

## BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

In the Matter of the Acknowledgment of )  
PacifiCorp's 2008 Integrated Resource Plan )

Docket No. 09-2035-01

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### COMMENTS OF WESTERN RESOURCE ADVOCATES

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#### 1.0 Introduction.

Western Resource Advocates (WRA) has reviewed PacifiCorp's 2009 Integrated Resource Plan (IRP), and provides the following comments. Like previous IRPs, WRA recognizes the difficult planning environment that PacifiCorp faces. Not only must the Company reconcile the needs of diverse jurisdictions, but it must do so in a difficult planning environment. Aside from volatile fuel prices and risk, and anticipated greenhouse gas regulation, we are in the midst of a recession of indefinite length and severity.

WRA appreciates that the Preferred Plan arising from this IRP increases wind capacity and reduces reliance on front office transactions somewhat from its 2007 IRP. These are steps in the right direction to reduce the significant risks facing shareholders and customers alike. Unfortunately, they are insufficient to protect customers from substantial risk.

Climate change regulation is a now virtual certainty, and a time-buying strategy – as PacifiCorp proposes in its 2008 IRP – is no longer appropriate. Substantial emission reductions on the Company's system will be needed under any reasonable future scenario, and putting off those reductions, as PacifiCorp proposes, will substantially increase the Company's future compliance costs. Aggressive action to integrate substantial and diverse renewable resources are necessary to mitigate carbon-price and fuel and market price risk, and PacifiCorp should begin those actions immediately.

For these reasons, at a fundamental level, PacifiCorp's 2008 IRP fails to comply with the Public Service Commission of Utah's 1992 Order promulgating Standards and Guidelines for Integrated Resource Planning (*Standards and Guidelines*). PacifiCorp's plan will not "meet current and future customer electric energy services needs at the lowest total cost to the utility and its customers, and in a manner consistent with the long-run public interest." Nor does it propose a set of resources best suited to "the expected combination of costs, risk and uncertainty." WRA believes the Commission should not acknowledge the Company's 2008 IRP.

These Comments identify six areas where WRA believes PacifiCorp's IRP fails to comply with the Commission's *Standard and Guidelines*. Those are:

- 1) PacifiCorp's IRP fails to adequately position the Company for carbon regulation and fuel price risk.

- 2) PacifiCorp's IRP is biased in favor fossil fueled resources and market transactions.
- 3) Demand-side resources are not assessed properly nor comparably with supply-side resources.
- 4) Storage technology is effectively precluded by the Company's assumptions.
- 5) PacifiCorp's transmission planning is not integrated with its other resource assessments.
- 6) PacifiCorp's reliance on market purchases presents extraordinary risk to its customers.

## 2.0 PacifiCorp's IRP fails to adequately position the Company for carbon regulation and fuel price risk.

By failing to aggressively reduce its total carbon footprint, PacifiCorp proposes a resource plan that would neither protect current nor future customers from the considerable and likely-to-be-realized risk of carbon regulatory costs, nor protect them from volatile electric or fossil fuel prices. This is despite the fact that PacifiCorp accepts that "its electric generating facilities are likely to be subject to regulation of greenhouse gas emissions within the next several years."<sup>1</sup>

The proposed plan is not in the long-run public interest considering the global implications of climate change, the national security issues related to fossil fuel dependence, the health impacts of fossil generation, and a number of other externalities associated with the preponderance of fossil generation in the Company's generation fleet. PacifiCorp's 2008 IRP falls far short of what is needed for the Company to transition from primarily fossil-based generation to a diverse resource portfolio with a wide range of renewable technologies, energy storage, extensive demand side management resources, and distributed generation. These are the types of resource additions that would best serve current and future customers, as well as be in the public interest.

## 2.1 PacifiCorp's IRP does not align its assessment of risk with its treatment of risk.

*Standard and Guideline 1*, which defines integrated resource planning, states: "The process should result in the selection of the optimal set of resources given the expected combination of costs, risks and uncertainty." PacifiCorp's plan, however, departs from this requirement, and instead chooses a portfolio with a greater risk and cost profile.

The most striking disconnect between a resource plan prepared for future carbon regulation, and what the Company has proposed, is in the Company's approach to what it claims – on multiple occasions – are the biggest risks facing the company: CO<sub>2</sub> regulation and the prices of natural gas and electricity. According to PacifiCorp: "The purpose of phase 6 is to determine the range of deterministic costs that could result given a fixed set of resources under varying gas/electricity price and CO<sub>2</sub> cost assumptions, the two main sources of portfolio risk."<sup>2</sup> Instead of pursuing an action plan based on Portfolio 8, the best performing portfolio,<sup>3</sup> the Company instead expresses its preference for Portfolio 5,<sup>4</sup> and then proceeds to present a cursory

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<sup>1</sup> PacifiCorp 2008 IRP. May 28, 2009. Page 39.

