- BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH -

In the Matter of Rocky Mountain Power's 2015 Integrated Resource Plan	DOCKET NO. 15-035-04 REPORT AND ORDER

ISSUED: January 8, 2016

SHORT TITLE

PacifiCorp 2015 Integrated Resource Plan

SYNOPSIS

The Commission acknowledges PacifiCorp's 2015 Integrated Resource Plan ("IRP") and provides guidance to assist in the development of future IRPs.

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I. INTRODUCTION

On March 31, 2015, PacifiCorp (doing business as Rocky Mountain Power, "PacifiCorp") filed its thirteenth Integrated Resource Plan ("IRP"), entitled "PacifiCorp's 2015 Integrated Resource Plan" ("2015 IRP"), pursuant to the IRP Standards and Guidelines ("Guidelines") adopted in Docket No. 90-2035-01, In the Matter of Analysis of an Integrated Resource Plan for PacifiCorp, Report and Order issued June 18, 1992. PacifiCorp requested the Commission acknowledge the 2015 IRP in accordance with Commission rules and fully support the IRP conclusions, including the proposed action plan.

The 2015 IRP consists of three volumes. Volume I provides the 2015 IRP development, results, action plan, and acquisition path analysis. Volume II provides the following appendices: a load forecast report (Appendix A); fulfillment of IRP regulatory requirements (Appendix B); the public input process (Appendix C); demand side management ("DSM") and supplemental resources (Appendix D); smart grid (Appendix E); flexible resource needs assessment (Appendix F); historical plant water consumption data (Appendix G); 2014 wind integration study (Appendix H); 2014 stochastic loss of load study (Appendix I); western resource adequacy evaluation (Appendix J); detailed capacity expansion results (Appendix K); stochastic simulation results (Appendix L); case study fact sheets (Appendix M); wind and solar peak contribution (Appendix N); distributed generation ("DG") study (Appendix O); anaerobic digesters study (Appendix P); energy storage study (Appendix Q); and stochastic parameters (Appendix R). Volume III provides public and confidential analysis related to environmental compliance and coal plant investments.

A. Summary of the 2015 Integrated Resource Plan Results

The 2015 IRP report and associated appendices present PacifiCorp's plan to supply energy and capacity to provide for and manage the growing demand for electricity in its six-state service territory over the next 20 years. The report identifies, as PacifiCorp's preferred (least cost-least risk) plan, investment in a portfolio of power plants, transmission facilities, and firm power purchases, coupled with customer energy efficiency programs, and direct-control load management. The type, timing, and magnitude of resource additions are noted and a short-term action plan is provided.

Based on its assumptions of existing generation capacity, generation plant life, length of existing purchase power contracts, transmission transfer capability, its September 2014 load growth forecast, and its 2014 study of customer driven DG, PacifiCorp identifies a capacity deficit between existing resources and peak system requirements, plus a 13 percent planning reserve,[1] of 869 megawatts beginning in 2015. This deficit grows to 1,834 megawatts in 2024.[2]

To meet these deficits and the continuing deficits through 2034, PacifiCorp identifies a resource and transmission investment schedule based in part on the portfolio of resources selected by the computer model, System Optimizer, in case C05a-3Q [3] as its least cost plan adjusting for risk and uncertainty. PacifiCorp refers to this plan as its "Preferred Portfolio." Case C05a-3Q differs from case C05-1 with respect to the timing of the first thermal gas plant. In case C05a-3Q, the thermal plant is deferred by 4 years to 2028. Compared to case C05-1, case C05a-

[1] Planning reserve includes operating reserve; *See* PacifiCorp, "2015 Integrated Resource Plan, Volume I," Chapter 5, at 79.
[2] *See* PacifiCorp, 2015 IRP, Volume I, Chapter 5, Table 5.14, at 81.
[3] A case is a defined set of input values, and assumptions. *See id.* Volume II, Appendix M, at 246 and 298-300.

3Q assumes different regional haze requirements, more flexibility in addressing Oregon renewable portfolio standards, and updates of executed QF contracts.[4]

PacifiCorp selects its Preferred Portfolio based on its analysis of the 20-year present value of future revenue requirement ("PVRR"), variations in load growth, customer DG penetration, qualifying facility ("QF") contracts, fuel and market price volatility, planned transmission transfer capability, hydro variability, expected thermal outages, customer rate impacts, expectations of potential costs associated with meeting existing and potential environmental regulations, lead time required for plant construction or bidding, fuel source diversity, supply reliability, production cost variability, carbon dioxide emissions, ability to meet accelerated DSM targets, the cost to acquire unbundled renewable energy certificates, and public policy goals.

