# Response to the Utah Party Comments on PacifiCorp's 2013 Integrated Resource Plan

Docket No. 13-2035-01

## 1. INTRODUCTION

PacifiCorp filed its 2013 Integrated Resource Plan (IRP) with the Public Service Commission of Utah (Commission) on April 30, 2013, and a Wind Integration Study Technical Memo on June 3, 2013. The Company's IRP was prepared in accordance with the Commission's IRP Standards and Guidelines in Docket No. 90-2035-01 and 2011 IRP acknowledgment requirements from the Report and Order in Docket No. 11-2035-01. The Commission's criterion for IRP acknowledgment is that the plan is deemed reasonable at the time it is presented. As part of its review the Commission determines if the IRP adequately adheres to the IRP Standards and Guidelines established under Docket No. 90-2035-01, and takes into consideration the "merit and applicability" of public comments.[1]

As part of the IRP acknowledgment schedule adopted by the Commission for this proceeding, parties filed comments and acknowledgment recommendations by September 9, 2013. Eight parties submitted written comments: Division of Public Utilities (DPU), Office of Consumer Services (OCS), Utah Association of Energy Users (UAE), Utah Clean Energy (UCE), Southwest Energy Efficiency Project (SWEEP)[2], Western Resource Advocates (WRA), Interwest Energy Alliance (IEA), and the Healthy Environmental Alliance of Utah (HEAL Utah).

In response to these comments, PacifiCorp submits its reply comments for consideration. Following an executive summary/recommendations section, the Company addresses specific comments provided by the parties. These replies are organized by responding party.

## 2. EXECUTIVE SUMMARY AND RECOMMENDATIONS

PacifiCorp appreciates the parties' comments on the Company's 2013 IRP, and appreciates that its active and engaged stakeholder group recognizes steps the Company has implemented to improve the IRP public process. A number of the parties raise concerns with respect to perceived shortcomings in modeling assumptions that influence the outcome of resource selection, particularly with respect to identification and analysis of environmental compliance costs and renewable resources. In its reply, PacifiCorp provides clarification to support its portfolio modeling assumptions and resource strategy conclusions.

[1] Public Service Commission of Utah, *Report and Order on Standards and Guidelines* (Docket No. 90-2035-01), pp. 22 - 23.
[2] SWEEP submitted joint comments with UCE on PacifiCorp's DSM Potential Study. The joint comments were filed as an attachment to UCE's written comments in this docket.

PacifiCorp disagrees with several parties' recommendations that the IRP not be acknowledged because the Commission's IRP Standards and Guidelines have purportedly not been met. Compliance with the Commission's Standards and Guidelines is carefully considered as the Company develops and finalizes its IRP. PacifiCorp specifically addresses in its reply comments why it believes parties' interpretation of the Commission's Standards and Guidelines are unfounded. Moreover, the Company identifies where it believes parties' recommendations would not meet the Commission's Standards and Guidelines. In supplying its reply comments, PacifiCorp respectfully requests that the Commission and the parties view the IRP as a planning document that lays out the resource road map, that considers long-term risk and planning uncertainties, and that continuously evolves in step with regulatory events and market trends.

With the responses and clarifications contained in this filing, PacifiCorp believes that its 2013 IRP meets the Commission's Standards and Guidelines and that the 2013 IRP Preferred Portfolio is least cost. Further, the Preferred Portfolio was selected in a manner consistent with the long-run public interest. Accordingly, PacifiCorp respectfully requests that the Commission acknowledge its 2013 IRP.

## 3. REPLY COMMENTS: DIVISION OF PUBLIC UTILITIES

Adherence to Report and Order in Docket No. 11-2035-01

But for the exceptions noted below, DPU finds that the Company met the requirements identified in the Commission's 2011 IRP Report and Order in Docket No. 11-2035-01. In its comments under the "Insufficient Adherence to Guidelines" section, DPU notes that the Company's analysis supporting an unbundled renewable energy credit (REC) for Washington renewable portfolio standard (RPS) compliance falls short of the Commission's directive on preferred portfolio evaluation criteria and Commission suggestions related to the public process. DPU further states it is not aware of where the Company addressed Commission suggestions related to a discount for combined cycle combustion turbine (CCCT) resources, as required in the Report and Order in Docket No. 11-2035-01.

In the development of the Preferred Portfolio, PacifiCorp evaluated a baseline of renewable resources required to meet the RPS requirements in Oregon, Washington, and California. As part of the final selection process, PacifiCorp selected a Preferred Portfolio that relies on the use of unbundled RECs for purposes of achieving compliance with Washington state RPS requirements because it is the lower cost, least risk alternative. PacifiCorp disagrees with DPU's characterization of this step in the selection process as a "manual change" and disagrees with DPU that this step of the selection process is unsupported by least cost, least risk analysis. Rather, and consistent with the Commission's directive in the Report and Order in Docket No. 11-2035-01, PacifiCorp informed its determination of the Preferred Portfolio by completing additional cost and risk analyses that quantify how the Preferred Portfolio compares to an alternative portfolio containing wind resources for the sole purpose of meeting Washington state RPS requirements.[3] Moreover, as directed by the Commission, PacifiCorp provided stochastic performance measures for the Preferred Portfolio consistent with this additional cost and risk

[3] PacifiCorp 2013 IRP, Volume I, Chapter 8, pp. 224 – 226.

analysis.[4] PacifiCorp believes this final selection process meets both the Commission's directive in the Report and Order in Docket No. 11-2035-01 and the Commission's IRP Standards and Guidelines.[5]

With regard to DPU comments on the discount for CCCT, PacifiCorp clarifies that it applied in its portfolio development process a stochastic cost credit to the cost of new CCCT resources in the 2011 IRP. However, for the 2013 IRP, PacifiCorp did not use this approach and did not include any cost credit for CCCT resources. Consequently, the 2013 IRP does not include sensitivity analysis to examine the impact of a CCCT cost credit on selection of wind and solar resources.

Adherence to Report and Order in Docket No. 90-2035-01 (IRP Standards and Guidelines)

DPU notes the Company's 2013 IRP meets the Commission's procedural requirements contained in its IRP Standards and Guidelines. DPU states the Company's 2013 IRP meets most of the Commission's IRP Standards and Guidelines, and identifies specific areas where it believes the Company fell short of meeting Utah's IRP requirements. Specifically DPU states that the Company did not follow a "three-stage process" by foregoing a deterministic risk analysis. DPU also notes the Company excluded Case C19 from the preferred portfolio selection process, and chose to exclude Case C15 despite high rankings generated with quantitative analysis. Finally, DPU restates its concerns with PacifiCorp's decision to select a Preferred Portfolio that uses unbundled RECs to meet Washington state RPS requirements. Consequently, DPU does not fully support and verify IRP conclusions and does not recommend the Commission acknowledge the IRP or accompanying Action Plan.

In response to DPU's comments on a "three stage process", PacifiCorp notes that DPU does not explicitly state which standard or guideline was not met. DPU indeed makes reference to the Commission's Report and Order on the Company's 2008 IRP in Docket 09-2035-01, which encouraged the Company to continue its efforts to implement a three-step approach that includes a deterministic risk analysis.[6] As explained to stakeholders at the April 5, 2013 public input meeting, given the similar type, timing, and quantities of resources among the top performing portfolios in the 2013 IRP, PacifiCorp determined that a deterministic risk analysis would not produce incremental information that would further inform selection of a preferred portfolio.[7] At that time, no party raised concerns that this would be in conflict with the Commission's IRP Standards and Guidelines. PacifiCorp does not consider the omission of the deterministic risk analysis to be in conflict with the Commission's IRP Standards and Guidelines as defined in the Report and Order in Docket No. 90-2035-01. As noted above, the Company chose not to perform the deterministic resource analysis for the 2013 IRP based upon portfolio results specific to this IRP process. PacifiCorp has historically followed the Commission's guidance

[4] PacifiCorp 2013 IRP, Volume II, Appendix L, pp. 275 – 287.
[5] DPU does not explicitly identify which IRP standard or guideline was not met.
[6] A deterministic risk analysis evaluates cost consequences of superior portfolios with respect to uncertainty by subjecting them to evaluation under the initial set of relatively broad fixed input assumptions.
[7] Please refer to Figure 8.25 in Volume I of PacifiCorp's 2013 IRP, which graphically shows similarities among the top performing portfolios.

encouraging the Company to perform a deterministic risk analysis, and intends to continue to follow the Commission's guidance as applicable in future IRPs.

In response to comments related to exclusion of Case C19, which includes the Zephyr DC transmission line, PacifiCorp once again notes that DPU does not explicitly state which of the Commission's IRP Standards and Guidelines were not met. Moreover, PacifiCorp highlights for the Commission that DPU's comments are incomplete in that they only provide a partial quote from footnote 73 in Volume I of the 2013 IRP. Additional information in footnote 73 further explains that the Zephyr DC line does not provide interconnection for new resources except at termination points, does not allow for multiple interconnection points with the existing PacifiCorp transmission system, and that the proposed line is more expensive than Energy Gateway Segment D. Further, PacifiCorp explains in Volume I at page 216 that Case C19 was removed from consideration because the case is predicated on completion of a third party transmission project, which is not currently far enough into the development process for it to be considered for the Preferred Portfolio. DPU further states that results from Case C19 would have been helpful in validating optimality of the Preferred Portfolio. PacifiCorp believes it fully documented its rationale for excluding Case C19 as a pre-screening step and notes that portfolio screening is a necessary step in selecting a Preferred Portfolio. The Company's screening process was completed in conformance with the Commission's IRP Standards and Guidelines.