<sup>2</sup> Page 177. For fuller discussion of these risks see pages 27-34.

<sup>3</sup> Page 234.

analysis of a new approach deferring a gas resource decision (while fixing two additional Case 5 scenarios with gas resources) that shows a version of the Company's preferred Portfolio 5, 5B\_CCCT\_Wet, as the new preferred portfolio.<sup>5</sup> Ironically, it is Portfolio 8 that best protects the Company and its customers from what the Company considers to be its greatest risks. The Company's analysis states:

These results indicate that Portfolio 5 performed best in low gas/low CO2 tax scenarios and performed worst in high gas price and high CO2 tax cases. Portfolio 8 performed best under the medium/high gas price and medium/high CO2 tax scenarios, but performed worst in low gas/low CO2 scenarios.<sup>6</sup> (emphasis added)

In fact, Portfolio 8 outperformed Portfolio 5 on most performance measures including stochastic mean PVRR (expected cost); risk adjusted PVRR; portfolio cost exposure for CO2 (minimize the maximum regret); upper tail risk; cost/risk tradeoff at \$45/ton, \$100/ton, and average across all CO2 tax levels (the two were equivalent at \$0/ton); energy not served; emissions footprints for CO2, SO2, NOX, HG; and the alternative weighted measure of overall performance as suggested by public input participants. Portfolio 5 outperformed Portfolio 8 on four performance measures: capital cost, customer rate impact, LOLP, and the weighted performance measure the Company proposed. In all but one of the cost/risk scatter plots provided, Portfolio 8 was on the efficient frontier. Only at \$100/ton did portfolios with significantly larger amounts of wind and energy efficiency beat out Portfolio 8 (Portfolio 8 significantly dominated Portfolio 5). Finally, Portfolio 8 ranked 1<sup>st</sup> in expected cost, 1<sup>st</sup> in risk adjusted PVRR, and, significantly, it performed 1<sup>st</sup> in the weighted performance measure suggested by public participants.

Therefore of the initial portfolios studied, Portfolio 8 would best protect the Company and its customers from what the Company cites as its greatest risks. Even after the cursory, second-round of modeling used to select a variation of Portfolio 5, the stochastic mean present value of revenue requirement (PVRR) of Portfolio 8 is only 0.4% higher than that of Portfolio 5B\_CCCT\_Wet.<sup>7</sup> A difference of this small amount is insignificant, and within any reasonable margin of error.

## 2.2 Risk of exposure to CO2 regulation & gas/electricity prices is asymmetric.

Portfolio 8 is the preferred portfolio from the main IRP analysis – and only appears slightly more costly in the secondary, cursory analysis through which the Company chooses Portfolio 5B\_CCCT\_Wet – yet provides the Company and its customers with considerably more protection from the greatest costs risks facing the Company. *Standard and Guideline 4.f* directs the Company to plan different resource acquisition paths, should circumstances change. Of the portfolios studied, PacifiCorp should be pursuing Portfolio 8 because it performed the best under the main analysis, and it protects the Company from its greatest cost risks. Portfolio

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<sup>4</sup> As compared with Portfolio 5, Portfolio 8 has twice as much wind resource, more distributed generation, more “other renewables” – it appears to max out the geothermal resource available, and more DSM. It has less gas-fired resource and fewer front-office transactions.

<sup>5</sup> Pages 235-239.

<sup>6</sup> Page 234.

<sup>7</sup> Page 238, Table 8.39.  $(40,295 - 40,137)/40,137 = 0.0039$ .

5B\_CCCT\_Wet might be a back-up resource acquisition plan, should carbon, natural gas, and electricity price risks diminish, but the Company should not pursue what its main analysis showed to be a second-best alternative, especially given that this alternative would include a great deal more risk, that would be mitigated by pursuing Portfolio 8. The Company has reversed the pathway analysis provided for in *Standard and Guideline 4.f*.

Given that Portfolio 8 would protect the Company from what it considers to be its greatest risks, 0.4% seems a small premium to pay, if one accepts the last-minute analysis associated with the 2012 gas resource deferral. In addition, it is also important to note that the risk of choosing Portfolio 8 over Portfolio 5B\_CCCT\_Wet is asymmetric. If one were to select Portfolio 8 to protect customers from the risks of CO2 costs and natural gas and electricity prices, but find that, in the future, CO2 regulation did not materialize significantly and that natural gas and electricity prices stayed low, then the cost risk is having paid 0.4% more than would have been necessary.