To serve system-wide peak hour demand over the next twenty years, cumulative Preferred Portfolio supply additions, and direct-control load management or energy efficiency programs range from 860 megawatts in 2015 to about 6,592 megawatts in 2034.[5] By 2034, this consists of 2,881 megawatts of converted or new primarily gas-fired capacity (44 percent), 2,679 megawatts of energy efficiency programs and 41.7 megawatts of direct-control load management (total DSM is 41 percent), and 983 megawatts of unspecified annual firm power purchases, also referred to as front office transactions ("FOTs") (15 percent).[6] The Preferred Portfolio also

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[4] *See id.* Volume I, at 65 and 189.
[5] *See id.* Volume I, Chapter 8, Table 8.7, at 196.
[6] *See id.*

consists of the retirement of about 3,200 megawatts of existing, primarily coal-fired, generation capacity.[7]

Planned investment in the Preferred Portfolio during the first ten years differs from PacifiCorp's fall 2014 business plan. The 2015 IRP relies more heavily on DSM, calling for an additional 613 megawatts of energy efficiency and 8 megawatts less of direct-control load management, and relies less heavily on utility level solar (7 megawatts versus 9 megawatts) and front office transactions (843 megawatts versus 1,227 megawatts).[8]

The Preferred Portfolio includes segments C (Mona-Oquirrh) and G (Sigurd-Red Butte) of the energy gateway transmission project ("Energy Gateway") as existing system facilities. In addition, PacifiCorp requests the Commission acknowledge the Wallula to McNary portion of segment A of Energy Gateway. PacifiCorp explains the project is required to meet its existing obligation for network transmission customers under its Open Access Transmission Tariff.[9] The Wallula to McNary segment is estimated to be in service in 2017.

PacifiCorp evaluates two incremental Energy Gateway cases labeled S-07 and S-08, patterned after Energy Gateway scenarios 2 and 5 in the 2013 IRP. Case S-07 examines the impact of Energy Gateway segment D (Windstar to Populus), with an in-service date of 2022; and case S-08 examines the impact of Energy Gateway segments D, E, and F with in-service dates of 2022, 2023, and 2024, respectively.[10] These projects are not a part of the Preferred

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[7] *See id.* 2,805 megawatts of coal-fired capacity is retired or converted to gas and then retired, and 358 megawatts of gas-fired capacity is retired.
[8] *See id.* at 241.
[9] *See id.* Volume I, at 49.
[10] *See id.* Volume I, at 151-152.

Portfolio; however, PacifiCorp states it will continue to conduct permitting activities and consider the economics of these segments of Energy Gateway.

PacifiCorp notes the U.S. Environmental Protection Agency ("EPA") issued a proposed rule under § 111(d) of the Clean Air Act, also referred to as the Clean Power Plan ("CPP"), to regulate greenhouse gas emissions from existing sources in June 2014 ("Proposed CPP Rule"). PacifiCorp's 2015 IRP includes approaches for addressing the Proposed CPP Rule[11] as well as alternative approaches for addressing regional haze requirements.

B. Request for Comments

Following a scheduling conference convened on April 16, 2015, the Commission issued a Scheduling Order and Notice of Technical Conferences on April 17, 2015. The Commission requested comments from interested parties on the 2015 IRP and the DSM Resource Potential Assessment for 2015-2034[12] by August 25, 2015 and reply comments by September 25, 2015. The Commission scheduled both confidential and non-confidential technical conferences for June 22, 2015, during which PacifiCorp provided an overview of the 2015 IRP and responded to questions and comments. On June 22, 2015, the Division of Public Utilities ("Division") requested the Commission schedule a second technical conference to be held July 17, 2015. On June 25, 2015, the Commission issued a notice granting the Division's request.

In addition to the Division, the Office of Consumer Services ("Office") participated as a statutory party in this docket. Between January 28, 2015 and May 15, 2015, the following parties

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[11] The EPA issued the final CPP on August 3, 2015 and published it in the Federal Register on October 23, 2015.