DPU suggests that PacifiCorp's reasons for not selecting Case EG2-C15 were not supported with analytical evidence, and references the Commission's Report and Order from PacifiCorp's 2006 IRP in Docket No. 07-2035-01. Again, DPU does not explicitly state which of the Commission's IRP Standards and Guidelines was not met. Nonetheless, PacifiCorp disagrees with DPU's assessment for two reasons. First, PacifiCorp developed Case C15 in direct response to stakeholder requests received during the public process to consider a portfolio developed under the assumption that energy efficiency resources could be acquired at an accelerated rate. At that time, PacifiCorp explained to its stakeholders that it did not have a demand side management (DSM) resource potential study to develop cost and resource potential assumptions for such a scenario. Nonetheless, PacifiCorp agreed to develop, at a high level, adjusted measure and market ramp rates consistent with stakeholder-derived inputs such that the effects of this assumption could be explicitly quantified. While not selected as the preferred portfolio, this case produced, via quantitative analysis, specific cost and risk metrics that directly influenced PacifiCorp's 2013 IRP Action Plan. Second, another defining attribute of Case C15 is that it did not allow selection of CCCT resources. PacifiCorp chose not to select, as its Preferred Portfolio, a portfolio that at the outset precludes consideration of an entire class of proven resource technology. PacifiCorp believes that this would not meet the Commission's Standards and Guidelines 4b.

As discussed above, DPU identifies specific areas in which it believes PacifiCorp's 2013 IRP failed to meet the Commission's IRP Standards and Guidelines, but once again fails to identify which specific Standard or Guideline was not met. Consequently, DPU's claims are unfounded and unsupported. PacifiCorp believes its decision to forego completing a deterministic risk assessment, specifically for the 2013 IRP, is not inconsistent with the Commission's Standards and Guidelines and is generally consistent with DPU's comments, discussed below, that the IRP process be simplified to balance effort with the payoff. PacifiCorp further believes its portfolio selection process is well documented and supported by quantitative analysis as required by the Commission and was performed consistent with the IRP Standards and Guidelines.

IRP Process/Suggested Solution and Changes to IRP Standards and Guidelines

In its comments, DPU recommends IRP process improvements and provides a redline revision of the Commission's Standards and Guidelines. DPU states that the IRP process is overly long and burdensome, often out of date, and that effort is out of balance with the payoff. DPU requests the Commission set the goal that the IRP should be relatively simple and easily understood. DPU further suggests that the Commission should revisit the fundamental purpose and use of the IRP. DPU further comments on transmission scenarios considered in the IRP and states that it would expect the Preferred Portfolio would include a preferred transmission scenario. In addition, DPU comments that PacifiCorp could provide some "extreme" scenarios around the preferred portfolio in which there was little or no additional transmission acquired, and one with significantly more transmission.

PacifiCorp appreciates DPU's efforts to broadly critique the IRP process and offer suggestions to streamline the IRP process going forward. While PacifiCorp supports, as a general matter, IRP process improvements, PacifiCorp does not support DPU's "Model IRP Process" and annotated redline version of the Commission's IRP Standards and Guidelines. As a practical matter, PacifiCorp is concerned that DPU's specific recommendations to revamp and downsize the IRP will not achieve the desired result considering that PacifiCorp produces its IRP in conformance with guidelines and requirements across all of its jurisdictions.[8] In fact, PacifiCorp is concerned that a substantial overhaul of the Commission's IRP Standards and Guidelines, absent a coordinated effort to streamline the IRP process in other jurisdictions, could have the undesired effect of adding complexity to PacifiCorp's IRP process. Nonetheless, PacifiCorp is dedicated to improving the quality and content of its IRP and has committed to explore process improvement opportunities. To this end, PacifiCorp recently held an IRP Process Improvement Workshop, consistent with Action Item 11a in the 2013 IRP Action Plan, to discuss specific process improvement ideas that can be implemented for the 2015 IRP planning cycle that meet the IRP guidelines of each jurisdiction. PacifiCorp believes that continued coordination with stakeholders among each of its jurisdictions is the most efficient means to identify and implement IRP process improvement measures.

In response to DPU's additional comments regarding transmission, PacifiCorp notes that the Preferred Portfolio was selected as part of a specific transmission scenario (EG2, which includes Energy Gateway Segment D). However, PacifiCorp notes that it does not have in its 2013 IRP Action Plan any action items to initiate construction of the Segment D line. PacifiCorp will continue to evaluate Segment D and other Energy Gateway Segments in its on-going planning efforts. PacifiCorp further notes that it did analyze a range of transmission investments in the 2013 IRP. For example, EG1 included the Sigurd to Red Butte transmission investment and other EG scenarios included both Gateway West and Gateway South segments.

[8] The Commission's Procedural Issue 8 as contained in its Guidelines recognizes the importance of coordination with other jurisdictions.

## 4. REPLY COMMENTS: OFFICE OF CONSUMER SERVICES

Preferred Portfolio Selection Process and Conformance with IRP Guidelines

OCS comments that PacifiCorp should be required to select a Preferred Portfolio without considering transmission benefits quantified using the System Operational and Reliability Benefits Tool (SBT). OCS recommends the Commission not acknowledge PacifiCorp's 2013 IRP on the basis that selection of the Preferred Portfolio considered SBT benefits, which it believes does not meet Guideline 1. OCS further recommends the Commission order PacifiCorp to remove SBT benefits from the IRP analysis and redo the preferred portfolio selection process.[9] OCS further recommends the Commission prohibit PacifiCorp from using the SBT in any future IRP until more robust supporting evidence is provided showing the efficacy of its analysis. Absent SBT benefits, OCS contends that the EG1-C16 portfolios should be given serious consideration as the Preferred Portfolio.

PacifiCorp disagrees with OCS' contention that consideration of SBT benefits in the portfolio selection process results in a portfolio that is not optimal given the expected combination of costs, risks and uncertainty. Based on this contention, OCS states that selection of the Preferred Portfolio does not meet Guideline 1. PacifiCorp explicitly considered SBT benefits in its portfolio selection process to be consistent with Guideline 4b, which requires the Company to evaluate all present and future resources on a consistent and comparable basis. In its IRP process, PacifiCorp evaluates a broad range of resource alternatives when generating resource portfolios. The selection of an optimal resource mix for any scenario is made within IRP modeling tools, which endogenously compare resource costs *and* resource benefits among all resource alternatives. Considering the full range of costs and benefits for any given resource alternative ensures that the IRP evaluates resources on a consistent and comparable basis. PacifiCorp simply extended this same concept in its evaluation of future transmission resource alternatives, recognizing that there are certain benefits specific to a given transmission project that cannot be directly quantified in production cost dispatch models that are used to develop portfolios and used to analyze portfolio risks. Consequently, to ensure transmission resources are considered on a consistent and comparable basis with other resource alternatives, the full range of benefits, as estimated using the SBT, were factored into PacifiCorp's portfolio selection process.

OCS further comments that absent consideration of SBT benefits, Case EG1-C16 should be considered as the Preferred Portfolio. PacifiCorp believes that the analysis used by OCS to reach this conclusion is flawed in that it is based upon an apples-to-oranges comparison of portfolio costs. The system costs reported for all resource portfolios generated under the EG2 transmission scenario include projected capital and operations and maintenance costs associated with the Windstar to Populus transmission project (Energy Gateway Segment D). These fixed costs are not included in the system costs reported for all resource portfolios generated under the

[9] Guideline 1 provides the following definition: Integrated resource planning is a utility planning process which evaluates all known resources on a consistent and comparable basis, in order to meet current and future customer electric energy services needs at the lowest total cost to the utility and its customers, and in a manager consistent with the long-run public interest. The process should result in the selection of the optimal set of resources given the expected combination of costs, risk and uncertainty.

EG1 transmission scenario, which excludes Energy Gateway Segment D. Consequently, the comparative analysis performed by OCS, which ranks system costs for both EG1and EG2 resource portfolios absent SBT benefits, captures the entire incremental fixed cost of Segment D in each EG2 portfolio without capturing the entire range of benefits associated with Segment D.

As noted above, PacifiCorp believes this type of comparative analysis performed by OCS conflicts with the Commission's Guideline 4b. Notwithstanding the flaws in OCS' comparative analysis, PacifiCorp notes that the type, timing, and quantity of resources in Case EG1-C16 is very similar to the type, timing, and quantity of resources in Case EG2-C07, which was used as the precursor to the Preferred Portfolio.[10] Given similarities among these portfolios, PacifiCorp's 2013 IRP Action Plan, which focuses on specific actions the Company expects to take over the next two to four years, would be largely unaffected if Case EG1-C16 were considered as an alternative to the Preferred Portfolio.[11] Considering flaws in OCS' comparative analysis and considering Case EG1-C16 would have limited to no impact on PacifiCorp's 2013 IRP Action Plan, PacifiCorp requests the Commission reject OCS' recommendation to order the Company to remove SBT benefits from its Preferred Portfolio selection process.