If, on the other hand, one pursued the slightly lower cost of Portfolio 5B\_CCCT\_Wet, and carbon regulation materialized and/or the costs of gas or electricity price volatility became expensive, the cost risk is unbounded. Portfolio 8, with its greater amount of wind acquisition, 2,663 MW as opposed to only 1,863 MW,<sup>8</sup> would provide the Company a better buffer from its greatest risks than Portfolio 5B\_CCCT\_Wet. PacifiCorp's System Optimizer model "found wind to be cost-effective for displacing gas generation under high gas price scenarios, reducing CO2 taxes, and selling to markets during off-peak periods."<sup>9</sup>

### 2.3 PacifiCorp assesses the wrong carbon risk by measuring carbon intensity rather than absolute emissions.

*Standard and Guideline 1* requires "the selection of an optimal set of resources given the expected combination of costs, risk and uncertainty." PacifiCorp's IRP however, focuses on a carbon analysis that does not reflect anticipated regulation. While pointing out that "concentration of any one fuel or technology for new resource investment has been found to be suboptimal when considering risk and uncertainty,"<sup>10</sup> the Company's 2009 resource energy mix in 2009, with a \$45 CO2 tax, contains 75.4% coal and natural gas generation (not including purchases or front office transactions), and its 2018 mix consists of 60.3% coal and natural gas generation.<sup>11</sup> However, front office transactions, often fossil fuel generated, rise from 1.1% in 2009 to 7.7% in 2018. The Company, in its sensitivity modeling, uses the emissions of a Utah combined-cycle gas plant for front office transactions.<sup>12</sup> In other words, through 2018 and given expected growth, the Company makes no progress in reducing its carbon footprint.

While a reduction in the carbon intensity (CO2 released per MWh generated) of PacifiCorp's generation fleet (which, as described in the Executive Summary, appears not to include front office transactions, which would most likely come from fossil generation) is a step in the right

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<sup>8</sup> Appendix A. Pages 120 and 176.

<sup>9</sup> Page 183.

<sup>10</sup> Page 222.

<sup>11</sup> Pages 7-8.

<sup>12</sup> Page 192.

direction, carbon intensity is not nearly as relevant to the Company’s exposure to carbon regulation as its total carbon footprint is.<sup>13</sup> Carbon intensity is unlikely to be the standard by which carbon regulation is achieved because it does not measure the actual total amount of CO2 released to serve the Company’s customers.

PacifiCorp forecasts its loads to grow from 61.6 million MWh in 2009 to 74.3 million MWh in 2018, a system average annual growth rate of 2.1% from 2009-2018.<sup>14</sup> At a CO2 cost of \$45 per ton, the Company’s projected carbon footprint would increase over that time, when current political circumstances and scientific data all point to a need to significantly reduce carbon emissions from current levels. The current draft of H.R. 2454, The American Clean Energy and Security Act, calls for a reduction in carbon emissions from 2005 levels of 17% by 2020 and 80% by 2050.<sup>15</sup> This is consistent with the findings by the Intergovernmental Panel on Climate Change (4th Assessment) of what level of reductions are needed to avoid a catastrophic outcome. PacifiCorp’s 2008 IRP takes the Company in an opposite direction from where it will likely need to go, unnecessarily exposing PacifiCorp customers to future costs of complying with carbon regulation and reducing the Company’s carbon footprint. Resources added by this IRP may very well be in service in 2050, a time when the Company’s carbon footprint should be 20 percent of its current emissions. The portfolio selected by PacifiCorp does not put it on any kind of path to realize that future. This is not in the “long-run public interest,” as required by *Standard and Guideline 1*.

Year	CO2 Intensity (Tons/MWh)	Load (MWh)	Tons of CO2	Emissions Cost at \$45/ton	Emissions Cost at \$100/ton
2009	0.78	61,558,392	48,015,546	\$2,160,699,559	\$4,801,554,576
2018	0.67	74,348,970	49,813,810	\$2,241,621,446	\$4,981,380,990

Notes: CO2 Intensity was approximated from the graph on page 8. Load is from page 71.

#### 2.4 PacifiCorp’s modeled CO2 costs do not comport with a realistic planning environment.

*Standard and Guideline 1* also dictates that the “process should result in the selection of the optimal set of resources given the expected combination of costs, risk and uncertainty.” Above we describe how PacifiCorp’s 2008 IRP does not select the portfolio that best addresses the greatest risks faced by the Company, CO2 regulatory costs and natural gas and electricity price regulation. This contradiction is further highlighted by the Company’s statement that “there have been clear signals that the Obama administration has more of an appetite than the previous

<sup>13</sup> Pages 8-9.

<sup>14</sup> Page 71.

