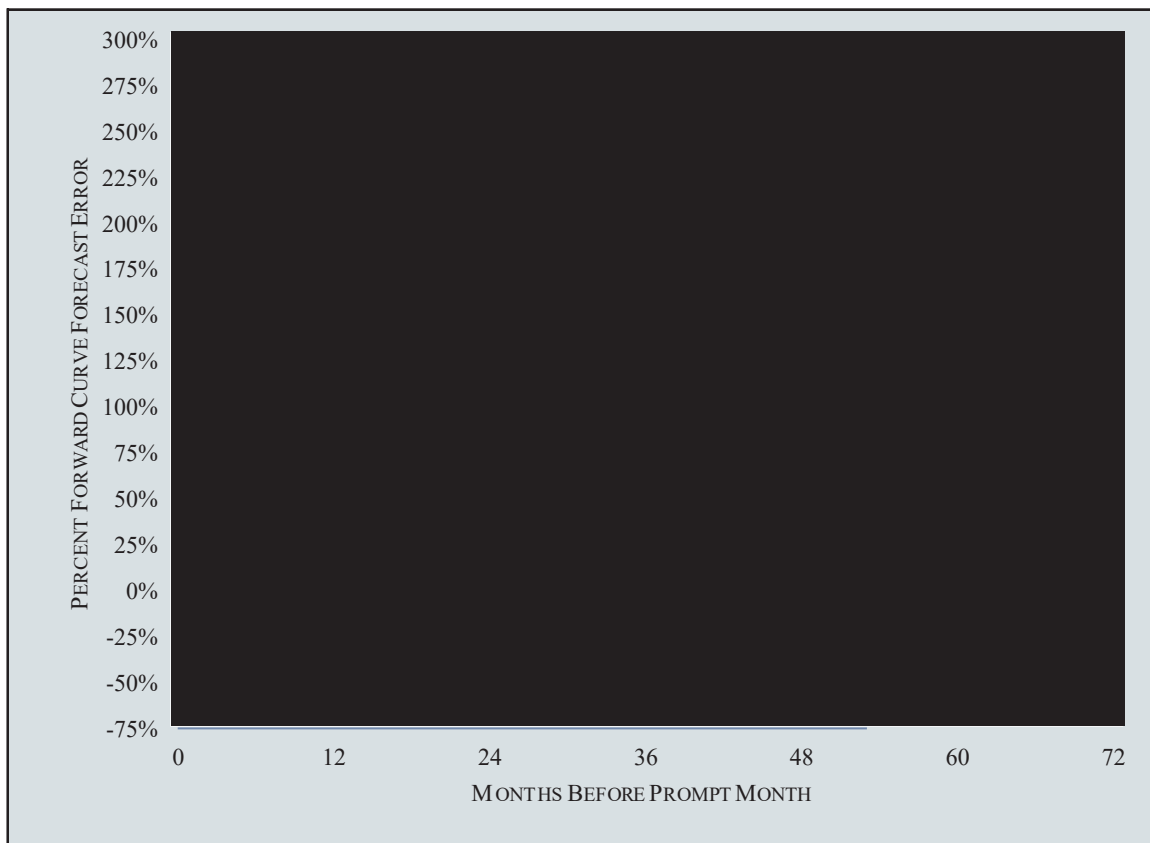
5 A. In UAE-UIEC Exhibit 1.3 and UAE-UIEC Exhibit No. 1.4, I present an analysis
6 exploring the accuracy of PacifiCorp’s previously issued OFPCs. UAE-UIEC Exhibit
7 1.3 examines the accuracy of OFPCs issued over the period 2007 through 2016. UAE-
8 UIEC Exhibit No. 1.4 examines the accuracy of OFPCs issued over the period 2010
9 through 2016. UAE-UIEC Exhibit 1.4 considers a shorter period of 2010 through 2016
10 in order to determine whether structural changes in natural gas and power markets—
11 which occurred generally in the period 2008 through 2010, as a result of advances in
12 directional drilling and fracking technologies and other factors—might have contributed
13 to the over-forecasting observed in the longer-term analysis presented in UAE-UIEC
14 Exhibit 1.3.

15 **Q. WHAT DOES YOUR ANALYSIS SHOW?**

16 A. The analysis in UAE-UIEC Exhibit 1.3 shows that, over the period 2007 to 2016,
17 PacifiCorp historically overestimated future forward prices, and that the magnitude of the
18 overestimation tended to be greater the further out the forecast was made. In addition,
19 the same pattern of overestimation can be observed in UAE-UIEC Exhibit 1.4, when
20 considering only the curves issued over the shorter period of 2010 through 2016. This
21 indicates that PacifiCorp’s over-forecasting cannot be explained by the unexpected, rapid
22 decline in natural gas prices that occurred between 2008 and 2010.

1 The analysis for the Henry Hub market has been reproduced in Confidential
2 Figure 1, below, based on OFPCs issued over the period 2007 through 2016.

CONFIDENTIAL FIGURE 1
Henry Hub Forecast Error
For OFPCs Issued 2007 to 2016



3 Similar figures may be found in UAE-UIEC Exhibit 1.3 for other power and gas
4 markets over this same 2007 to 2016 time period. In addition, UAE-UIEC Exhibit 1.4
5 contains similar figures over the shorter 2010 to 2016 time period.

6 **Q. PLEASE DESCRIBE THE DATA PRESENTED IN CONFIDENTIAL FIGURE 1.**

7 A. Confidential Figure 1 is a plot of the percentage forecast error associated with forward
8 prices included in forward price curves issued by PacifiCorp over the period 2007 to the

1 end of 2016. Each dot in the figure represents the percentage difference between a price
2 that was forecast in a forward curve and the ultimate spot price for the given prompt
3 month. To the extent that the error is positive, it means that the price in the forward
4 curve exceeded the ultimate spot price. To the extent that the error is negative, it means
5 that the price in the forward curve was less than the ultimate spot price. Along the x-axis,
6 the set of forecast errors was separated by the number of months before the prompt
7 month for which the forward price was calculated. Thus, a forecast error further to the
8 right indicates the forecast error associated with a price that was forecast further in
9 advance of the prompt month. Similarly, a forecast error on the left side of the x-axis
10 represents a price that was forecast nearer to the prompt month. Overlaid on the figure is
11 the median forecast error based on the number of months in advance of the prompt month
12 that the forward prices were calculated, as well as the interquartile range of the forecast
13 errors.