PacifiCorp recognizes that the SBT is a new tool that was introduced in the 2013 IRP, and that stakeholders have expressed an interest in further validating specific input assumptions and calculations used to quantify transmission benefits. To this end, PacifiCorp included Action Item 9a in the 2013 IRP Action Plan, which establishes a process whereby stakeholders can participate in workshops intended to further review the SBT. This process has already been initiated, and PacifiCorp plans to consider stakeholder feedback received through this process to further refine the SBT going forward. PacifiCorp notes that it has not used the SBT to specifically support action items to construct Energy Gateway Segments.[12] Rather, the 2013 IRP Action Plan identifies the Company's plans to continue permitting activities for specific Energy Gateway projects. PacifiCorp believes it is important that it follow through with its stakeholder process to improve the SBT, and requests that the Commission reject OCS' recommendation to prohibit the Company from using the SBT in future IRPs.

Wind Resources/Energy Gateway Transmission

As compared to PacifiCorp's 2011 IRP and 2011 IRP Update, OCS notes there are fewer wind resources in the 2013 IRP Preferred Portfolio and that they show up later in the planning horizon. Based upon this observation, OCS concludes that certain segments of the Energy Gateway project may not be needed.

As noted above, PacifiCorp reiterates that it has not used the 2013 IRP to support action items to construct Energy Gateway Segments beyond the Sigurd to Red Butte transmission project

[10] Please refer to Figure 8.25 in Volume I at p. 223 of PacifiCorp's 2013 IRP.

[11] OCS comments that EG1-C16 includes geothermal PPA resources. While true, these resources are included for the sole purpose of meeting Washington state RPS requirements. As noted in the 2013 IRP Action Plan and as discussed in response to comments from DPU, PacifiCorp has conducted quantitative analysis supporting a compliance strategy that relies on unbundled RECs to meet Washington state RPS requirements.

[12] Action Item 9c identifies PacifiCorp's intentions to complete construction of the Sigurd to Red Butte 345 kilovolt transmission line (Segment G), which is required to satisfy the Company's obligations to its network transmission customers under its OATT and comply with mandatory FERC, NERC and WECC reliability standards.

(Segment G), which is required to meet network load and system reliability requirements.[13] As permitting efforts proceed, PacifiCorp will continue to assess the costs and benefits for specific Energy Gateway transmission projects through its ongoing planning efforts. PacifiCorp notes that it has the burden of demonstrating the necessity of each of these segments through CPCN proceedings where OCS and other parties will have the opportunity to participate. PacifiCorp further notes that in addition to CPCN proceedings, recovery of its costs for all transmission lines are subject to prudence reviews in ratemaking proceedings where OCS and other parties will also have the opportunity to participate.

Demand Side Management

OCS continues to support the pursuit of cost effective demand side management (DSM) resources, but raises concerns as to the achievability of the targets in the Preferred Portfolio. OCS recommends that whenever the Company seeks approval of a new or expanded Class 2 DSM program, it should be required to report the amount of capacity that will contribute to the annual DSM targets identified in the IRP. OCS further recommends that the Company be required to provide regular updates to the DSM Steering Committee on the status of Class 2 DSM actually achieved and expected to be achieved, as it relates to the acquisition targets in the IRP.

PacifiCorp appreciates OCS's support of on-going acquisition of DSM resources in Utah. In 2012, Utah achievements were approximately 98% of the target. When assessed in combination with prior year's results, where the targets were exceeded, PacifiCorp is not concerned that the DSM targets identified in the IRP Preferred Portfolio can be achieved on a cumulative basis over the planning period. Currently, PacifiCorp provides a forecast of energy savings from new or expanded Class 2 DSM program(s). Consistent with state-level annual targets in megawatt-hours reported in the 2013 IRP, PacifiCorp proposes that energy savings contributions from the new program be compared at the time of initial filing on an energy basis instead of a capacity basis.[14] Annual energy (and capacity) achievements from all Class 2 DSM programs are provided in the Energy Efficiency and Peak Reduction Report currently filed with the Commission. PacifiCorp believes this existing reporting content and schedule, which has been approved by the Commission, is sufficient to meet the information needs of the DSM Steering Committee.

Front Office Transactions

OCS notes that PacifiCorp's Preferred Portfolio shows reliance on front office transactions (FOTs). Based upon review of the Western Electricity Coordinating Council (WECC) 2012 Power Supply Assessment, OCS concludes, consistent with PacifiCorp, that there is both adequate market depth and liquidity to maintain positive regional reserve margins for several years. OCS also comments that regional power supply should be closely monitored, stating it is not clear what contingency plans PacifiCorp has in place if market conditions quickly change in certain sub-regions resulting in upward pressure on prices. OCS recommends that the Commission require PacifiCorp to provide a contingency plan for the IRP's heavy reliance on

[13] Report and Order in Docket No. 12-035-97 (Re-Issued), p. 6 (March 19, 2013).
[14] PacifiCorp 2013 IRP, Volume I, Chapter 8, Table 8.9, p. 232.

FOTs in the 2013 IRP Update and to address the contingency plan more fully in the next IRP cycle.

In response, PacifiCorp notes that FOTs provide system capacity and "compete" with other resource alternatives, including a broad range of generating assets and DSM resources, during the portfolio development process. During this process, portfolios are developed among a wide range of input assumptions, including scenarios for both lower and higher forward electricity prices, and consequently, lower and higher costs for FOTs. As portfolios are developed among these scenarios, the relative cost among all resource alternatives (FOTs, generating assets, and DSM) are factored into developing the least cost portfolio consistent with the specific assumptions used to define a core case. These portfolios are then further analyzed for stochastic risk, allowing PacifiCorp to compare the distribution of portfolio costs, using a consistent set of input assumptions, when they are subjected to volatility in market prices, load, and unit availability. It is this very process that is used to select a Preferred Portfolio in a manner that is consistent with the Commission's IRP Standards and Guidelines.

PacifiCorp further emphasizes that the level of FOTs within the least cost Preferred Portfolio were selected having considered the potential for both lower and higher prices, and having considered price volatility. Based upon the evolution of market and system conditions (i.e. changes to load or market supply) over time, the Company would pursue contingency plans that might include acquiring more DSM, accelerating acquisition of new or existing generating assets, and/or contracting for physical supply to maintain reliable and cost-effective service for its customers. Through its existing planning processes, PacifiCorp is constantly re-evaluating its resource plans with the most current information available. Finally, PacifiCorp notes that it manages price risk for its entire portfolio, inclusive of FOTs, through hedging. PacifiCorp refers OCS and the Commission to Chapter 9 in Volume I of PacifiCorp's 2013 IRP, which contains a detailed discussion on hedging.

Loss of Load Probability Study

OCS comments on PacifiCorp's loss of load probability study (LOLP Study), and questions the use of a single year (2014). OCS states that reserve sharing from the Northwest Power Pool (NWPP) increases the "actual" reserve margin; however, OCS explains that additional reserve requirements needed to meet variability in wind generation were not included in the LOLP Study. Nonetheless, OCS concludes that the 13% planning reserve margin is acceptable for this IRP. OCS recommends the Commission require PacifiCorp in its next IRP to explicitly identify the impact of NWPP reserve sharing and wind integration requirements on the planning reserve margin.

Implementation of OCS' recommendation would require the Company to perform two separate LOLP analyses – one study that captures the NWPP reserve sharing implications on the planning reserve margin, and a second study that incrementally measures how wind integration requirements affect the planning reserve margin.[15] As recommended by OCS, the additional analysis could provide additional detail on the individual components that affect the planning

[15] The difference between each study could theoretically be used to isolate the impact of wind integration requirements in determining the planning reserve margin.

reserve margin, but it would not affect the aggregate planning reserve margin level. Consequently, PacifiCorp does not believe performing the analysis twice will add value to future IRPs because it will not ultimately affect the portfolio development process.

PacifiCorp further notes that it has not modeled wind *generation* levels as a stochastic variable in the Monte Carlo random sampling process in any of its IRP studies. Adding a stochastic variable in PaR is expected to significantly affect model performance (increased run times), and the Company is already pushing the model performance limitations with its current analytical framework. PacifiCorp further clarifies that stochastic wind generation is not analogous to capturing *operating reserves* required to manage uncertainty and variability in wind generation. PacifiCorp has consistently updated the LOLP Study as part of its IRP process, and will more clearly explain in future LOLP Study updates how operating reserves required to manage variability and uncertainty are factored into its analyses. However, PacifiCorp requests the Commission reject OCS's recommendation to explicitly identify the impact of wind integration requirements on planning reserve margin levels.

## 5. REPLY COMMENTS: UTAH ASSOCIATION OF ENERGY USERS

Conformance with Standards and Guidelines

UAE does not oppose Commission acknowledgment of the IRP as generally consistent with the Standards and Guidelines. UAE further requests that the Commission specify in its order that acknowledgement in no way suggests or implies any kind of approval or sanction for any future Gateway Transmission segment or for PacifiCorp's SBT.