[12] PacifiCorp filed the DSM Resource Potential Assessment for 2015-2034 electronically in conjunction with Volume II, Appendix D of the 2015 IRP. The Commission directed PacifiCorp to file any DSM Potentials Study used to inform the IRP concurrently with that IRP in Docket No. 11-2035-01, "In the Matter of PacifiCorp's 2011 Integrated Resource Plan," (Report and Order; March 22, 2012).

petitioned for leave to intervene, which the Commission granted: Utah Clean Energy ("UCE"); Western Clean Energy Campaign; Idaho Conservation League; Interwest Energy Alliance ("Interwest"); Utah Association of Energy Users ("UAE"); Sierra Club; Powder River Basin Resource Council; Healthy Environment Alliance of Utah ("HEAL Utah"); and Western Resource Advocates ("WRA").

C. Standard of Evaluation

Under the Guidelines, we consider whether to acknowledge the 2015 IRP. Acknowledgment of an IRP means it substantially complies with the regulatory requirements of the planning process, but conveys no sense of regulatory approval of any specific PacifiCorp resource acquisition decision or strategy for meeting obligations; PacifiCorp management retains responsibility for its resource acquisition decisions. The IRP process is an open, public process through which all relevant supply-side and demand-side resources are investigated in the search for the optimal set of resources to meet current and future electric service needs at the lowest total cost to the utility and its customers, in a manner consistent with the long-run public interest, given the expected combination of costs, risks and uncertainty.

II. PARTIES' POSITIONS ON ACKNOWLEDGEMENT

By August 25, 2015, the following parties filed written comments and recommendations: The Division, the Office, UAE, UCE, Interwest, and Southwest Energy Efficiency Project ("SWEEP").[13] The Sierra Club filed comments on August 26, 2015 on behalf of the Sierra Club, HEAL Utah, Western Clean Energy Campaign, Powder River Basin Resource Council, and

[13] SWEEP submitted joint comments with UCE on PacifiCorp's DSM Potential Study. The joint comments were filed as an attachment to UCE's August 25, 2015 comments in this docket.

Idaho Conservation League (collectively “Joint Parties”). On September 25, 2015, PacifiCorp, the Office, and UCE filed reply comments. Additionally, many non-intervening parties filed public comments beginning on July 30, 2015.[14]

A. The Division

Based on its review and analysis, the Division recommends the Commission acknowledge the 2015 IRP and action plan. The Division concludes the 2015 IRP sufficiently complies with the Guidelines and satisfies the directives in the Commission’s January 2, 2014 order in Docket No. 13-2035-01 (“January Order”).[15] The Division concludes the Preferred Portfolio is one of the possible least cost-least risk portfolio combinations that meets the Proposed CPP Rule, regional haze requirements, and other state regulatory requirements for this IRP. The Division recognizes process improvements and increased transparency in this IRP and provides recommendations for future IRPs. The Division also concludes the 2015 IRP satisfactorily addresses future transmission obligations, and FOTs, and demonstrates the 13 percent planning reserve margin meets the 1 in 10 year planning target at the lowest reasonable cost.

The Division comments on several issues regarding the 2015 IRP or offers recommendations for future IRPs on the following issues: Energy Gateway analysis, market constraints, planning reserve, acquisition path analysis, link to business plan, DSM analysis, DG analysis, energy storage, and QFs.

[14] Public comments are available at: http://www.psc.utah.gov/utilities/electric/elecindx/2015/1503504indx.html.
[15] *See* Docket No. 13-2035-01, *In the Matter of PacifiCorp’s 2013 Integrated Resource Plan,* (Report and Order; January 2, 2014).

B. The Office

The Office notes PacifiCorp made significant efforts to incorporate stakeholder input throughout the 2015 IRP process, believes the Preferred Portfolio produces a low cost-low risk and reliable set of resources, and recommends the Commission acknowledge the 2015 IRP. The Office also provides several recommendations for future IRPs.

The Office provides comments on and recommendations for several issues including: the acquisition of energy efficiency ("Class 2 DSM"), reliance on FOTs, justification for Energy Gateway, and increasing capacity from QFs.

C. UAE

UAE appreciates PacifiCorp's efforts in developing the IRP. UAE concludes the 2015 IRP generally is consistent with the Guidelines and therefore does not oppose Commission acknowledgment of the 2015 IRP. UAE provides comments and recommendations on the following issues: DSM costs, FOT costs and availability, timing of the next deferrable resource for avoided cost pricing, and bias toward the first 10 years of the planning horizon.