14 **Q. HOW CAN THE DATA PRESENTED IN CONFIDENTIAL TABLE 1 ABOVE BE**
15 **USED TO DETERMINE PACIFICORP'S ABILITY TO PREDICT FORWARD**
16 **PRICES?**

17 A. If the OFPCs are reasonably accurate, one would expect PacifiCorp's price forecast to be
18 an unbiased expectation of future spot prices. That is, forward prices would exceed the
19 ultimate spot price 50% of the time and be less than the spot price 50% of the time. That,
20 however, is clearly not the case. Rather, PacifiCorp's projected forward prices have
21 exceeded the ultimate spot price approximately 90% of the time in Confidential Figure 1,
22 above.

1 **Q. COULD THE ABOVE ANALYSIS ALSO BE USED TO DETERMINE IF THERE**
2 **IS A RISK PREMIUM EMBEDDED IN THE FORWARD PRICE CURVE?**

3 A. Yes. In the first six years of the OFPC, the market prices are based on broker quotes for
4 current forward market prices. Accordingly, another way to look at PacifiCorp's
5 propensity to over-forecast is as a risk premium, an additional cost above the spot market
6 price that PacifiCorp is willing to pay, and that the counterparty demands, in order to lock
7 in a fixed price. If there is no risk premium embedded in the OFPC, the median forward
8 curve forecast error over the six-year period of the OFPC relying on broker quotes should
9 be zero. If, however, the median forecast error exceeds zero, then that is an indication of
10 a risk premium in the broker quotes that PacifiCorp relies on to develop its OFPC. It
11 makes sense that there might be a risk premium built into forward prices, based on the
12 fact that the curves are always upsloping, having the attributes of a contango market.

13 **Q. WHAT DOES THE DATA IN YOUR ANALYSIS CONFIRM ABOUT THE**
14 **EXISTENCE OF RISK PREMIUMS IN PACIFICORP'S FORECASTS?**

15 A. The empirical analysis underlying Confidential Figure 1 indicates that risk premiums
16 have been embedded in the forward curves and that those risk premiums have been
17 substantial. For a transaction executed more than one year in advance of the prompt
18 month, the expected forecast error for Henry Hub was approximately █%. This means
19 that each time PacifiCorp purchases a financial gas swap more than one year in advance
20 of the prompt month, ratepayers should statistically expect to pay an amount that is █%
21 greater than the actual spot price of natural gas.

22 Similar risk premiums may be observed in power markets. As can be identified in
23 UAE-UIEC Exhibit 1.3, the risk premium observed in PacifiCorp's Palo Verde market

1 forecast was approximately █% for transactions executed more than one year in
2 advance. For transactions executed more than 5 years in advance, the observed risk
3 premium rose to approximately █%—meaning that, if a transaction were executed more
4 than five years in advance based on the Palo Verde Market, ratepayers would be required
5 to pay nearly █ of the spot rate for power. These are considerable premiums, with
6 many troubling implications, particularly with respect to the speculative economics of the
7 proposed Energy Vision 2020 investment.

8 **Q. HOW SHOULD THE ABOVE ANALYSIS BE CONSIDERED WHEN**
9 **EVALUATING THE ECONOMIC CASE FOR ENERGY VISION 2020?**

10 A. In the case of Energy Vision 2020, the economic case relies on forward prices extending,
11 20-40 years into the future. The analyses in UAE-UIEC Exhibit 1.3 and UAE-UIEC
12 Exhibit 1.4 only detail forecast errors for prices forecast five to seven years in advance of
13 the prompt month, due to the availability of data. Based on the analysis, however, it is
14 reasonable to expect that PacifiCorp will over-estimate forward prices by even greater
15 magnitudes when estimated 20 or 40 years into the future. Simply put, ratepayers
16 throughout PacifiCorp's system have a sound basis to be uncomfortable taking on the
17 significant risks associated with Energy Vision 2020 if PacifiCorp's price forecast might
18 be overstated. Since PacifiCorp has historically overstated market prices—and by
19 significant margins—little weight should be given to the economics in PacifiCorp's
20 medium and high-priced gas scenarios. In fact, even the prices in the low-priced scenario
21 may well be overstated based on the magnitude of risk premium observed in PacifiCorp's
22 historical curves.

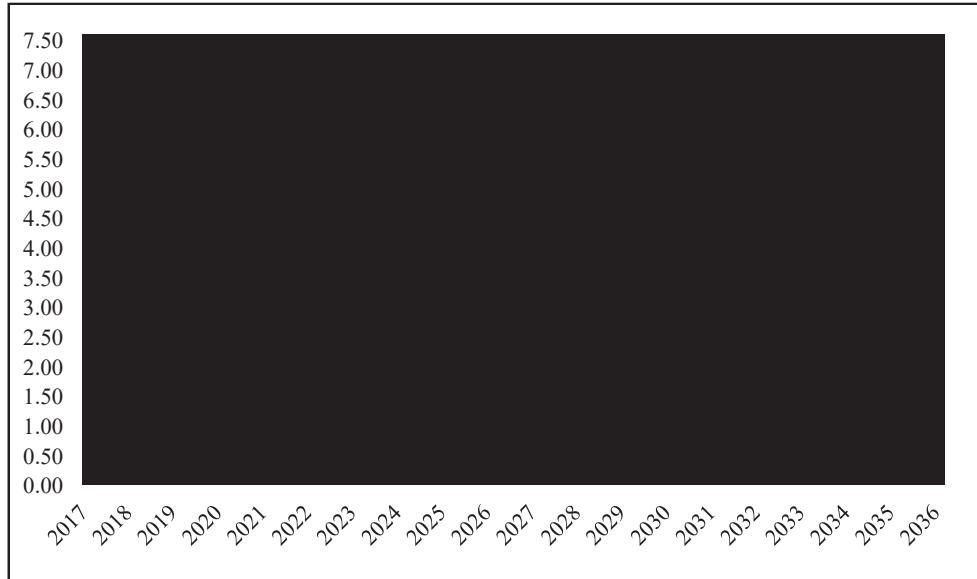
1 **Q. WHAT IS THE IMPACT OF THE ABOVE FORECAST ERRORS ON THE**
2 **COMPANY'S ANALYSIS?**