PacifiCorp agrees with UAE's assessment that PacifiCorp's 2013 IRP is consistent with the Commission's Standards and Guidelines. PacifiCorp believes it is not necessary for the Commission to clarify in its order specific statements regarding Energy Gateway transmission or the SBT. The Commission's Procedural Issue 3 as identified in the Standards and Guidelines clearly states that prudence reviews occur during ratemaking proceedings. Nonetheless, as discussed in response to OCS comments above, and as noted by UAE, PacifiCorp reiterates that it has not used the 2013 IRP to support action items to construct Energy Gateway Segments beyond the Sigurd to Red Butte transmission project (Segment G), which is required to meet network load and system reliability requirements.[16]

Third Party Transmission Line Scenario

UAE notes that PacifiCorp included a third party transmission scenario (Case C19) that was removed during the pre-screening phase of the portfolio selection process. UAE does not agree with PacifiCorp's rationale for determining the third party transmission line (the Zephyr DC line) is not cost effective. UAE further notes that rate payers are impacted on a nominal basis, not on a levelized basis. UAE comments that third party transmission projects should be seriously considered in future IRPs and that PacifiCorp should be expected to respond to transmission open seasons and otherwise participate and express serious interest in transmission projects proposed by others.

[16] Report and Order in Docket No. 12-035-97 (Re-Issued), p. 6 (March 19, 2013).

As noted in PacifiCorp's screening process for the 2013 IRP, Case 19 was removed during the pre-screening stage of the portfolio screening process because the Zephyr DC project is not far enough along in the development process for it to be considered for the Preferred Portfolio. In addition, PacifiCorp identified in footnote 73, various other attributes of the project that limit potential benefits of the Zephyr DC alternative specific to the PacifiCorp transmission system. PacifiCorp further notes that the IRP process relies on the present value revenue requirement (PVRR) as the primary metric to compare portfolios containing resources having different lives and in-service dates.[17] In addition, PacifiCorp continues to evaluate participation in any third party transmission project as part of its transmission planning, and where viable, may participate in partnerships such as with the Boardman to Hemingway or Cascade Crossing transmission projects.

SBT/Sigurd-Red Butte

UAE notes that the Sigurd to Red Butte transmission project was justified primarily on a reliability basis and states that PacifiCorp used the SBT in an attempt to quantify potential benefits for the Sigurd to Red Butte transmission line. UAE strongly disagrees with any implication in the 2013 IRP that the Commission's approval of the Sigurd to Red-Butte project was influenced in any manner by the SBT estimate of benefits.

PacifiCorp agrees with UAE that the Sigurd to Red Butte transmission line is justified to meet network load and system reliability requirements. The SBT continues to be vetted and refined as part of PacifiCorp's commitment in Action Item 9a in PacifiCorp's 2013 IRP.

SBT Benefits

UAE recommends that, whenever possible, a range of benefits should be quantified for each category of claimed benefits.

PacifiCorp will consider UAE's and other stakeholder comments received through on-going SBT stakeholder workgroup consistent with Action Item 9a in PacifiCorp's 2013 IRP.

Planning Reserve Margin

UAE continues to disagree with the use of a 13% or higher planning reserve margin. UAE contends that a planning reserve margin is properly considered in evaluating the timing of resources, but is not a measure of actual or required system reserves. UAE states that a meaningful cost-risk analysis is critical if any given planning reserve margin may drive a premature acquisition date for new resources.

In response, PacifiCorp notes that it establishes its planning reserve margin consistent with its LOLP Study. PacifiCorp believes its LOLP Study is a meaningful cost-risk analysis that supports the 13% planning reserve margin used in the 2013 IRP.

[17] Please refer to Volume I, Chapter 7, p. 160 for discussion on modeling capital costs and addressing "end-effects".

## 6. REPLY COMMENTS: UTAH CLEAN ENERGY & SOUTHWEST ENERGY EFFICIENCY PROJECT

Portfolio Development: Supply-Side Resource Assumptions and Load Forecasting

UCE contends that PacifiCorp's costs for utility scale solar resources are significantly inflated, and that prices have continued to drop. UCE comments that it expected PacifiCorp to run sensitivity analysis for solar costs to determine at what price point solar would be selected by System Optimizer. UCE further states that the capacity value of renewable resources was underestimated in the 2013 IRP, and requests the Commission take notice of the record in Docket No. 12-035-100 as it relates to capacity valuation relevant to the discussion in this IRP docket. UCE also asserts that PacifiCorp used incorrect assumptions for the investment tax credit available to qualifying solar resources.

In its comments, UCE also describes PacifiCorp's load forecasting as being based solely on historic weather. UCE contends this approach is problematic based on climate science.

UCE recommends the Commission order PacifiCorp to change its action plan to:

- model updated cost and capacity values for solar and wind to inform the IRP Update;
- issue a request for information (RFI) immediately to obtain updated solar market information;
- work with the wind industry to get updated wind cost data;
- utilize that information in sensitivity analysis using System Optimizer to see if more accurate solar costs and capacity values change portfolio results, using the recently approved interim solar capacity values from Docket No. 12-035-100; and
- if solar cost data from the RFI will take too long to be incorporated into the IRP Update, alternative data could be utilized such as first or second quarter GTM research cost data.

UCE further recommends that PacifiCorp conduct a more focused study effort for the next IRP cycle to develop a better assessment of solar, wind, and geothermal costs.

UCE also recommends that PacifiCorp implement the following changes to its portfolio modeling in future IRPs and Updates:

- incorporate renewable resource price decline projections, based on experience curves;
- explicitly consider the impacts of an energy imbalance market in the variable resource integration (for all variable resources); and
- assume a REC price curve for the duration of the planning horizon based on REC price predictions and state RPS standards.

Finally, UCE recommends the Commission should consider adding weather considerations to the factors that "affect the consumption of electric services" in the Commissions Standards and Guidelines 4.a.ii.

With regard to utility scale solar costs, PacifiCorp first notes that solar costs are commonly reported in the industry based on the panel DC rating, influence by the intended use of the information. The costs for solar resources that the Company reports on the Supply Side Resource table are based on the AC rating delivered to the grid to allow straight-forward comparison to competing resource alternatives. For example, as reported in the Supply Side Resource table, the 50 MW solar PV project using single axis tracking has an estimated cost of $3.18 per watt (AC basis) with a DC/AC ratio of 1.34; on a DC rating basis, the cost would be $2.37 per watt. PacifiCorp also notes that it was responsive to stakeholder comments provided during the public input process, and adopted a solar cost curve showing real de-escalation of capital costs consistent with data from a Black & Veatch report prepared on behalf of the National Renewable Energy Laboratory (NREL). PacifiCorp believes its solar cost assumptions applied in the 2013 IRP are reasonable and it does not agree with UCE's recommendations to provide updated portfolio analysis in the 2013 IRP Update.[18] Nonetheless, PacifiCorp remains committed to updating its solar cost inputs for the 2015 IRP planning cycle as informed by the RFI consistent with Action Item 1d in PacifiCorp's 2013 IRP Action Plan. Moreover, as it does through the normal course of business, PacifiCorp will update its wind resource cost assumptions as it prepares for the 2015 IRP planning cycle.

PacifiCorp recognizes UCE would have liked to see additional sensitivity analysis to better understand where costs would need to be before solar resources are selected by System Optimizer. While it is PacifiCorp's goal to be responsive to all stakeholders and all requests, it is not often practical or possible to accommodate all requests. Unfortunately, PacifiCorp was unable to complete these additional sensitivity scenarios while concurrently completing the extensive core case and stochastic risk analysis modeling required as part of the 2013 IRP. PacifiCorp is exploring IRP process improvements and will work with UCE and other stakeholders to implement these improvements for the 2015 IRP planning cycle.

In response to UCE comments on renewable resource capacity values, PacifiCorp does not object to the Commission taking notice of the Report and Order in Docket No. 12-035-100. However, PacifiCorp clarifies that capacity contribution assumptions as applied in the IRP process are appropriate and not necessarily inconsistent with the Commission's findings in the Report and Order in Docket No. 12-035-100. When developing resource portfolios in the 2013 IRP, resource adequacy is measured by achieving a portfolio that meets the coincident system peak load inclusive of a 13% planning reserve margin. In effect, resource adequacy is measured at the time of peak load. Evaluating the capacity contribution of wind and solar resources during summer peak load hours aligns the peak contribution input assumption with this resource adequacy planning criteria. Once portfolios are developed in System Optimizer, they are analyzed in Monte Carlo production cost simulations, where the energy that is produced by wind and solar resources in the portfolio *among all hours* contributes to reducing energy not served (a measure of reliability) as load, hydro availability, and thermal unit availability stochastic variables are sampled. The energy not served results of the Monte Carlo production cost simulation are considered in determining the preferred portfolio, and in this way the contribution of wind and solar resources to reducing energy not served metrics, among all hours of the year, are factored in to the determination of the preferred portfolio.

[18] PacifiCorp's small utility scale solar costs applied in the 2013 IRP are reasonably aligned with bids PacifiCorp received in the 2013 Solar RFP seeking solar resources to meet the Oregon solar capacity mandate goal.

With regard to UCE's comments on the investment tax credit, PacifiCorp confirms that it assumed the 30% federal investment tax credit available currently available to qualifying solar resources expired effective December 31, 2016, as opposed to assuming a reduction in the investment tax credit level to 10%. Nonetheless, PacifiCorp notes that Sensitivity Cases S-05 and S-06, which assumed the federal investment tax credit was extended at the 30% level through 2019, did not include any incremental solar resources. Based on these results, PacifiCorp concludes that an investment tax credit at the 10% level beyond 2016 would not have affected selection of solar resources in the 2013 IRP Preferred Portfolio.