D. UCE

UCE recognizes the difficulties of planning in uncertain times, but perceives shortfalls in the 2015 IRP and therefore does not recommend the Commission acknowledge PacifiCorp's 2015 IRP. UCE attaches to its comments a report by Synapse Energy Economics, Inc., entitled "Review of the Use of the System Optimizer in PacifiCorp's 2015 IRP, Including treatment of the Clean Power Plan and economic coal plant retirement," ("Synapse Report") prepared for UCE, Sierra Club, Western Clean Energy Campaign, Powder River Basin Resource Council, and Idaho Conservation League. UCE cites the explanations contained in the Synapse Report as support for the significant changes it perceives will be necessary to model compliance with the final CPP Rule as the primary reasons it does not recommend acknowledgment of the IRP.[16] UCE presents recommendations regarding Commission acknowledgement, future work, and an action plan prior to acknowledgement. UCE provides comments and recommendations on the following issues: coal investment strategy and modeling issues, acquisition path analysis, load forecasting, loss of load probability analysis and capacity contribution value,[17] emissions, risk bearing,[18] and planning objectives.[19]

E. Interwest

Interwest does not recommend the Commission acknowledge the 2015 IRP. It states: "…this Commission should request modification and refuse to allow the utility to rely on this IRP for any presumptions in regulatory dockets. At a minimum, the utility could be required to update the IRP with much more intensive analysis with firm commitments in 2016, based on the CPP Final Rule."[20] Interwest critiques the 2015 IRP regarding: coal plant retirement modeling and analysis, renewable resource costs, action plan and resource acquisition path, planning

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[16] *See* Initial Comments of UCE, August 25, 2015, at 10.

[17] We note the issue raised by UCE here also was raised by UCE and addressed by the Commission in Docket No. 14-035-140, *In the Matter of the Review of Electric Service Schedule No. 38, Qualifying Facilities Procedures, and Other Related Procedural Issues* (Order Approving Capacity Contribution Study and CF Method Values; June 26, 2015). Therefore, we will not address it again in this order.

[18] We note UCE's request regarding discussion of risk bearing is addressed in PacifiCorp's Reply Comments at 13, and in the 2015 IRP at 247.

[19] We note UCE advocates a "risk aware and least regrets" type of planning objective rather than the planning objectives provided in the Guidelines. We do not intend to address proposed changes to the Guidelines in a docket established to consider acknowledgment of an IRP under the current Guidelines. Any changes to the Guidelines would need to be considered in a proceeding designed to review and modify or change the Guidelines.

[20] *See* Comments on the PacifiCorp 2015 Integrated Resource Plan on behalf of the Interwest Energy Alliance, August 21, 2015.

objectives,[21] high reliance on natural gas resources, and treatment of renewable energy credits ("RECs").[22]

F. Joint Parties

The Joint Parties do not explicitly offer a recommendation on acknowledgment but identify shortcomings including a comparison of the 2015 IRP's Preferred Portfolio to alternatives developed in the Synapse Report. The Joint Parties criticize the 2015 IRP on the following issues: treatment of the Proposed CPP Rule; faulty modeling of coal plant retirements; and flawed and understated DSM program projections.

G. Public Comments

Approximately 1,822 written public comments criticize the 2015 IRP. All but one argues the 2015 IRP relies too much on coal-fired power plants and too little on renewable resources, to the detriment of Utah citizens' health. The comments generally urge the Commission to reject the 2015 IRP and to require PacifiCorp to modify its plans.

H. PacifiCorp

PacifiCorp replies to the parties' comments stating it ". . . appreciates that its active and engaged stakeholder group recognizes steps the Company has implemented to improve the IRP public process."[23] PacifiCorp argues the majority of intervenor comments either recommend the Commission acknowledge the IRP as meeting the Guidelines, or do not oppose acknowledgement.[24] PacifiCorp responds to the intervening parties' filed comments individually,

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[21] *See id.* n. 20 (addressing consideration of changes to planning objectives in this forum).
[22] We note Interwest's concern regarding use of REC's for the Proposed CPP Rule and state renewable portfolio standards is addressed in PacifiCorp's Reply Comments at 20.
[23] *See* Reply Comments of PacifiCorp, September 25, 2015, at 1.
[24] *See id.* at 2.

and discusses the large number of public comments received by topic. PacifiCorp provides either additional clarification or counter-point reasoning to justify the IRP's development and conclusions. After providing its responses, PacifiCorp requests the Commission acknowledge the 2015 IRP.

III. DISCUSSION AND GUIDANCE

We have reviewed and fully considered the 2015 IRP, and the public and parties' comments. Based on our review, we find PacifiCorp has substantially complied with the Guidelines and past relevant Commission orders. We acknowledge the 2015 IRP.