3 A. If one assumes that PacifiCorp will continue to over estimate prices, as by the same
4 degree as it has done in the past, it will significantly reduce the economics of the
5 proposed Energy Vision 2020 investment, making the prospect of any rate reduction
6 resulting from the investment highly unlikely. Based on the above analysis over the
7 period 2010 through 2016, and using the median historical forecast error associated with
8 the Palo Verde market, I estimate that the economics of the project will decline by
9 approximately \$411.2 million on an NPVRR basis over the 20-year study period as a
10 result of PacifiCorp's over-forecasting. At a minimum, this degree of over forecasting is
11 a reason to rely on the price curves based on the low gas price scenario, which shows the
12 Energy Vision 2020 investment not to be beneficial to ratepayers.

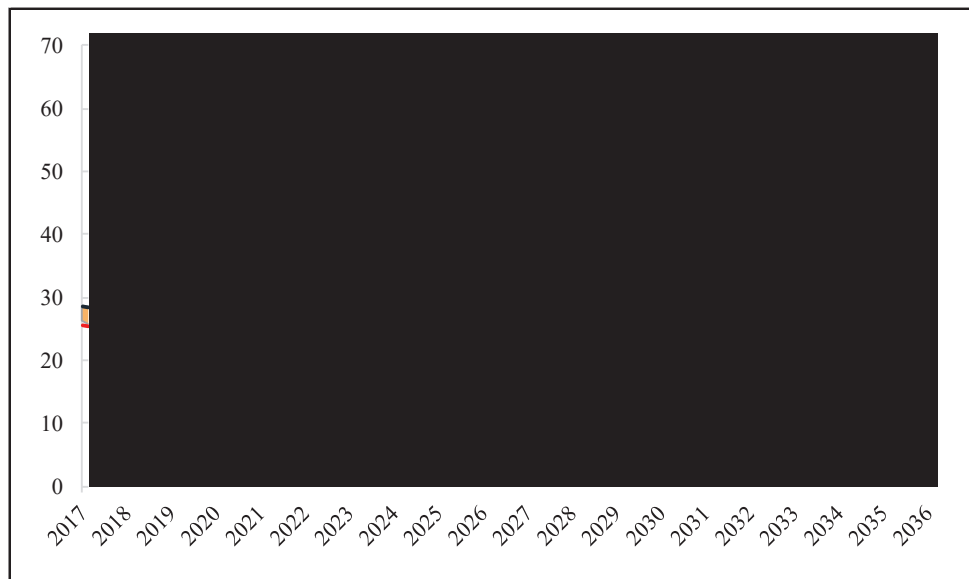
13 **Q. HOW DO PACIFICORP'S MEDIUM GAS PRICE CURVES COMPARE TO THE**
14 **LOW GAS PRICE CURVES, IF ADJUSTED FOR THE HISTORICAL LEVEL**
15 **OF OVER FORECASTING?**

16 A. In Confidential Figures 2 and 3, below, I have performed an analysis adjusting
17 PacifiCorp's medium price forecasts based on the observed forecast errors over the
18 period 2010 through 2016.

CONFIDENTIAL FIGURE 2
Medium Henry Hub Price Forecast Adjusted for Historical Forecast Errors
Based on Forecast Errors Observed Over the Period 2010 -2016
\$/MMBtu



CONFIDENTIAL FIGURE 3
Medium Palo Verde Price Forecast Adjusted for Historical Forecast Errors
Based on Forecast Errors Observed Over the Period 2010 -2016
\$/MMBtu



1 **Q. PLEASE PROVIDE AN OVERVIEW OF CONFIDENTIAL FIGURES 2 AND 3.**

2 A. Confidential Figures 2 and 3 show that PacifiCorp's medium forecast adjusted for the
3 historical level of forecasting error produces a result that is lower than the low gas case
4 PacifiCorp has used in its sensitivity analysis. The dark, solid line in the respective charts
5 shows the medium price forecast for the Henry Hub and Palo Verde markets. The shaded
6 area under the medium price forecast represents an expected level of risk premium based
7 on the data from 2010 to 2016 presented in UAE-UIEC Exhibit 1.4.²⁵ Overlaid on the
8 figure is the low price forecast for the respective markets. Since the shaded area extends
9 below the low price forecast, that is an indication that even PacifiCorp's low price
10 forecast overstates expected future prices after adjusting for a risk premium.

11 **Q. HAS THE COMMISSION RECOGNIZED THE INHERENT DIFFICULTY**
12 **ASSOCIATED WITH LONG-TERM PRICE FORECASTING?**

13 A. Yes. One example of which I am aware is the Commission's recent skepticism regarding
14 long-term price forecasts used to develop QF avoided prices. In a recent docket, the
15 Commission reduced the maximum length of QF contracts from 20 years to 15 years.
16 PacifiCorp proposed that the QF term be reduced to just three years, in large part due to
17 perceived "fixed price risk" stemming from long-range price forecasts. Moreover,
18 PacifiCorp claimed a clear distinction between QF resources acquired because of a must-
19 buy obligation and resources determined in an IRP process to be necessary.
20 Notwithstanding PacifiCorp's aggressive testimony in that docket, and the Commission's

²⁵ One caveat is that my analysis here applies the forecast error using the natural log difference rather than the absolute difference presented in UAE-UIEC Exhibit 1.4.

1 concurrence, at least in part, by reducing the term of QF contracts to 15 years, PacifiCorp
2 in this docket is asking ratepayers to bear the risk of 30-year fixed prices for 860 MW of
3 unnecessary wind resources. The Energy Vision 2020 investment would clearly not be
4 economic if the new wind projects were based on only a 15 year term.

5 In addition, as discussed below, there are recent examples in which previous
6 attempts to execute long term transactions in which PacifiCorp's OFPC forecasts
7 provided the economic justification have not worked in ratepayers' favor due to forecast
8 errors. There should be little expectation that Energy Vision 2020 might produce any
9 different result.