In response to UCE's recommendation that PacifiCorp explicitly consider the impacts of an energy imbalance market in the variable resource integration, the Company refers UCE to Action Item 1a in PacifiCorp's 2013 IRP Action Plan. This action item already states that the Company intends to consider the implications of an energy imbalance market in its next wind integration study.

PacifiCorp does not agree with UCE's recommendation to establish a twenty year REC price based on REC price "predictions". Considering that the REC market lacks transparency, PacifiCorp is concerned that publishing a REC price projection in the IRP could influence prices when the Company looks to sell or purchases RECs in the market. This could harm customers and would not be in the public interest. As was done in the 2013 IRP, the Company believes that it is reasonable for it to consider the upper limits of future REC prices in the context of state-specific RPS rules and current market conditions when evaluating compliance alternatives for any given state RPS program. Through its planning processes, PacifiCorp will continue to monitor REC prices and update its RPS compliance plans consistent with state RPS rules and consistent with changes in market conditions. Moreover, PacifiCorp notes that there is presently no framework to establish a REC price projection that would be consistent with other environmental policy, power price, natural gas price, $CO_2$ price, and resource cost assumptions specific for any given scenario used in the portfolio development process.

UCE suggests that the Company's peak forecast in the IRP is unreasonable because it does not take into consideration changing temperatures that may occur in the future. PacifiCorp has used the hottest year in the last twenty years to model its 1 in 20 peak forecast. Using the historical data set of last the twenty years is the best information the Company has on what may occur in the future, and the Company is not in a position to know what time period constitutes a trend with regard to weather. The fact that the Company used the 1 in 20 weather in each year of 20 year plan, and predicts a peak that is up to 450 MW above the base case peak forecast, reasonably captures the range of estimates for forecast load growth.

Portfolio Development: DSM Potential Study

UCE provided joint comments with SWEEP on PacifiCorp's DSM Potential Study. The joint comments state the following:

- PacifiCorp's achievable potential is too low and that other DSM potential studies show potential for higher levels of achievable savings.

- The DSM Potential Study did not consider emerging technologies and approaches.
- Residential and commercial energy efficiency opportunities were not appropriately captured.
- The DSM Potential Study did not evaluate the potential of alternative; more steeply inverted residential rate pricing scenarios in its assessment of Class 3 DSM opportunities.
- Class 4 DSM opportunities are ignored.
- PacifiCorp has not explained how the results of the DSM potential study were incorporated into the 2013 IRP.

UCE and SWEEP recommend the DSM Potential Study should include an alternative scenario that considers energy savings impact of:

- The interactive effects of building efficiency measures (reduced heating load in a building due to high efficiency lighting and daylighting, and improved building thermal envelope);
- How higher rebate incentive amounts can motivate additional participation and realize greater potential;
- More vigorous marketing and promotion of DSM programs;
- An adjustment factor to account for new/emerging technologies;
- Comprehensive Class 4 DSM programs for all residential and commercial customers; and
- Best practice utility regulation that could accelerate the amount and timing of Company investments in energy efficiency resources (for example, a decoupling scenario and a shareholder performance incentive scenario).

As a general matter, PacifiCorp believes the DSM Potential Study was an accurate and independent assessment of the available DSM opportunities that are sufficiently reliable and firm to include as inputs to the 2013 IRP. Reasons for change in this most current potential study as compared to the prior study are provided on page 87 of the report. PacifiCorp notes that direct comparisons with other potential studies should not be used to determine the sufficiency of the Company's study since territory specific differences in housing stock, industry mix, prior program activities, baselines and unit energy savings assumptions can vary considerably. The Company believes the assessment and screening of emerging technology in the DSM Potential Study was appropriate given the need for feasible and reliable resources to include as IRP inputs.

PacifiCorp recognizes that, by definition, the emerging technology market is changing and will include an updated review in its next study. Contrary to the joint comments from UCE and SWEEP, the DSM Potential Study *does* include energy efficiency resources that may be available from implementing energy management activities at business customer sites. While the current study does not include opportunities from Home Energy reports, information specific to these opportunities will be included in the next study. In summary, potential assessments are an identification of the magnitude and type of DSM opportunities that are available in a specific territory over the planning horizon. The DSM Potential Study assessment was completed by an experienced independent consultant routinely engaged in preparing these studies across the nation. The nature of the findings from the DSM Potential Study are aligned with the need for providing resources that are sufficiently firm and reliable as input for selection within the IRP modeling process.

In response to the joint comments on Class 3 DSM, PacifiCorp notes that available market data did not indicate there was additional opportunity beyond that already captured in the existing inverted block rates. Future potential studies will continue to review and incorporate, if appropriate, updated information on the potential from more steeply inverted rates for residential customers.

With regard to explaining how the DSM Potential Study was incorporated into the IRP, PacifiCorp references Volume I, Chapter 6 (pp. 140-150). This section describes how the DSM resources identified in the potential study were provided as inputs in the 2013 IRP modeling process. This description also includes identification and amounts of the cost credits afforded to the Class 2 DSM resources. After the IRP selects the preferred portfolio, the DSM selections are reviewed and used to inform PacifiCorp of any cases where measures are selected but not included in current programs. If such cases exist, programs are modified or added to insure delivery capability exists for new measures selected within the planning period.

The joint comments from UCE and SWEEP state that alternative scenarios should consider the impact of best practice utility regulation. The Company will consider the recommendations, with one exception, when conducting the next potential assessment. PacifiCorp believes the DSM Potential Study should focus on the technical and market-based components, and that any change in the utility regulations be researched and addressed in a more appropriate venue such as a DSM advisory group or Commission proceedings. PacifiCorp does not support the recommendation to include any element of changes in utility regulation for DSM acquisition in the future potential studies.

Stochastic Risk Analysis: Stochastic Variables and Climate Change

UCE comments that electricity cooling loads are expected to increase as global temperatures continue to rise and that PacifiCorp should anticipate that extreme weather events, such as long-lasting heat waves, will increase. UCE contends that by not assessing long-run load volatility in its stochastic risk analysis, PacifiCorp is not testing the resiliency of specific resource portfolios to longer term risk factors related to load changes associated with increasing temperatures. Similarly UCE states that PacifiCorp should consider how climate change might impact hydro generation levels and thermal plant operations. UCE recommends the following:

- Long-run load volatility should be factored into PacifiCorp's stochastic analysis.
- Stochastic modeling must consider future climate impacts on load, hydro availability, and thermal outages.
- Further investigation into specific vulnerabilities of PacifiCorp's system to climate impacts.
- Load forecasting should consider gradual changes and also lower probability, higher warming scenarios with potentially more severe impacts.

PacifiCorp removed long-run load volatility from its Monte Carlo stochastic modeling in the 2011 IRP and continued with this model structure for the 2013 IRP. Long-run volatility does not revert to a mean, and consequently, long-run load volatility leads to increasingly higher load excursions over time. Over the long-run, fundamental drivers to changes in load include technology, demographics, fuel switching, and economic growth. Shifts in long-term load growth would be addressed through the normal course of planning activities. PacifiCorp routinely revisits its resource needs consistent with projected changes in its load and resource balance. Considering that PaR does not add or remove resources from a portfolio, PacifiCorp would have many opportunities to modify its resource procurement activities over time in response to fundamental changes in load growth expectations. It is simply not reasonable to assume a long-term resource strategy would be "locked down" and would remain unchanged as market and system conditions evolve over time. For this reason, PacifiCorp believes that including a long-run load volatility parameter in stochastic modeling adds little value when comparing the costs and risks among different portfolios. Absent the ability to add incremental resources to a portfolio, these simulations simply show, among all portfolios, increasing levels of energy not served over time. The most appropriate means to study long-run load risk is through load forecast scenario analysis. PacifiCorp analyzed alternative load growth scenarios in sensitivities completed for the 2013 IRP.

In response to UCE's comments on capturing climate change impacts in IRP modeling, PacifiCorp notes that its current modeling framework includes Monte Carlo random sampling of both hydro and thermal unit availability. Moreover, PacifiCorp recognizes that there are many uncertainties that could be studied in long-term planning efforts. Some uncertainties are best captured through stochastic risk analysis (market price volatility, short-run load volatility, and unit availability), while others are more appropriately analyzed through scenario analysis (policy, technology shifts, etc.). PacifiCorp's IRP process captures a broad range of both stochastic and scenario risks and these analyses are factored into selection of a Preferred Portfolio and Action Plan. PacifiCorp further recognizes that it must be resilient and adapt to emerging risks as it continuously updates its long-term plans.

At present, there is tremendous uncertainty around how climate change might specifically impact PacifiCorp's system and an equal level of uncertainty around how climate change scenarios might be best analyzed in the context of an IRP. In fact, the U.S. Department of Energy report (DOE Report) referenced by UCE cites the need for improved data and models. In addition to the uncertain impacts on hydro and thermal unit availability, the DOE Report also identifies potential implications for variation in wind patterns with uncertain impacts on wind resource potential and potential for reduction in solar generation capacity. As concrete data and improved modeling capabilities are developed that allow for a holistic assessment of how climate change might influence a broad range of input assumptions, PacifiCorp will work with its stakeholders to evaluate these impacts in future IRPs.