<sup>15</sup> Committee on Energy and Commerce. The American Clean Energy and Security Act (H.R. 2454) – Summary. June 9, 2009. Page 1.

administration to address the climate change issue.”<sup>16</sup> Moreover, numerous regional initiatives described by the Company and the growing volume of passed and proposed legislation addressing global warming and renewable energy development, make it is unreasonable for the Company to not prepare for future regulation that will mandate absolute carbon emission reductions.<sup>17</sup>

## 2.5 PacifiCorp’s IRP and Business Plan treatment of CO2 risk is inconsistent.

*Procedural Issue 9* from the Standards and Guidelines requires that “The Company’s Strategic Business Plan must be directly related to its Integrated Resource Plan.” This guideline is violated by the sharp divergence between the carbon price assumptions used in the IRP, and those used in the PacifiCorp’s Business Plan. The Company’s business plan CO2 price starts at \$8.79 per ton in 2013 and grows to only \$11.68 by 2028 (2008\$).<sup>18</sup> The IRP, however, uses the more realistic prices of \$45 per ton and higher.

While the planning environment suggests effective and significant carbon costs, the Company’s business plan is based on very low carbon costs. The Company’s business approach is further highlighted in its acknowledgement of imminent carbon regulation, but in its reluctance to proceed until every puzzle piece has been laid. The Company refers to an “eventual, but highly uncertain, climate change regulatory regime.”<sup>19</sup> While the specifics of future regulation can be highly uncertain, it is difficult to imagine that a reduced carbon footprint would not better position the Company for whatever carbon emission reduction regulation emerges.

On page 44 of its IRP, PacifiCorp states that “[a]dditional voluntary actions to mitigate greenhouse gas emissions could increase customer rates and represent key public policy decisions that the Company will not undertake without prior consultation with regulators and lawmakers at state and federal levels.” Preparing for “the expected combination of costs, risk and uncertainty” is not voluntary, however. It is part of Utah’s Standards and Guidelines for resource planning. Moreover, PacifiCorp’s statement ignores the very real possibility that failure to mitigate its greenhouse gas footprint today could invoke significantly higher costs of compliance in the future – as the demand for carbon reductions drives the price of carbon emissions higher. Current action to aggressively reduce the Company’s carbon footprint and protect its customers from future carbon regulation and fuel prices is not a public policy decision (though it is good public policy), it is good future planning and risk avoidance.

## 2.6 The IRP erroneously assigns all risk of carbon reduction costs to its customers.

*Standard and Guideline 4.h* directs the Company to identify risks and who should bear them, the ratepayer or the stockholder. Given the planning environment, the EPRI Analysis contained in the IRP that identifies significant carbon prices (\$50 - \$85 and more) needed to effect change,<sup>20</sup>

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<sup>16</sup> Page 31.

<sup>17</sup> Page 37-44.

<sup>18</sup> Page 145.

<sup>19</sup> Page 25.

<sup>20</sup> Page 45 *et seq.*

and given the time it takes to transform a fossil fuel dependent resource portfolio into a sustainable one, failing to aggressively move forward now to reduce the Company's absolute carbon footprint raises significant prudence concerns. Additional costs associated with decisions to delay action should likely be borne by the Company's shareholders.

PacifiCorp's IRP presumes that customers will bear the entirety of costs associated with future carbon regulation. Toward the end of the Company's discussion of the EPRI Analysis, the Company states that such high CO<sub>2</sub> prices are unprecedented (not surprisingly, given that the global circumstances we find ourselves in are also unprecedented) and will lead to unprecedented retail power prices, thus presuming the risk to fall entirely on customers.<sup>21</sup> PacifiCorp concludes that section by stating:

Under either situation, higher costs will inevitably be passed on to consumers in the form of higher electricity rates, but if accompanied by sufficient time to adapt to the new regulatory regime, costs can be mitigated.<sup>22</sup>

Should PacifiCorp not pursue the acquisition of a diversity of renewable generation, energy storage, DSM and energy efficiency resources, and sustainable distributed generation, at least at the level provided for in Portfolio 8 (though, as described later, a number of these resources are significantly undervalued in the Company's IRP), not only is it failing to prepare its resource portfolio for future carbon regulation, it is also reducing the amount of time it has to adapt its portfolio to that carbon regulatory regime.

### 3.0 PacifiCorp's IRP is biased in favor fossil fueled resources and market transactions.

Both *Procedural Issue 6* and *Standard and Guideline 1* dictate that resources must be evaluated on a "consistent and comparable basis." PacifiCorp's 2008 IRP does not do this. At almost every juncture, the modeling assumptions, constraints and characterizations appear biased in a manner that prefers conventional fossil-fueled resources to renewable energy and energy efficiency. Resources such as solar thermal, distributed generation, and geothermal are given only cursory analysis in their report. Transmission is presumed in a manner that advantages front office transactions, and storage is modeled in a manner that makes it impossible to select. Energy efficiency is similarly analyzed in a deficient manner.

### 3.1 Fossil-fueled resources are given preferential treatment in this IRP.

Despite its heavy reliance on coal and natural gas, PacifiCorp continues to portray, as it does when describing the EPRI Analysis,<sup>23</sup> resource choices in reaction to carbon regulation as being only between coal and natural gas. Moving away from those fuels, however, would both diversify its portfolio and better protect its customers from the cost of carbon regulation.