10 **b. Recent Bets on PacifiCorp's Forward Price Curve Have Not Provided**
11 **Financial Benefits for Ratepayers.**

12 **Q. HAS PACIFICORP ENTERED INTO ANY RECENT LONG-TERM**
13 **TRANSACTION JUSTIFIED ON THE BASIS OF ITS PRICE FORECAST?**

14 A. Yes. In 2012, PacifiCorp entered into a pair of long-term gas hedging contracts. The
15 execution of those contracts was discussed in Docket No. 12-035-102. Execution of the
16 long-term contracts was subject to a provision that the levelized price of each contract
17 must not exceed the forward market prices in PacifiCorp's forecast. Specifically, the
18 stipulation in that matter required that "refreshed pricing yields a market ratio below 100
19 percent calculated from PacifiCorp's most current forward price curve at the time bid

1 prices are refreshed”²⁶ This means that the hedging contract was only to be executed if it
2 was estimated to be neutral, or beneficial, in relation to PacifiCorp’s forward price curve.

3 **Q. DID PACIFICORP EXECUTE GAS HEDGING CONTRACTS?**

4 A. Yes, PacifiCorp entered into two contracts with J. Arron, the Commodities trading
5 division of Goldman Sachs. I have reviewed the terms of those contracts, and previously
6 contested them in a Wyoming proceeding on the basis that they constituted affiliate
7 transactions. At the time of the transaction, Berkshire Hathaway possessed warrants on
8 Goldman Sachs equating to beneficial ownership of about 8.4%. I do not contest the
9 transactions in this matter, but merely point out that they have been financially
10 detrimental to ratepayers, and that they were justified on the basis of PacifiCorp’s official
11 forward price curve projections in a manner similar to the proposed Energy Vision 2020
12 investment.

13 **Q. WHAT HAVE BEEN THE FINANCIAL IMPACTS OF THE LONG-TERM GAS**
14 **HEDGING CONTRACTS?**

15 A. From a ratepayer perspective, the contracts have resulted in payment of significant risk
16 premiums. Confidential Figure 2, below, details the historical settlements, as well as the
17 future mark-to-market costs, associated with the long-term gas hedging contracts. The
18 data underlying Confidential Figure 2 was obtained through UAE Data Request 2.2

²⁶ *In the Matter of the Voluntary Request of Rocky Mountain Power for Approval of Resource Decision to Acquire Natural Gas Resources*, Ut.PSC Docket No 12-035-102, Settlement Stipulation, ¶ 5

CONFIDENTIAL FIGURE 4
Benefit / (Cost) of J. Arron Long-term Gas Hedging Contracts (\$millions)
2013 - 2023



1 **Q. WHAT DOES CONFIDENTIAL FIGURE 4 SHOW?**

2 A. Confidential Figure 4 shows that PacifiCorp has a record of losing when making long-
3 term bets on its official forward price curve. Based on RMP's current Official Forward
4 Price Curve forecasts, which themselves may be overstated due to the over-forecasting
5 described above, ratepayers are poised to incur approximately \$ [REDACTED] million in costs
6 with respect to the above long-term gas hedging contracts.

7 **Q. WHAT IS YOUR CONCLUSION REGARDING FORECASTING RISKS**
8 **ASSOCIATED WITH ENERGY VISION 2020?**

9 A. In total, I believe the Energy Vision 2020 proposals will likely cost ratepayers billions of
10 dollars in the long-term. As with the long-term gas hedging contracts discussed above,
11 PacifiCorp purports to justify the Energy Vision 2020 investment primarily based on its
12 future market price projections. Yet, PacifiCorp's price projections have historically

1 failed to reflect a reasonable estimate of future prices, and the long-term gas hedging
2 contracts demonstrates how significant the impact of inaccurate assumptions can be. In
3 my view, it is not reasonable for PacifiCorp to make long-term bets with billions of
4 dollars of ratepayer money predicated on the accuracy of its forward price curve for
5 unnecessary, speculative investments of the magnitude contemplated for Energy Vision
6 2020.

7 **VI. THE ECONOMIC CASE IS NOT COMPELLING**

8 **Q. WHY DO YOU BELIEVE THAT PACIFICORP HAS OVERSTATED THE**
9 **POTENTIAL FOR BENEFITS ASSOCIATED WITH ENERGY VISION 2020?**

10 A. Even if one were to ignore PacifiCorp's pattern of over-forecasting future prices, the
11 economic case for Energy Vision 2020 is not compelling. Upon examination of the
12 assumptions PacifiCorp used to inform its analysis, it is apparent that there is not an
13 overwhelming economic case for deploying the significant amount of capital underlying
14 Energy Vision 2020. In fact, the data suggests that it is more likely that these projects
15 will end up costing Utah ratepayers greatly in the long run. In Confidential Table 2,
16 below, I detail the impact of peeling away some of the speculative assumptions in
17 PacifiCorp's analysis. Due to PacifiCorp's history of over forecasting, the analysis
18 begins with the low gas price scenario in PacifiCorp's filing.

Direct Testimony of Bradley G. Mullins
REDACTED UAE-UIEC Exhibit 1.0
UPSC Docket No. 17-035-23
Page 37 of 52

CONFIDENTIAL TABLE 2
Net Present Value Revenue Requirement (“NPVRR”)
Impact of Speculative Assumptions (\$million)

NPVRR Benefit / (Cost), Low Gas Med CO2		\$ (72,606)
Impact of Speculative Assumptions:		
Tax Reform (Tax Rate)	(139,500)	
Tax Reform (PTC Escalation)	(139,500)	
Supplemental GRID Studies	(62,196)	
Wholesale Transmission Revenues	(62,196)	
Transmission Costs Estimates	(62,196)	
Transmission Levelized Fixed Costs	(62,196)	
Wind Integration Costs	(57,054)	
Subtotal		(1,042,113)
Likely Benefit / (Cost) to Ratepayers		\$ (1,114,718)

1 With a forecasted ratepayer NPVRR *cost* of \$32 million to \$73 million under the
2 low gas price scenario,²⁷ the potential for Energy Vision 2020 to result in harm to
3 ratepayers is great. After considering these speculative assumptions, Energy Vision 2020
4 could end up costing ratepayers approximately \$1.1 billion on an NPVRR basis. Even if
5 PacifiCorp is wrong on just one of these speculative assumptions, that would be enough
6 to effectively eliminate all of the purported economic benefits in its medium gas price
7 scenario. These are not the characteristics of an economic project that PacifiCorp should
8 be pursuing as a utility investment.