<u>Stochastic Risk Analysis: Carbon Emissions Pricing</u>

UCE believes that a proposed rule from U.S. EPA expected in June 2014 to regulate carbon emissions from existing coal plants indicates the timing and costs for carbon regulation will be much faster and higher than was considered in PacifiCorp's base case. UCE also characterizes

PacifiCorp's approach to capturing $CO_2$ emission costs in the forward price curve as problematic in that it does not provide a clear indication of the Company's vulnerability to carbon prices and ignores real emissions associated with various portfolios. UCE recommends the following:

- Carbon prices should not be co-mingled with natural gas and electricity prices. Further, emissions and potential costs of carbon associated with FOTs should be analyzed and reported separately.
- The Company should attribute an emissions rate to FOTs to include in its comparison of resource portfolio emissions levels.

PacifiCorp has reviewed the Presidential Memorandum issued June 25, 2013, in which President Obama directed the EPA to complete greenhouse gas (GHG) standards for both new and existing power plants. With regard to existing sources, EPA was directed to issue "standards, regulations, or guidelines, as appropriate" that address GHG emissions from modified, reconstructed, and existing power plants.[19] PacifiCorp notes that the Presidential Memorandum did not explicitly set forth regulations for existing coal plants. The proposed standards, regulations, or guidelines are to be issued by June 1, 2014, finalized by June 1, 2015, with implementing regulations and state implementation plans required by June 30, 2016. Following submission of state implementation plans, EPA review of the state implementation plans would commence. Accordingly, if EPA follows the President's aggressive schedule, the effective compliance dates for these standards, regulations, or guidelines are likely a number of years into the future. The June 25, 2013 Presidential Memorandum did not include detail with respect to how EPA will approach $CO_2$ regulation or what the resulting standards, regulations, or guidelines will ultimately entail.

Considering the foregoing, and contrary to the comments from UCE, the $CO_2$ assumptions applied in the 2013 IRP remain reasonable. The IRP assumptions already represent a wide range of policy mechanisms that might be used to regulate $CO_2$ emissions in the power sector at some point in the future. This approach was taken because, as yet, there are a wide range of potential future policy tools that may be employed to regulate $CO_2$ emissions. Because the June 25, 2013 Presidential Memorandum does not direct a particular type of regulatory approach, it does not make one particular approach more or less likely and therefore does not change the IRP assumptions already applied in this regard. Similarly, because there is no detail on which to base an analysis, it does not make a particular $CO_2$ price forecast used in the IRP more or less reasonable.

In addition, it is important to note that the IRP assumptions and analyses were completed well before June 25, 2013. Given the timeline set forth in the Presidential Memorandum, the Company will have multiple opportunities to update its $CO_2$ price assumptions prior to and after the issuance of proposed regulations in June 2014.[20] As assumptions are developed for the 2015 IRP, the Company will re-evaluate current market conditions and policy developments along

[19] Presidential Memorandum – Power Sector Carbon Pollution Standards, June 25, 2013.
[20] Review of current third party $CO_2$ price forecasts reviewed by PacifiCorp shows that despite issuance of the Presidential Memorandum, these forecasters have not materially altered either their assumed $CO_2$ start date or price level.

with current forecasts from external sources in establishing updates, if any, to $CO_2$ price assumptions.

UCE further claims that PacifiCorp's treatment of $CO_2$ costs, which are incorporated into the forward price curve and included as part of the cost for FOTs, is problematic. PacifiCorp disagrees. As explained in PacifiCorp's response to UCE data requests on this topic, PacifiCorp incorporates the cost of $CO_2$ price assumptions into its forward price curve by including the price for $CO_2$ as a dispatch cost for fossil fuel generation resources.[21] Removing the cost of $CO_2$, which can be thought of as fuel cost adder for a fossil-fired generating resource, would inappropriately distort unit dispatch, and consequently, distort both forward price curve assumptions and portfolio costs used in the portfolio selection process. PacifiCorp's approach to modeling $CO_2$ price assumptions allows for a consistent set of input assumptions for any given scenario, is consistent with industry best practices and is aligned with basic supply and demand fundamentals. For these reasons, PacifiCorp does not support UCE's recommendation to separately analyze and report the cost of carbon associated with FOTs. Similarly, PacifiCorp does not support UCE's recommendation to attribute an emission rate to FOTs.

<u>Preferred Portfolio Selection</u>

UCE states that emphasis on the stochastic mean PVRR over a risk-adjusted PVRR metric biases risk analysis to portfolios based on less costly futures, such as futures with fewer environmental regulations or internalized costs. UCE comments that a more meaningful risk analysis would come from focusing on the risk-adjusted mean PVRR. UCE recommends that in addition to comparing carbon emissions and projected regulatory costs of different portfolios (including emissions associated with FOTs), the Company apply a social cost of carbon and compare differences in PVRR among portfolios with additional social costs per emissions level so that regulators and stakeholders can get a sense of the external, social costs associated with different resource plans.

PacifiCorp interprets UCE's comments related to the stochastic mean and risk-adjusted PVRR to imply that the Company relies on the stochastic mean to inform its selection of a Preferred Portfolio. In response, PacifiCorp clarifies that it does not solely rely on the stochastic mean when evaluating cost and risk differences among resource portfolios. PacifiCorp walks through its portfolio selection process in Volume I, Chapter 8 of the 2013 IRP. In short, PacifiCorp performed both pre-screening and initial screening analysis using scatter plots of both expected and upper tail PVRR metrics. In its final screening process, PacifiCorp ranks portfolios using a risk-adjusted PVRR metric and further considers other metrics consistent with the Commission's Standards and Guidelines to select the lowest cost portfolio that is in the long-run public interest.[22]

As it pertains to the social cost of carbon, PacifiCorp believes that incorporating costs associated with projects to maintain compliance with environmental regulations, both known and potential,

[21] Please refer to PacifiCorp's response to UCE data requests 3.3 and 3.6, provided as an attachment to UCE's written comments in this docket.
[22] In addition to the risk-adjusted PVRR, PacifiCorp evaluates $CO_2$ emissions, energy not served metrics, and resource diversity in the final stages of its portfolio selection process.

established by the EPA and other governing agencies prudently and appropriately addresses the social benefits of that regulation. PacifiCorp notes that the EPA and other governing agencies are specifically tasked with addressing both costs and benefits when developing new regulations as part of their regulatory oversight obligation to establish appropriate emissions control requirements for the power generation industry. PacifiCorp has captured a broad range of potential $CO_2$ price scenarios in the 2013 IRP, and has incorporated the appropriate compliance costs into its IRP modeling effort. PacifiCorp believes these considerations are captured by the appropriate regulatory authority when new regulations are developed and UCE's recommendation is not appropriate in IRP modeling.

Deterministic Risk Analysis

UCE explains that the Company did not complete a deterministic risk analysis to test how the preferred portfolio performed assuming different futures. UCE recommends that the IRP must contain uncertainty analysis to facilitate selection of a Preferred Portfolio and to facilitate a more meaningful acquisition path analysis.

In response, PacifiCorp refers to its reply comments to DPU, as provided above, related to the Company's decision to not perform a deterministic risk analysis specifically for the 2013 IRP.

Distributed Solar Analysis

UCE notes that the amount of distributed solar in the IRP is similar to the market potential included in the DSM Potential Study. UCE believes the market potential for solar PV in Utah is low as compared to technical potential for solar PV in Utah and for the entire PacifiCorp territory. UCE reiterates its position that the assumed costs for solar resources are too high. UCE recommends the following:

- The Company re-analyze the market potential for distributed solar, given today's solar costs and installation trends.
- Update the distributed solar PV costs to reflect current costs and projected cost trends.
- Use the updated solar PV market potential and solar PV costs in the IRP Update Analysis.
- Update the solar PV market potential and solar PV costs prior to the 2015 IRP.

In creating the 2013 IRP, PacifiCorp used inputs for the market potential and the solar PV costs provided by the Cadmus Group, and independent consultant. The reports used to create these inputs were reviewed by stakeholders, and stakeholder input was used to test and refine the Cadmus assumptions. While admittedly consensus on these assumptions was never achieved, PacifiCorp believes that the numbers provided were rational estimates of both the market potential and solar PV costs based on the best information available.

The Company acknowledges that the environment impacting distributed solar PV is rapidly transforming. However, PacifiCorp sees limited value in conducting new studies in time for the IRP update. The Company believes that it would be better to allow additional time before conducting a more comprehensive evaluation. This time will allow for the results from recently initiated, existing programs, like the Utah Solar Incentive Program, to be more thoroughly evaluated. Also recently initiated regulatory proceedings at the Oregon Public Utility Commission and Washington Utility and Transportation Commission will be concluding prior to the 2015 IRP and can be used to inform any potential updates to studies. Additional time will also provide a more thorough understanding of recent trends in solar PV pricing. At this point it is unclear if recent observations are a sustainable trend or a market aberration based on oversupply that will moderate over time.

Acquisition Path Analysis

UCE comments that PacifiCorp's acquisition path analysis does not include a discussion of attendant costs and who bears the risk of having to pursue different acquisition paths. UCE recommends that the acquisition path analysis include a discussion of attendant costs and who bears the risks associated with having to pursue different acquisition paths.