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<sup>21</sup> Page 48.

<sup>22</sup> *Ibid.*

<sup>23</sup> Page 45.

When addressing greenhouse gas policy uncertainty, the Company takes multiple pages to describe the choice between coal and natural gas, including a figure showing the different costs of gas vs. coal under different CO2 prices.<sup>24</sup> As pointed out earlier, however, every current proposal being considered in Congress is geared toward absolute reduction of carbon emissions. The natural gas investment proposed in the Company's IRP, while producing less CO2 than a coal plant, would nevertheless contribute to the Company's carbon footprint and those plants stand to be operational in 2050, when the American Clean Energy and Security Act currently would call for an 80% reduction in carbon emissions from a 2005 baseline.

It is telling that, when discussing carbon risk, the resources the Company identifies are only those with varying degrees of carbon emissions, as opposed to the many available resources that do not have a carbon footprint. This is despite the fact that the Company's modeling suggests that – even under an only moderate CO2 tax (using EPRI's Analysis) and medium gas prices – renewable resources, energy efficiency and distributed generation would serve customers better than a pulverized coal CCS retrofit.

### 3.2 A variety of renewable resources are ignored or summarily treated in the IRP, and then dismissed.

In addressing fuel source diversity, PacifiCorp treats fossil fuels and renewable fuels on a very different basis. In describing the Company's portfolio evaluation approach, PacifiCorp uses fuel source diversity as a measure of the robustness of a portfolio. However, PacifiCorp provides one category to encompass all renewable generation and efficiency, and then separate categories for each of gas, coal and market purchases. It is very disappointing, given the variety of renewable fuels available, from wind to solar to geothermal to biomass, that they would all be lumped into one category – as if all of these fuel sources represented a single facet of diversity.<sup>25</sup> Such an oversimplification fails to value the different characteristics of each renewable fuel type and how they complement each other.

Reflective of the dismissive nature of its renewable analysis, the Company's preferred portfolio as presented in the Executive Summary, contains only three renewable resources for acquisition in the 2009-2018 time frame.<sup>26</sup> Of these, only 35 MW of geothermal generation is selected, along with 75 MW of hydroelectric upgrades. The proposed 1,313 MW of wind represents the only significant addition of renewable generation, and is less than half of the 2,663 MW called for in preferred Portfolio 8.

#### 3.2.1 Solar resources are neglected and undervalued in the IRP.

The range of solar resources available to the Company, from rooftop PV, to larger distributed PV (such as at substations), to utility-scale PV, and to solar thermal, in particular solar thermal with storage, is all but absent with no major PV or concentrated solar thermal additions planned. Solar thermal with storage would bring added value of dispatch-ability and capacity contribution to

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<sup>24</sup> Pages 32-33.

<sup>25</sup> Pages 174-175.

<sup>26</sup> Page 6.



PacifiCorp's system – making it a very attractive alternative to carbon-intensive and fuel-risky conventional resources.

Moreover, recent growth in both solar PV and solar thermal generation suggests that the value of these resources is not being properly accounted for in the Company's modeling. Currently, there are 419 MW of solar thermal capacity in operation serving customers of primarily Southern California Edison, and also NV Energy, and Arizona Public Service. Outside the Southwest, Florida Power & Light began construction on a 75 MW CSP plant in Florida.<sup>27</sup> In 2009 Arizona Public Service signed a PPA for the 290 MW Starwood Solar I concentrating solar plant to be located 75 miles west of Phoenix, and, in 2008, signed a PPA for energy from the 280 MW Solana Solar Plant 70 miles southwest of Phoenix.<sup>28</sup> The proximity of these plants to a major load center brings the added advantage of avoided transmission. In addition, 292 MW of grid-tied solar PV capacity was added in the US in 2008 alone, an 81% increase over the 161 MW of grid-tied installations in 2007, and an amount that brings total installed grid-tied PV capacity in the U.S. to more than 1 GW.<sup>29</sup> PacifiCorp's IRP Action Plan notes that the Company will "[m]onitor solar and emerging technologies ... during the 10-year investment horizon."<sup>30</sup> Solar is far from an "emerging" technology, and the growth in its development and use by other utilities again suggests that the Company's modeling is not properly evaluating the benefits of the range of solar resources available.

### 3.2.2 PacifiCorp's analysis neglects solar support of thermal generation.

*Standard and Guideline 4.b.ii* requires the Company to assess "all technically feasible generating technologies...." PacifiCorp has failed to satisfy this requirement.