²⁷ See Direct Testimony of Rick T. Link at 36, Table 2.

1 **a. Impacts of Tax Reform**

2 **Q. WHAT IS THE CURRENT STATUS OF TAX REFORM?**

3 A. At the time of developing this testimony the Tax Cuts and Jobs Act of 2017 had passed
4 both houses of congress and was in conference. It is unclear how the legislation might
5 develop from this point on. Notwithstanding, there are many provisions with the bill that
6 will further diminish the economic case for making the Energy Vision 2020 investment.

7 **Q. WHAT IMPACT MIGHT TAX REFORM HAVE ON THE PROJECT
8 ECONOMICS?**

9 A. As discussed above, much of the projected benefits of PacifiCorp's proposed Energy
10 Vision 2020 investment come in the form of expected tax benefits. Notwithstanding, the
11 tax reform legislation currently being discussed would diminish, if not entirely eliminate,
12 the benefits of favorable tax provisions purported in the Energy Vision 2020 investment
13 proposal.

14 There are at least three aspects of the tax reform legislation that would negatively
15 impact the economics of the proposed investment. First, the tax reform legislation
16 reduces corporate income tax rates from 35% to 20%. Second, the legislation would also
17 modify the way that inflationary assumptions are applied to the production tax credit rate.
18 Third, the legislation would impose restrictions on the ability of entities to utilize general
19 business credits, including the production tax credit.

20 **Q. HOW DO REDUCED CORPORATE TAX RATES REDUCE THE PURPORTED
21 BENEFIT ASSOCIATED WITH THE ENERGY VISION 2020 PROPOSAL?**

22 A. Reducing the corporate tax rate will have the effect of reducing the revenue requirement
23 impact of production tax credits. It will also diminish the impact of other tax benefits

1 associated with the renewable resource addition, such as the benefit of bonus and
2 accelerated depreciation. This is a significant risk associated with the project. In
3 response to a data request, PacifiCorp estimated that, if tax reform is approved, it will
4 reduce the project economics by approximately \$93 million.²⁸ PacifiCorp's estimate,
5 however, assumed the corporate tax rate would be reduced to 25%. Assuming the tax
6 rate declines to 20%, using simple extrapolation, the impact could grow to approximately
7 \$139.5 million.

8 **Q. WHAT CHANGES ARE BEING CONTEMPLATED WITH RESPECT TO THE**
9 **INFLATIONARY ESCALATOR APPLIED TO THE PRODUCTION TAX**
10 **CREDIT RATE?**

11 A. The proposed House Resolution would eliminate the inflationary escalator applied to
12 production tax credits for facilities where construction begins after the date of the
13 enactment of the resolution. Currently, production tax credit rates are approximately
14 \$24.00/MWh, with annual adjustments corresponding to inflation. Absent the
15 inflationary escalation, the production tax credit rate is \$15.00/MWh.

16 Moving from escalating production tax credit rates of \$24.00/MWh down to fixed
17 production tax credit rates of \$15.00/MWh obviously will have extreme impacts on the
18 overall case for making the Energy vision 2020 investment. PacifiCorp's analysis,
19 however, begins with a credit rate of \$24.00/MWh and assumes 2% per year inflationary
20 escalation for production tax credits for ten years. Replacing PacifiCorp's assumption
21 with a fixed \$15/MWh production tax credit rate would reduce the NPVRR economics of

²⁸ See UAE-UIEC Exhibit 1.2 at 9-10 (PacifiCorp's Response to PIIC DR 13).

1 Energy Vision 2020 by approximately \$ [REDACTED] million. Just removing the inflationary
2 escalation, and keeping the \$24.00/MWh production tax credit rate, has a lesser impact of
3 \$ [REDACTED] million on an NPVRR basis.

4 There are many questions about how the termination of the inflationary escalation
5 might be applied. The proposed language contains special rules for determining the
6 beginning of construction, which could be subject to various interpretations and it is not
7 clear how the Internal Revenue Service might implement the provision surrounding the
8 termination of the production tax credit inflationary escalator. Such uncertainty further
9 undermines the speculative economics and increases the risks to ratepayers that no
10 economic benefits will ever be realized.

11 **Q. HOW DOES WOULD THE TAX REFORM LEGISLATION IMPACT THE WAY**
12 **PRODUCTION TAX CREDITS GET UTILIZED?**

13 A. The Senate version of the tax reform legislation included series of provisions replacing
14 the Alternative Minimum Tax called the Base Erosion Anti-Abuse Tax (“BEAT”)
15 provision.²⁹ I have not reviewed the specific language behind these provisions, but my
16 understanding is that the BEAT tax would impose a minimum tax equal to 10% of
17 taxable income, meaning that production tax credits would only be eligible to offset 90%
18 of taxable income in any given year.

²⁹ See <https://www.utilitydive.com/news/last-minute-provision-in-senate-tax-bill-could-devastate-renewable-energy/511923/>

1 **Q. BASED ON YOUR REVIEW, WHAT IS THE TOTAL POTENTIAL IMPACT OF**
2 **TAX REFORM ON THE ECONOMIC CASE FOR ENERGY VISIONS 2020**

3 A. In total, tax reform has the potential to reduce the already questionable economics of the
4 Energy Vision 2020 project by \$ [REDACTED] million on a NPVRR basis. This demonstrates
5 how risky a resource strategy justified based on tax savings can be.

6 **b. Supplemental GRID Studies**

7 **Q. WHAT SUPPLEMENTAL GRID STUDIES DID PACIFICORP PERFORM**
8 **WHEN DEVELOPING THE ECONOMIC CASE FOR ENERGY VISION 2020?**

9 A. As a part of the initial economic analyses surrounding Energy Vision 2020, PacifiCorp
10 performed supplemental GRID studies where it quantified additional projected benefits of
11 approximately \$62.2 million, on a NPVRR basis, over a 20-year period. The studies
12 were used to quantify certain aspects of PacifiCorp's proposal related to reduced line
13 losses, reliability benefits, and EIM benefits, which PacifiCorp believed would be
14 additive to the economics calculated using the IRP models.