Consistent with the Commission's Standards and Guidelines 4.f, PacifiCorp includes an acquisition path analysis that is informed by modeling completed in the 2013 IRP.[23] Similarly, and consistent with the Commission's Standards and Guidelines 4.h, PacifiCorp identifies how risks are distributed between ratepayers and shareholders, and breaks this discussion into different classes of risk, including scenario risk.[24] Moreover, PacifiCorp's acquisition path analysis is based upon core cases developed for the 2013 IRP, and both cost and risk metrics are reported for each of these cases.[25] PacifiCorp believes that it is meeting the Commission's Standards and Guidelines and is already addressing this recommendation proposed by UCE.

Coal Investment Analysis

UCE appreciates improvements the Company has made in its evaluation of coal investments; however, it states that regulators should not rely on the analysis to evaluate prudence. UCE states that the Company was unresponsive to stakeholder input, and references comments that it submitted with other stakeholders related to assumptions on regional haze requirements. UCE recommends the following:

- In the IRP Update, the Company should evaluate all future potential environmental compliance obligations for coal plants simultaneously, including more stringent environmental controls and carbon costs.
- The Company's coal investment analysis should look at benefits of reduced emissions (all emissions, including carbon) in its coal investment calculus.

PacifiCorp notes that the Commission's IRP Standards and Guidelines, specifically Procedural Issue 3, clearly state that prudence reviews are not made during IRP proceedings. Further, PacifiCorp disagrees with UCE's assertion that the Company was not responsive to stakeholder requests. PacifiCorp worked with its broad stakeholder group to define core case definitions over the course of four public input meetings held between June 20, 2012 and September 14,

[23] Please refer to PacifiCorp's 2013 IRP, Volume I, Chapter 9, pp. 264 – 268.
[24] Please refer to PacifiCorp's 2013 IRP, Volume I, Chapter 9, pp. 281 – 282.
[25] Please refer to PacifiCorp's 2013 IRP, Volume II, Appendix L.

2012. Throughout this process, PacifiCorp received, reviewed and responded to stakeholder recommendations. PacifiCorp maintained a Portfolio Development Log, summarizing all of the stakeholder comments and documenting the Company's response and proposed resolution for each comment. This Portfolio Development Log was reviewed with stakeholders at the September 14, 2012 public input meeting attended by UCE.[26] Within the Portfolio Development Log, PacifiCorp explicitly addresses comments from UCE and others related to regional haze and other environmental policy assumption recommendations.

The Company's response to UCE and other stakeholder recommendations related to regional haze assumptions notes that it viewed then-current EPA federal implementation plan (FIP) outcomes as being highly contested, and did not consider it reasonable to apply such assumptions to its base case. Nonetheless, PacifiCorp noted in its reply that it would (and ultimately did) evaluate more stringent regional haze assumptions patterned after then current proposed EPA FIP outcomes. The stringent regional haze assumptions were applied to Core Cases C-8 through C-13.

PacifiCorp notes that EPA issued a re-proposed FIP for Wyoming on May 23, 2013 (after the 2013 IRP was filed).[27] As it pertains to PacifiCorp assets, EPA's re-proposed FIP, does not alter the requirements or timing for selective catalytic reduction (SCR) on any of the Jim Bridger Units, and consequently, does not affect Action Item 8c in PacifiCorp's 2013 IRP Action Plan.

EPA's re-proposed FIP includes requirements for SCR at Naughton Units 1 and 2 and at Dave Johnston Unit 3 by the end of December 2018. These controls were not included in the Wyoming state implementation plan (SIP), nor were they required in EPA's original FIP for Wyoming, which was used to establish inputs for the stringent regional haze assumptions used in the 2013 IRP.

PacifiCorp notes that it is not seeking acknowledgement of SCR investments at Naughton Unit 1, Naughton Unit 2, or Dave Johnston Unit 3 in its 2013 IRP. Considering that EPA has not yet made a final action on its re-proposed FIP for Wyoming, which is required by November 21, 2013, it remains uncertain whether these specific investments will be required. PacifiCorp will continue to evaluate, pending future actions by EPA, how it will meet its compliance obligations in the best interest of its customers during the 2015 IRP planning cycle and in future IRPs.

In response to UCE's comments on evaluating benefits from reduced emissions in its coal investment analysis, PacifiCorp refers to its response to UCE's comments on preferred portfolio selection.

<u>Periods of Resource Sufficiency and Deficiency</u>

UCE comments that definitions of resource sufficiency and deficiency used for avoided cost calculations may not be in the best interest of ratepayers. UCE recommends the Commission

[26] The Portfolio Development Log is posted on PacifiCorp's IRP website: http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Integrated_Resource_Plan/2013IRP/2013IRP_PortfolioDevelopmentLog_09-14-12.pdf

[27] PacifiCorp filed written comments with EPA on its re-proposed FIP on August 26, 2013.

open a docket to investigate changing the definitions of periods of resource sufficiency and deficiency to include consideration of the Company and ratepayer's reliance on FOTs and the market.

PacifiCorp disagrees with UCE's recommendation. Periods of resource sufficiency and deficiency are established in avoided cost dockets. The Company believes the Commission has already ruled on this issue in its Report and Order in Docket No. 12-035-100.

## 7. REPLY COMMENTS: WESTERN RESOURCE ADVOCATES

$CO_2$ Price Forecasts and Coal Plant Retirement Analysis

WRA contends that $CO_2$ price forecasts used in the IRP are inconsistent with earlier projections and do not account for the recent developments with respect to timing. WRA references President Obama's directive to EPA to complete carbon pollution regulations for the electricity industry no later than June 1, 2015, for existing plants, making implementation by 2017 likely. WRA recommends the Company update the analysis it undertook to support its application to install SCR at Bridger with current information and file this information with the Commission no later than early November.

In response, PacifiCorp refers to its response to UCE's comments on carbon emission pricing under the heading of stochastic risk analysis. PacifiCorp further states that the June 25, 2013 Presidential Memorandum does not provide new information that in any way invalidates the financial analysis used by the Company in Docket No. 12-035-92 and in the Company's Confidential Volume III as filed in this IRP docket.

Stochastic Modeling and the Hedging Value of Renewable Resources

WRA states that, "[b]eginning with the 2011 IRP, PacifiCorp changed the way it models the stochastic risk of loads and thermal generation, which have measures of the risk of adding fossil fuel generation and underestimating load growth, and thereby for the hedging value of renewable resources." WRA claims that the Company did not discuss these changes with stakeholders as part of the 2013 IRP public input process. WRA recommends the Company be required to conduct a stochastic modeling workshop wherein these issues can be fully vetted, and recommends the workshop be conducted prior to the initiation of the next biennial cycle.

In response, PacifiCorp refers to its response to UCE's comments on stochastic variables under the heading of stochastic risk analysis. Further, PacifiCorp notes that it addressed WRA's comments on the topic of stochastic thermal outage risk in response to Utah party comments in the 2011 IRP (Docket No. 11-2035-01). In those comments, PacifiCorp referenced its response to a WRA data request clarifying that it *does* apply stochastic outage modeling for existing thermal plants.[28] As it pertains to the 2013 IRP, PacifiCorp continues to stochastically model thermal outages for its existing thermal assets.

[28] WRA Data Request 1.4, Docket No. 11-2035-01.

2013 Action Plan

WRA reviews changes in resource portfolios and business plans dating back to 2009.

Consistent with the Commission's Standards and Guidelines, PacifiCorp replies by noting that it routinely updates its IRP and business plan consistent with the most current information available.[29]

## 8. REPLY COMMENTS: INTERWEST ENERGY ALLIANCE

Environmental Investments in Coal Resources

IEA states that stakeholders requested PacifiCorp model additional potential investments or retirements early in the IRP public process, suggests that portfolios including transitions from fossil fuels to larger penetrations of wind and solar resources were eliminated, and recommends that PacifiCorp be required to review and update its modeling prior to the Spring of 2014, when there will be additional confirmation of revised EPA rules applicable to coal plants providing electricity to ratepayers in Utah. IEA claims that absent revision, the IRP could potentially drive imprudent investments. IEA further states that PacifiCorp should be required to revert to the highest ranking portfolio, EG2-C15.

With regard to IEA comments on stakeholder requests for modeling potential investments or retirements early in the IRP process and its recommendation to update its modeling in the spring of 2014, PacifiCorp refers to its response to UCE's comments on coal investment analysis.

PacifiCorp further notes that it developed numerous portfolios where a large portion of PacifiCorp's coal fleet retires or is converted to burn natural gas by the end of the 20-year planning horizon. In the 2013 IRP, 94 different core resource portfolios were developed among five different Energy Gateway transmission scenarios. Of these 94 resource portfolios, 25 showed more than 4,000 megawatts of coal either retiring or converting to burn natural gas by 2032. Ultimately, PacifiCorp did not select these resource portfolios as its preferred portfolio. IEA states that these portfolios were eliminated but fails to mention that they were not chosen as the preferred portfolio in the 2013 IRP because the modeling showed these portfolios to have higher costs and higher risk as compared to the alternatives.

IEA's claim that, absent revision, the IRP will potentially drive imprudent investments is simply not factual. The IRP is a useful planning tool that provides the foundation for actions the Company will take to meet the needs of its customers into the future. However, when PacifiCorp makes investment decisions, it relies upon the most current information and analysis available at the time the decision is being made.

With regard to IEA comments on Case EG2-C15, PacifiCorp refers to its response to DPU's comments on this core case.