The Company's overreliance on fossil generation, at the expense of other energy resources available, is demonstrated by its presumption of needing "to commit to a large new thermal power plant,"<sup>31</sup> (we presume the Company did not intend this comment to refer to solar thermal). Were other generating technologies explored, such as solar augmentation of existing fossil-fueled plants, we believe the Company would find that it does not need another gas generator.

Solar augmentation of thermal generation is a promising technology that is currently in use at the Liddel Power Station in Australia (coal), and has received Commission approval for demonstration at the Cameo coal facility in Colorado (scheduled to be online by the end of 2009). As of 2008, there were at least four solar augmentation projects of natural gas facilities scheduled to come online in 2010: the Martin Next Gen Solar Energy Center in Florida, the Victorville 2 Hybrid Power Project in California, the Beni Mathar Plant in Morocco, and the Kuraymat ISCCS project in Egypt.<sup>32</sup> In addition, EPRI is currently performing two engineering case study analyses of solar thermal augmentation of fossil generation, one on existing natural

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<sup>27</sup> Solar Energy Industries Association. US Solar Industry 2008 Year in Review. Pages 6-7.

<sup>28</sup> Arizona Public Service. Press Release: Starwood Energy To Collaborate On Major Concentrating Solar Plant - APS to Provide More Solar Electricity per Customer than any other U.S. Utility. May 22, 2009.

<sup>29</sup> Solar Energy Industries Association. US Solar Industry 2008 Year in Review. Page 5.

<sup>30</sup> Page 12.

<sup>31</sup> Page 241.

<sup>32</sup> WorleyParsons Presentation. Solar Technology Options, 2008. Page 4.

gas plants and the other on existing coal plants.<sup>33</sup> Solar augmentation was not considered in the Company's 2008 IRP, even though it presents an opportunity for PacifiCorp to reduce its carbon regulation and fuel price exposure.

### 3.2.3 Distributed solar generation was not integrated into the analysis in a reasonable manner.

Utah *Standard and Guideline 4.b.iii* requires that resource assessments include opportunities for customer participation. The analysis PacifiCorp performed for distributed solar generation, however, effectively precludes such customer-sited resources and violates this standard.

Rooftop solar, in particular, due to size screening that the Company used for distributed generation alternatives (5 MW by State and 8 MW by technology<sup>34</sup>), was eliminated except in Oregon and northern California (a counterintuitive result).<sup>35</sup> Rooftop PV systems provide a direct and tangible way for customers to participate in the generation of the electricity that they use, and provide the entire system with load-side generation resources.

Colorado's Solar\*Rewards small program (0.5 kW - 10 kW) demonstrates customers' interest in installing PV systems, and, through Public Service Company of Colorado's incentive program, customers installed over 5 MW of capacity in 2008 and over 4 MW in 2006-2007 in the small program alone.<sup>36</sup> The size screening used by PacifiCorp appears to significantly disadvantage distributed solar, and might also mask the benefits and potential of other distributed generation sources such as combined heat and power. When describing the modeling and portfolio selection results, the Company does not even mention rooftop PV when discussing distributed generation selection.<sup>37</sup> We are sensitive to the Company's concern with regard to the number of resource options included in its IRP models,<sup>38</sup> but small, distributed resources bring a number of benefits to the system as a whole, and provide an opportunity for customers to participate in their electricity generation.

### 3.2.4 Geothermal is not considered clean baseload generation – while advanced coal is.

In its 2008 IRP, the Company does not acknowledge geothermal as a clean baseload resource. In its 29 core case definitions, a clean baseload plant is only available in 2025, and only 4 of its 48 case definitions allow for "early" (2020) availability of clean baseload technology.<sup>39</sup> It appears that the Company's focus on clean baseload generation is limited to advanced coal technologies as described in the coal section of resource options.<sup>40</sup> This limitation, along with the Company's

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<sup>33</sup> EPRI Press Release. EPRI To Evaluate Adding Solar Thermal Energy To Coal Plants - Two Solar Augmentation Projects Target Natural Gas and Coal Generation. January 29, 2009.

<sup>34</sup> Page 118.

<sup>35</sup> Pages 118-119.

<sup>36</sup> Colorado PUC Docket 08A-532E. Public Service Company of Colorado. Application for Approval Of Public Serve 2009 RES Compliance Plan. December 1, 2008. Volume 1, Section 5, Page 2.

<sup>37</sup> Page 185.

<sup>38</sup> Page 118.

<sup>39</sup> Pages 141-142.

<sup>40</sup> Pages 113-115.

100 MW cap on geothermal additions,<sup>41</sup> violates the *Standard and Guideline 1* requirement that resources be evaluated on a consistent and comparable basis.