15 **Q. HAVE THESE MODELING ADJUSTMENTS BEEN INCORPORATED INTO**
16 **THE IRP MODELS?**

17 A. Yes. PacifiCorp confirmed that it has subsequently incorporated the adjustments
18 underlying the supplemental GRID studies into the System Optimizer and Planning and
19 Risk models. For the reasons discussed below, however, those adjustments have little
20 basis in reality, yet are a key driver in the economic benefits that PacifiCorp projects with
21 respect to Energy Vision 2020.

1 **Q. WHAT ADDITIONAL CLAIMED BENEFITS DID PACIFICORP INCLUDE**
2 **WITH RESPECT TO LINE LOSSES?**

3 PacifiCorp believes that the new transmission line will have a positive impact on line
4 losses, and modeled the line losses by quantifying the power cost impacts of reducing
5 loads in Wyoming. In reality, I believe that the addition of new resources in remote areas
6 of Wyoming would actually increase line losses, in contrast to resources at locations
7 nearer to loads. While the lines themselves may have improved loss ratings, adding more
8 resources in remote locations on PacifiCorp's system will cause more power to flow over
9 long distances, subjecting more power to transmission level losses. For example, a study
10 performed by Steve Knudson in the Utah proceeding on the ongoing RFP showed that
11 locating new resources in Wyoming far from load would result in materially higher real
12 system power losses in critical winter and summer peak conditions.³⁰ In addition,
13 ratepayers have no way to ensure that any line loss reductions will actually be achieved.

14 **Q. WHAT IS YOUR REACTION TO ADDITIONAL CLAIMED BENEFITS WITH**
15 **RESPECT TO THE EIM?**

16 A. I am concerned with PacifiCorp's analysis regarding the additional claimed EIM benefits,
17 because the benefits associated with the EIM are being modeled in a way that is
18 completely different than the way that EIM benefits are established when setting power
19 costs in general rate cases and other similar dockets. In its economic analysis of Energy
20 Vision 2020, PacifiCorp modeled the entrance of Idaho Power into the EIM by increasing
21 the transfer capability between Jim Bridger and Walla Walla by 300 MW, even though

³⁰ *In re the Application of Rocky Mountain Power for Approval of Solicitation Process of Wind Resources*,
Docket No 17-035-23, Prefiled Testimony of F. Steven Knudsen at 12:245-247.

1 no actual increase to transfer capability will occur as a result of the EIM. Thus,
2 PacifiCorp's models were configured to allow additional phantom transfers of power
3 from Jim Bridger into the Northwest, even though PacifiCorp does not have transmission
4 rights to accommodate those transfers. Such an assumption has no basis in the way that
5 the EIM actually operates, since based on my understanding, the EIM does not allow a
6 utility to rely on the system of another utility in order to effectuate firm transfers of
7 power in excess of firm rights. As I understand it, attempting to use the EIM to
8 effectuate firm transfers in the manner contemplated by PacifiCorp is a prohibited
9 practice and would appear to violate many provisions of the EIM, such as the
10 requirement to enter into the hour with a balanced forecast of loads and resources. To
11 accomplish the additional firm transfers, PacifiCorp would basically have to manipulate
12 its hour-ahead schedules, with the expectation that EIM would redispatch its resources in
13 order to serve loads in the Northwest.

14 In contrast, the EIM will likely represent an additional cost associated with the
15 Wind Projects, which PacifiCorp has not considered in its economic analysis. The Wind
16 Projects will be subject to uninstructed imbalance charges, and the cost of those charges
17 is not reflected in PacifiCorp's analysis. Due to transmission constraints in eastern
18 Wyoming, I expect the uninstructed imbalance charges to be significant, as PacifiCorp is
19 already experiencing negative EIM pricing in eastern Wyoming due to the uninstructed
20 imbalance associated with wind facilities located in the transmission area.

1 **Q. ARE THESE MODELING ADJUSTMENTS APPROPRIATELY USED TO**
2 **JUSTIFY SUCH MAJOR RESOURCE ADDITIONS?**

3 A. No. These supplemental analyses are hardly a sound basis to justify such significant
4 resource additions and ratepayer risks. Notwithstanding, these modeling adjustments
5 would comprise nearly the entirety of the benefits forecast in the medium gas and CO2
6 scenario in PacifiCorp's analysis. Effectively, ratepayers are dealing with a risky
7 marginal project that would clearly not be forecast to be economic in the absence of these
8 modeling adjustments. Ratepayers and regulators should not be comfortable making
9 significant resource additions based solely on these types of aggressive modeling
10 assumptions.

11 **c. Wholesale Transmission Revenues**

12 **Q. WHAT HAVE YOU IDENTIFIED WITH RESPECT TO PACIFICORP'S**
13 **ASSUMPTIONS SURROUNDING WHOLESALE TRANSMISSION REVENUES?**

14 A. PacifiCorp assumes that, in connection with the Aeolus to Bridger segment, it will
15 receive about \$ [REDACTED] million, on a NPVRR basis, of associated incremental transmission
16 revenues over the 20-year period.³¹ In response to discovery requests in the docket
17 before the Idaho Commission regarding these claimed incremental benefits, PacifiCorp
18 described these additional claimed benefits as the amount by which projected incremental
19 revenue received from other transmission customers will offset the revenue requirement
20 for these transmission investments.³²

³¹ Calculated from PacifiCorp's confidential workpaper "Energy Gateway GM 2017 03 13 w Bonus", Tab "Gateway", Column "G."

³² UAE-UIEC Exhibit 1.2 at 5-6 (PacifiCorp's Response to PIIC DR 11).

1 **Q. DO YOU AGREE WITH PACIFICORP'S ASSUMPTION?**

2 A. No. PacifiCorp's analysis was highly simplified, and does not represent the way that the
3 formula rates will actually work. PacifiCorp simply assumed that 12% of the new
4 investment would be funded by Open Access Transmission Tariff ("OATT") customers,
5 based upon the historical percentages of transmission revenue requirement that has been
6 funded by OATT customers in the past. But, PacifiCorp did not perform a rigorous
7 analysis of how the amount of costs allocated to OATT customers will change as a result
8 of the project.