[29] Please see the Commission's IRP Standards and Guidelines, specifically Procedural Issue 9 and Guideline 2.

Lack of Renewables Increases Cost and Risk

IEA notes that the Company's Preferred Portfolio relies on firm market purchases and misses opportunities for investment in low cost clean energy. IEA comments that firm market purchases are shielded from other cost and risk analysis, including carbon costs, price volatility, water availability and water quality concerns and other public policies. IEA states that wind offers a unique competitive advantage over natural gas due to the stable or fixed long term prices available from wind and the lack of long term fixed prices available for natural gas. Consequently, IEA requests the Commission require the Company to incorporate wind energy acquisition as an integral part of its hedging strategies.

PacifiCorp does not agree that its Preferred Portfolio misses opportunities for investment in low cost clean energy. The Company's Preferred Portfolio, which includes firm forward market purchases, or FOTs, is the least cost least risk alternative among the wide range of portfolios studied in the 2013 IRP. IEA's claim that these market products are shielded from public policy considerations such as carbon costs and price volatility is not correct, nor is it consistent with how PacifiCorp analyzes these resources in the IRP modeling process. PacifiCorp references the Company's response to UCE's comments on carbon emissions pricing. The price for market purchases is tied to the cost of producing power in a given market region. For example, fuel costs are a key driver to the cost of producing power, and as fuel costs rise, the prevailing market price for power rises. Similarly, should generators face $CO_2$ emission costs, the prevailing market price for power would increase. In this way, the market price for firm forward purchases is dynamic and subject to fluctuation with changing market conditions.

There are numerous benefits and costs associated with wind resources in PacifiCorp's portfolio. Wind resources provide fuel diversification benefits and produce emissions-free energy and these benefits are captured in the IRP modeling process. Taking these benefits into consideration, PacifiCorp's analytical framework evaluates how wind resource alternatives compare to the overall cost and risk of other resource alternatives when developing and analyzing the cost and risks of any given resource portfolio. Any requirement to include a specific resource such as wind in developing a hedging strategy would remove from consideration the comparative cost and risk among a broad range of resource alternatives, is counter to the planning principals used in the IRP, and would not be in the public interest.

Washington RPS

IEA claims that PacifiCorp arbitrarily removed wind resources prior to 2020 in favor of unbundled RECs to comply with the Washington RPS. IEA claims this decision is not supported by least-cost, least-risk analysis. IEA recommends the Commission require the Company to fully justify this change in compliance strategy prior to acknowledgement.

In response, PacifiCorp refers to its response to DPU's comments on Washington state RPS compliance.

Capacity Value Study for Renewables

IEA requests the Commission require PacifiCorp to improve its wind load carrying capacity analysis prior to acknowledgement of the IRP. IEA states that PacifiCorp should be required to perform a new capacity contribution analysis and be required to adopt the capacity contribution levels approved by the Commission in Docket No. 12-035-100.

In response, PacifiCorp refers to its response to UCE's comments on renewable resource capacity values.

Wind Integration

Prior to acknowledging the IRP or recovery of fuel costs from ratepayers, IEA recommends that the Commission consider requiring PacifiCorp to adopt improved forecasting methods. IEA further states that PacifiCorp be required to provide a study of the costs and benefits of increased geographic diversity brought by an energy imbalance market (EIM) and expanded wind development in the Western Renewable Energy Zones.

With respect to forecasting methods, PacifiCorp's power production forecasting consists of a service provided by a forecasting vendor, GL Garrad Hassan. The service consists of 15 minute generation forecasts for each of PacifiCorp-owned wind facilities and those wind facilities for which PacifiCorp has entered into a power purchase agreement. Third-party wind data is incorporated into the forecasting process administered by GL Garrad Hassan. GL Garrad Hassan receives site level generation data for a limited number of third-party wind generation facilities. With this data, GL Garrad Hassan produces a forecast which is used by the PacifiCorp Generation Desk to help balance the system. This forecast is updated every 15 minutes and extends out 168 hours. PacifiCorp's use of this forecasting service facilitates optimal use of PacifiCorp's assets and the Company will continue to use GL Garrad Hassan's forecast in the future.

Regarding IEA's comments on geographic diversity, implementation of an EIM will enable PacifiCorp to better utilize its resources and resources in the market to more effectively manage the variability and uncertainty associated with variable energy resources. Implementation of an EIM does not change PacifiCorp's ability to access wind resources across its service territory. As is the case for any IRP, PacifiCorp will incorporate into its planning process any changes in the market place that might influence its IRP and associated action plan. IEA's recommendation that the Commission require the Company to perform a cost and benefit study on geographic diversity is not necessary.

Acknowledgement

IEA recommends that, "[t]he Commission should refuse acknowledgement of the IRP and Action Plan due to the excessive, high- risk coal plant investments and renewable energy capacity contribution analysis. IEA further concludes that, "[t]he Commission could require the Company to minimize integration costs, and engage in additional planning and studies as suggested herein as a pre-condition to a) net power cost recovery; b) retention of REC revenues;

and c) imposition of integration costs in a variety of proceedings including rate cases, if these studies revealed additional consumer savings which the Company missed due to ineffective or incomplete integrated resource planning."

PacifiCorp disagrees with IEA's acknowledgement recommendation noting that it does not specify how PacifiCorp failed to reasonably adhere to the Commission's IRP Standards and Guidelines. PacifiCorp further states that IEAs conclusions related establishing pre-conditions to rate recovery are beyond the scope of the IRP.

## 9. REPLY COMMENTS: HEAL UTAH

Wyoming Coal Units

HEAL Utah states that the 2013 IRP did not take into account near-term Wyoming coal unit retirements. HEAL Utah suggests the Commission require a unit-by-unit retirement and/or conversion analysis for each coal power plant that identifies the monetary value at which continued operation of the coal unit becomes uneconomic. HEAL Utah further suggests this analysis be made public.

In response, PacifiCorp refers to its response to UCE's comments on coal investment analysis. PacifiCorp further notes that unit specific coal investments required to meet known and prospective compliance obligations across the Company's coal fleet were factored into the development of all portfolios in the portfolio development process. As such, potential alternatives to environmental investments were evaluated in 94 core cases and in each sensitivity case produced during the 2013 IRP. Moreover, PacifiCorp included Confidential Volume III in its 2013 IRP, which reports the PVRR differential for near-term environmental investment decisions required for specific generating assets.

PacifiCorp does not agree with HEAL Utah's suggestion that detailed financial analysis of specific environmental investments should be made public. Release of this data on a non-confidential basis could impact pricing for environmental control equipment and would not be in the interest of customers or in the public interest.

Renewable Resources

HEAL Utah believes renewable resources are undervalued, citing low capacity values assumed in the 2013 IRP. HEAL Utah further expresses disappointment that the Company is not planning for new renewable resources until 2024.

In response, PacifiCorp refers to its response to UCE's comments on renewable resource capacity values. PacifiCorp further states that the Preferred Portfolio was selected as the lowest cost portfolio in a manner consistent with the long-run public interest. Moreover, the Company notes that its selection process was supported by extensive modeling completed in support of the 2013 IRP.

Cost of Solar

HEAL Utah believes solar PV costs assumed in the 2013 IRP were likely overstated by as much as 30%.

In response, PacifiCorp refers to its response to UCE's comments on solar resource costs.

RFP for Wind Resources

Citing the possibility of near-term coal unit retirements in Wyoming, HEAL Utah believes it would be reasonable to anticipate the need for new near-term wind capacity. HEAL Utah had hoped PacifiCorp would issue an RFP for new wind resources this year, noting expiration of the federal production tax credit at the end of 2013.

PacifiCorp has not and is not proposing to issue a RFP for a renewable resource. First, wind resources included in the 2013 IRP preferred portfolio are necessary to meet future RPS obligations. Absent these RPS requirements, the 2013 IRP modeling shows wind resource additions would not be necessary when accounting for both cost and risk. Second, if the Company were to issue an RFP prior to acknowledgement of the 2013 IRP, it would take a minimum of 12 months to conduct and complete the RFP process. Even though the Company does not have an RFP for renewables in the 2013 IRP Action Plan, the Company is in continuous discussion with counterparties on both a bilateral basis for unique opportunities and through qualifying facilities under the Public Utility Regulatory Policy Act (PURPA).

Washington RPS

HEAL Utah does not believe PacifiCorp's decision to meet the Washington RPS with unbundled RECs represents a sound and prudent approach.

In response, PacifiCorp refers to its response to DPU's comments on Washington state RPS compliance.

Blue Sky

HEAL Utah recommends adding a new IRP Action Item to revise the Blue Sky program allowing customers to directly support the long-term acquisition of utility-scale renewable energy resources.

In the context of its continuing evaluation of the Blue Sky program, the Company will consider HEAL Utah's recommendation.

## 10. CONCLUSION

PacifiCorp believes its IRP reasonably adheres to the Commission's Standards and Guidelines, and should therefore, be acknowledged. PacifiCorp further believes its IRP reflects a balanced consideration of customer interests, and is well-supported by portfolio modeling and prudent planning assumptions leading to selection of a least cost Preferred Portfolio consistent with the long-run public interest. PacifiCorp appreciates the comments received from an active and engaged stakeholder group, and continues to urge stakeholder participation throughout the IRP development process to foster constructive debate throughout it.