This advanced coal limitation to clean baseload technologies is not appropriate. PacifiCorp has clean baseload generation at its Blundell geothermal plant, and geothermal represents a large, untapped baseload resource. Utah's Renewable Energy Zone Task Force found the estimated potential for electric generation from identified geothermal systems to be approximately 754 MW, and the total estimated potential from undiscovered geothermal systems to be approximately 1,413 MW.<sup>42</sup> This geothermal generation potential in Utah alone, which should be coordinated with the Company's planned transmission expansion, is considerable. Nevertheless, that Company fails to give this resource the consideration that clean coal technologies are given because of, according to PacifiCorp, the difficulty in characterizing the type, quality and conditions of the resource, and the investment for well drilling and testing.<sup>43</sup> This justification fails to recognize Utah's long history of evaluating potential geothermal sites, while the process of developing advanced coal technologies is in comparative infancy.

#### 4.0 Demand-side resources are not assessed properly nor comparably with supply-side resources.

A couple of concerns with the Company's equitable treatment of DSM arise in this IRP. In all but one of the cases – core, sensitivity, and business plan – Class 3 DSM for peak load reduction is excluded as a capacity resource<sup>44</sup> – even though Class 3 DSM for peak load reduction is specifically a capacity resource. In comparing the coincident peak loads for two load forecasts, the Company adjusted the load forecast to include the expected impact of historical Class 2 DSM programs. This results in an increased load forecast for the capacity expansion model and, the Company points out, “this adjustment also ensures that sufficient resource capacity is added in case the full amount of estimated future load reductions from existing Class 2 DSM programs is not realized.”<sup>45</sup> Nowhere does PacifiCorp add load to its forecast for capacity expansion modeling purposes because a fossil plant's generation might not materialize as forecast. This is contrary to the “consistent and comparable basis” treatment for demand-side and supply-side resources of *Standard and Guideline 4.b*.

We are also concerned that *Standard and Guideline 4.b.i*, the assessment of cost-effective improvements in the efficient use of energy, was compromised due to the 15% administrative cost adder for Class 2 DSM, which seems excessively high – possibly eliminating cost-effective DSM from consideration.<sup>46</sup> Though this adder comes from a DSM potential study done for the Company, it should be compared with the 5.3% administrative and program support costs incurred by the Energy Trust of Oregon in 2008.<sup>47</sup> The Company's analysis shows “that upper-

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<sup>41</sup> Page 117.

<sup>42</sup> Utah Renewable Energy Zones Task Force. Phase I Report: Renewable Energy Zone Resource Identification. 2009. Utah Geological Survey, Miscellaneous Publication 09-1. ISBN 1-55791-808-2. Page 3.

<sup>43</sup> Page 117.

<sup>44</sup> Pages 141-142.

<sup>45</sup> Page 250.

<sup>46</sup> Page 127.

<sup>47</sup> Energy Trust of Oregon. Facts About Energy Trust of Oregon, Inc. April 20, 2009. Page 4.

tail cost risk is inversely proportional to the amount of [wind and energy efficiency] resources added.”<sup>48</sup> So it is particularly important that energy efficiency not be undervalued.

#### 5.0 Storage technology is effectively precluded by the Company’s assumptions.

*Standard and Guideline 4.b.ii* directs the Company to provide an assessment of all technically feasible generating technologies. PacifiCorp has modeled energy storage technologies with emission attributes that match, in some cases pulverized coal (battery and pumped storage), and in others a CCCT (compressed air energy storage or CAES).<sup>49</sup> Not surprisingly, the cost of these storage technologies increases with the cost of emissions regulation. However, where storage stands to play a strategic role is in combination with renewable generation such as wind and solar, and improving the efficiency of existing fossil resources. Rather than modeling storage as an opportunity to reduce emissions from existing plants, however, PacifiCorp appears to require that storage technologies be accompanied by new fossil resources and their costs and emissions, precluding storage technology from development.<sup>50</sup>

In addition, the earliest the Company makes a storage technology available to the model is 2014, and that is for small battery applications.<sup>51</sup> Compressed air energy storage is not available to the model until 2015, and pumped hydro is not available until 2018. The latter two technologies, both of which pair well with wind, have been technologically demonstrated. For pumped hydro, the Company’s rationale for the delay to 2018 is for study and permitting issues. The Company does not provide an explanation for why it would not pursue CAES immediately, but does comment that only two CAES plants have been built. While this is not an extensive history of CAES, natural gas has been stored in underground caverns for years, and the Company should be balancing what it appears to see as the technology risk of CAES with the significant risk of carbon regulation. There is no justification for technology risk being treated differently than other forms of risk, and the Company’s risk-related delay of storage deployment violates *Standard and Guideline 4.b and 4.b.ii* – an assessment of all technically feasible generation technologies on a consistent and comparable basis.

The combination of storage with the considerable wind development the Company should be pursuing could be one of the lynchpins in developing a firm resource portfolio that is without carbon, fuel price, or market electricity price risk.