9 **Q. IS IT POSSIBLE THAT OATT CUSTOMERS WILL NOT BE REQUIRED TO**
10 **PAY FOR ANY OF THE ENERGY VISION 2020 TRANSMISSION**
11 **INVESTMENT?**

12 A. OATT customers will likely not be pleased to pay for an investment driven entirely by
13 economics benefits that cannot possibly accrue to them. In Attachment K of PacifiCorp's
14 OATT the process for making investments in new transmission facilities is identified.
15 Based on the fact that the Energy Vision 2020 project is being driven by economics,
16 rather than reliability concerns, it would seem more likely to me that all of the cost of the
17 investment in the Transmission Projects would be allocated to PacifiCorp merchant and
18 not shared by OATT customers.

19 **Q. DOES PACIFICORP PROPERLY ACCOUNT FOR THE WAY THAT THE**
20 **PROJECT MIGHT FLOW THROUGH FORMULA RATES?**

21 A. No. Even if the cost of the Transmission Projects is unfairly socialized to other OATT
22 customers, PacifiCorp's analysis fails to account for the fact that if Energy Vision 2020
23 project is constructed, PacifiCorp's merchant operations will likely be required to

1 maintain additional transmission capacity in order to utilize the wind facilities. When this
2 additional capacity is acquired, it will dilute the percentage of costs allocated to OATT
3 customers, resulting in additional cost being allocated to retail customers.

4 PacifiCorp's 12% assumption was made with little rigor and is fundamentally
5 inconsistent with how the new project will impact the costs borne by retail customers.
6 Moreover, MSP uncertainty, discussed above, makes reliance on projected transmission
7 benefits even less supportable. This assumption, like others, does not provide a basis to
8 justify the significant investment and ratepayer risk proposed by PacifiCorp, yet the
9 preponderance of alleged benefits could be attributed solely to this assumption.

10 **d. Transmission Cost Assumptions**

11 **Q. HOW MUCH CERTAINTY DO RATEPAYERS HAVE WITH RESPECT TO**
12 **PACIFICORP'S COST ASSUMPTIONS?**

13 A. At this point, the cost assumptions are just projections. The total capital required for the
14 Aeolus to Bridger/Anticline transmission project is forecast to be about \$ [REDACTED] million.³³
15 Given the magnitude of the proposed transmission investment in this case, even small
16 changes to this cost assumption can have the effect of eliminating the claimed positive
17 economics of the project.

³³ See PacifiCorp's confidential workpaper "Energy Gateway GM 2017 03 13 w Bonus", Tab "Summary", Cell "G26"

1 **Q. DOES PACIFICORP RECOGNIZE THAT THERE IS A GREAT DEAL OF**
2 **UNCERTAINTY SURROUNDING ITS COST ASSUMPTIONS?**

3 A. Yes. In response to PIIC Data Request 15 in the docket before the Idaho Commission,
4 PacifiCorp estimated the accuracy of its transmission cost assumption to be within plus or
5 minus 15% of actual cost.³⁴ That is a range of approximately \$ [REDACTED] million above and
6 below PacifiCorp's estimate. On an NPVRR basis over the life of the Transmission
7 Projects, that equates to approximately \$ [REDACTED] million in additional ratepayer costs. That
8 magnitude of error could eliminate any claimed favorable economics associated with the
9 project, under the medium price scenarios. As was seen in the case of the Populous to
10 Terminal Energy Gateway segment, the line ultimately cost more than ten times the
11 amount that was originally forecast.

12 **Q. HAS PACIFICORP MADE OTHER QUESTIONABLE COST ASSUMPTIONS?**

13 A. PacifiCorp also makes some assumptions regarding operating expenses. In response to
14 PIIC Data Request 14 for example, PacifiCorp identifies an assumption in its model to
15 include \$1 million of incremental operations and maintenance expenses associated with
16 the new transmission project.³⁵ When asked to substantiate this estimate, PacifiCorp
17 noted that it had no supporting workpapers for the estimate, and therefore, no basis to
18 refute that incremental operating expenses might be substantially higher than its estimate.

³⁴ UAE-UIEC Exhibit 1.2 at 12-13 (PacifiCorp's Response to PIIC DR 15).

³⁵ UAE-UIEC Exhibit 1.2 at 11 (PacifiCorp's Response to PIIC DR 14).

Direct Testimony of Bradley G. Mullins
REDACTED UAE-UIEC Exhibit 1.0
UPSC Docket No. 17-035-23
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1 **e. Transmission Levelized Fixed Costs**

2 **Q. HOW DOES THE COMPANY MODEL THE COST OF THE TRANSMISSION**
3 **PROJECTS IN ITS ECONOMIC ANALYSIS?**

4 A. The analysis presented in Table 2 of Mr. Link's testimony is based on a 20 year study
5 period. PacifiCorp assumes, however, that the Transmission Project assets will have a 62
6 year life. To analyze the Transmission Project assets within the 20 year period,
7 PacifiCorp used a levelized fixed cost calculation, which spread the cost of the
8 Transmission Project assets over their assumed 62 year life and assigned only a portion of
9 the cost to the 20 year study period. Levelized fixed costs are often used in IRP analysis
10 for the purpose of comparing the cost of different resources, with differing lives
11 extending beyond the end of the study period.

12 **Q. IS THE LEVELIZED FIXED COST TECHNIQUE APPROPRIATE FOR**
13 **EVALUATING TRANSMISSION INVESTMENTS?**

14 A. No. While the use of levelized fixed costs is fine to be used when comparing generation
15 assets with differing lives, it is not appropriate to be used for analyzing transmission
16 investments. By using the levelized fixed cost calculation for transmission, PacifiCorp's
17 analysis only considered about one-third—or, 20 of 62 years—of the ratepayer cost
18 associated with the Transmission Project investment. Unlike generation, the
19 transmission assets do not produce electricity, and therefore are not comparable to other
20 resources on a levelized fixed cost basis.

1 **Q. WHAT IS THE IMPACT OF USING LEVELIZED FIXED COSTS TO**
2 **CONSIDER THE TRANSMISSION PROJECT INVESTMENTS?**

3 A. The NPVRR of the Transmission Project investments over the 62 year life is
4 approximately \$ [REDACTED] million. In contrast, by using a levelized fixed costs over a 20 year
5 period, PacifiCorp assumes the NPVRR of the Transmission Project investment is only
6 \$ [REDACTED] million. Thus, PacifiCorp has excluded approximately \$ [REDACTED] million NPVRR
7 cost associated with the Transmission Projects from its analysis. Ratepayers will still be
8 required to pay for the Transmission Project investment after the 20 year period, and for
9 that reason, it is appropriate to consider the impact of the transmission investment over
10 the full life of the Transmission Project assets.

11 **f. Wind Integration Cost**

12 **Q. WHAT LEVEL OF WIND INTEGRATION COSTS DID PACIFICORP**
13 **INCLUDE IN ITS ANALYSIS?**

14 A. PacifiCorp includes wind integration costs of approximately \$0.63/MWh.

15 **Q. WHAT WIND INTEGRATION VALUES HAS PACIFICORP USED**
16 **PREVIOUSLY?**

17 A. Based on its 2014 Wind Integration Study, PacifiCorp estimated intra-hour wind
18 integration costs of approximately \$2.35/MWh—almost four times as much as is
19 assumed for the new wind in this docket.³⁶ In addition, PacifiCorp has previously

^{36/} See e.g., In The Matter of the Application of Rocky Mountain Power for Authority of a General Rate Increase in Its Retail Electric Utility Service Rates in Wyoming of \$32.4 Million Per Year or 4.5 Percent, Wy.PSC, Docket No. 20000-469-ER-15, Direct Testimony of Bradley G. Mullins at 63, Table BGM-6.

1 identified inter-hour wind integration costs of approximately 0.75/MWh,³⁷ yet the
2 economic analysis for Energy Vision 2020 includes no inter-hour wind integration costs.

3 **Q. WHAT IS THE IMPACT OF USING THE PREVIOUS WIND INTEGRATION**
4 **ASSUMPTION?**

5 A. I estimate that if the 2014 Wind Integration Study results were used, including inter-hour
6 wind integration, it would reduce PacifiCorp's claimed economics of the Energy Vision
7 2020 project by approximately \$57.1 million on a 20-year NPVRR basis.

8 **Q. IS IT POSSIBLE TO VERIFY THAT SAVINGS IN WIND INTEGRATION**
9 **COSTS WILL BE ACHIEVED?**

10 A. No. Generally, it is not possible in actual operations to determine the amount of actual
11 wind integration costs that PacifiCorp might incur with respect to the Wind Projects. If
12 the actual wind integration costs are higher than PacifiCorp projects, it will reduce the
13 economics of the project, yet it will not be possible to verify whether wind integration
14 costs will ultimately be in line with PacifiCorp's assumptions in this matter.

15 **g. Summary of Economic Case**

16 **Q. PLEASE SUMMARIZE WHY YOU BELIEVE THE ECONOMIC CASE FOR**
17 **ENERGY VISION 2020 IS NOT COMPELLING.**

18 A. Taking all of PacifiCorp's speculative assumptions into consideration, it is clear that the
19 Energy Vision 2020 project is far riskier than PacifiCorp suggests. If these speculative
20 assumptions are stripped away, the project cannot be viewed as being economic for
21 ratepayers, nor in the public interest. Based on these assumptions, it is clear that there are

³⁷ UAE-UIEC Exhibit 1.2 at 7-8 (PacifiCorp's Response to PIIC DR 12).

1 a great number of risks associated with the project that cannot be reasonably captured in
2 the probabilistic analyses that PacifiCorp performed. Risks such as the possibility of
3 changing tax provisions make economic projects inherently more risky to ratepayers than
4 a project justified based on a demonstrated reliability need. For that reason, this type of
5 economic project should not be pursued absent an overwhelming showing of benefits. In
6 this case, there is no overwhelming economic showing and, in fact, it appears more likely
7 that the project would cost ratepayers significantly.

8 VII. SINGLE ISSUE RATEMAKING SHOULD BE AVOIDED

9 Q. HOW HAS PACIFICORP PROPOSED TO RECOVER THE COSTS OF 10 ENERGY VISION 2020?

11 A. The ratemaking proposal of PacifiCorp in this matter was described in the Direct
12 Testimony of Mr. Larsen. Prior to PacifiCorp's next general rate case, PacifiCorp
13 proposes to use a Resource Tracking Mechanism ("RTM") to recover costs associated
14 with the New Wind and New Transmission investments.³⁸

15 Q. IS PACIFICORP'S RATEMAKING PROPOSAL APPROPRIATE?

16 A. No. PacifiCorp's proposal would constitute single issue ratemaking, which is inherently
17 unfair to ratepayers and should generally be avoided.

18 Q. WHY IS SINGLE ISSUE RATEMAKING UNFAIR TO RATEPAYERS?

19 A. When utility regulatory commissions determine the appropriateness of a cost that a utility
20 seeks to recover from its customers, the standard practice is to review and consider all

³⁸ Direct Testimony of Jeffrey K. Larsen at 30-49.

1 relevant factors as part of a general rate case, rather than just certain factors in isolation.
2 Isolation of a single issue, as PacifiCorp requests with respect to the RTM, is disfavored
3 as a matter of policy because it distorts a fundamental “matching principle” of traditional
4 ratemaking. While under traditional ratemaking, revenues and costs are balanced at a
5 common point in time, single issue ratemaking often isolates only those costs expected to
6 increase, without recognizing counterbalancing savings in another area. As a result,
7 single issue ratemaking often results in over-earning by the utility and over-paying by the
8 customer. Accordingly, the Commission should view the ratemaking proposal
9 surrounding the RTM with great caution.

10 **Q. If ENERGY VISION 2020 WERE APPROVED, HOW SHOULD THE**
11 **INVESTMENTS BE INCORPORATED INTO RATES?**

12 A. From a ratepayer perspective, it is more appropriate to consider investments of the scope
13 contemplated with Energy Vision 2020 in a general rate case. This will allow all aspects
14 of the utility’s costs to be considered. In a general rate case, ratepayers can be assured to
15 receive credit from other aspects of PacifiCorp’s results, which might have trended
16 favorably.

17 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

18 A. Yes.