#### 6.0 PacifiCorp’s transmission planning is not integrated with its other resource assessments.

*Standard and Guideline 1* provides that PacifiCorp’s IRP involve a process that “evaluates all known resources on a consistent and comparable basis.” Recent Commission Orders in past IRP acknowledgement proceedings have made clear that the treatment of transmission is covered by this requirement. (See for example Commission Order in Docket No. 03-2035-01, p 13). PacifiCorp’ treatment of transmission resources has not complied with this requirement.

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<sup>48</sup> Page 206.

<sup>49</sup> Pages 102-103, Tables 6.2 and 6.3.

<sup>50</sup> Pages 104-107.

<sup>51</sup> Pages 117-118.

For modeling purposes, PacifiCorp included all segments of the Energy Gateway Transmission project in its base topology. The inclusion of this major project as an existing, unchangeable, asset caused PacifiCorp to assume greater market access and changed the dispatch and the cost of all modeling runs.

The treatment of transmission in this IRP is a significant shortcoming. The very concept of integration requires an evaluation of transmission on a consistent and comparable basis to other resources. While transmission is, on occasion, a substitute to additional generation resources, it is more generally a complement to increased market access or other generation resources, and both its direct costs and the changed dispatch of the system resulting from the changed topology must be evaluated. Given that the cost and dispatch of all resource runs were altered by this significant planning decision, the validity of the results of all modeling runs are called into question by this departure from the Commission's required integrated analysis of resources.

#### 7.0 PacifiCorp's reliance on market purchases presents extraordinary risk to its customers.

The Company's planned "bridging strategy" of relying heavily on front office transactions<sup>52</sup> (7.7% of its energy mix assuming \$45 CO2 costs by 2018)<sup>53</sup> exposes PacifiCorp and its customers to extraordinary risk. PacifiCorp has identified its most significant risks as being fuel prices and carbon regulation. Yet, rather than mitigate that risk by procuring substantial and diverse renewable resources and energy efficiency, the Company instead turns to the market, exposing itself to a strong likelihood of confronting fuel price escalation and carbon regulation in the near future with no mitigation strategy.

With regard to its planned increased reliance on front office transactions, the Company speaks of flexibility and buying time to build another large thermal plant,<sup>54</sup> but not of a Company serving its customers primarily with sustainable resources, protected from fossil fuel price volatility and carbon regulation, and leading the industry in its diverse use of renewable generation, energy storage, distributed generation, load management, and energy efficiency.

Renewable portfolio standards are being passed in a number of states across the country, state and regional initiatives are striving to reduce greenhouse gas emissions, and the new administration, as noted by the Company, seems ready to provide leadership at the national level.<sup>55</sup> As such, this is not a time to wait. The economy is weak, construction prices have softened, and steel prices have dropped.<sup>56</sup> Pressure is already mounting in some arenas, such as the availability of wind turbines, and, as more and more utilities seek to meet their increasing renewable energy standards, the best sites for wind, solar, geothermal, etc. stand to be developed. The longer it waits to develop these critical resources, the more vulnerable the Company will be to scarcity pricing and shortfalls. These concerns never enter into the Company's IRP analysis.

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<sup>52</sup> Page 12.

<sup>53</sup> Page 8.

<sup>54</sup> Page 241.

<sup>55</sup> Page 31.

<sup>56</sup> Page 99.

The Company's "bridging strategy" sacrifices precious time and opportunity to address and mitigate its fuel and carbon risk, and chart a course toward an energy supply that could, one day, be without those risks. In failing to aggressively mitigate the major risks of carbon regulation and natural gas and electricity prices, PacifiCorp has not provided a compass bearing toward an "optimal set of resources given the expected combination of costs, risk and uncertainty," and thereby fails to meet the definition of integrated resource planning as provided for in *Standard and Guideline 1*.

## 8.0 Conclusions.

PacifiCorp's 2008 IRP fails to comply with many of the Utah Public Service Commission's Standards and Guidelines governing integrated resource plans. For this reason, WRA requests that the Commission not acknowledge the Company's 2008 IRP.

In addition, WRA notes that much of the deficiency in the Company's IRP appears to stem from the Company's reluctance to aggressively confront and mitigate the risks and uncertainties it faces. This reluctance, unfortunately, presents undue and unnecessary risk to the Company and its customers. For this reason, WRA asks that the Commission exercise its prerogative within *Procedural Issue 4* to "pursue a more active-directive role" in PacifiCorp's planning.

As part of that "active-directive role," WRA believes PacifiCorp should, at a minimum, be directed to pursue the renewable generation and energy efficiency called for in Portfolio 8. In addition, the Company should be directed to model a diversity of renewable generation resources and their different operating characteristics, pursue storage technologies that would complement its renewable energy development, enhance the development of distributed generation, and deploy substantial demand side resources that are not modeled as unreliable.

Respectfully submitted,

WESTERN RESOURCE ADVOCATES

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