We find PacifiCorp implements significant improvements in this IRP cycle. Chief among these improvements is a broader range of alternative scenarios of core and sensitivity cases. These cases are constructed with attention to consistent sets of assumptions for ready comparison and understanding of cost and performance metric impacts. Also of significant improvement is the abundance of supporting data filed with the Commission for inspection by all parties. The supporting data enables parties to more easily understand the process, logic, and calculations behind not only the Preferred Portfolio, but all of the underlying data utilized and various scenarios analyzed in this IRP cycle. As a result, parties are able to clearly articulate viewpoints utilizing the information contained in the IRP and provide the Commission with informed and useful comments. We also appreciate PacifiCorp's improved responsiveness and interaction with state agencies and other interested parties as noted by several parties.

We understand not all parties agree PacifiCorp's Preferred Portfolio is the optimal portfolio for customers, or that the process is as transparent as it could be. Our acknowledgment of the 2015 IRP imparts no regulatory approval of any element of the Preferred Portfolio or of the action plan. PacifiCorp's investment decisions and actions will be evaluated for prudence in appropriate rate proceedings. Because of our role in those evaluations it would be inappropriate to use this IRP proceeding as an opportunity to substitute our planning judgment for that of PacifiCorp. The 2015 IRP is PacifiCorp's plan, which we find was reasonably supported at the time it was filed. The information contained in the 2015 IRP is clearly very useful for interested parties to evaluate the soundness of PacifiCorp's plans and actions. Further, the 2015 IRP provides critical inputs, *i.e.*, type and timing of resource additions and DSM decrement values, used in other proceedings. The factors driving the 2015 IRP results and action plan change, and PacifiCorp will need to make appropriate planning adjustments.

While the IRP is a comprehensive snapshot of a long-term plan at a point in time, its ongoing usefulness could be improved through the use of a wider range of assumptions for sensitivity analysis and greater use of path analysis, as we will discuss in more detail below. Such changes could provide flexibility and transparency in investment decisions when significant political or market changes occur between IRPs.

Parties raise important issues that merit attention in future IRPs, and to that end we provide the following guidance for PacifiCorp's IRP efforts going forward.

A. Carbon Emissions and Coal Plant Investment Analysis

Using information from the Synapse Report, UCE and the Joint Parties argue that the 2015 IRP is flawed because PacifiCorp chose to hard-code coal plant retirements in all but one core case, and chose to evaluate only rate-based measures to comply with the Proposed CPP Rule. The authors of the Synapse Report modified the 2015 IRP System Optimizer database to allow endogenous coal unit retirements and mass-based Proposed CPP Rule options, and then recalculated the results. Interwest also faults the 2015 IRP for not allowing the System Optimizer model to select the timing of resources to retire in determining a least cost solution for complying with environmental requirements.[25] Interwest recommends the Commission consider how to treat this issue in future reports prior to relying on the 2015 IRP for any purpose. To the extent the System Optimizer is incapable of choosing the most cost-effective timing and resource choices, Interwest suggests the choice of assumptions related to the timing of retirements of each coal unit could be more transparently worked into the public process.

UCE and Interwest also argue the Preferred Portfolio relies on a litigation strategy to avoid installation of Selective Catalytic Reduction ("SCR") control devices on coal plant units. If this strategy fails, UCE is concerned customers will pay for SCR or replacement power if the units retire early. Interwest is concerned this strategy causes continued reliance on coal and gas-fired resources and delays commitment to renewable resources. UCE is concerned that the SCR devices are costly, do not eliminate ongoing carbon emissions risk, and introduce additional risk to Utah ratepayers associated with how much of the SCR devices will be paid for by Oregon customers due to shorter plant depreciation lives in Oregon. UCE recommends PacifiCorp model compliance with the final CPP Rule and allow the System Optimizer model to determine least cost solutions without hard-coding retirements in the 2015 IRP update.[26] UCE also recommends PacifiCorp evaluate and determine least cost portfolios to meet future carbon emissions in the 2017 IRP.

[25] *See* Comments on the PacifiCorp 2015 Integrated Resource Plan on behalf of the Interwest Energy Alliance, August 21, 2015, at 16.

[26] *See* Initial Comments of UCE, August 25, 2015, at 10.

Regarding its evaluation of coal plant retirements, PacifiCorp disagrees that it should incorporate the endogenous determination of early coal plant retirement dates when selecting portfolios in the System Optimizer model.[27] PacifiCorp contends the System Optimizer model is not able to dynamically account for many of the variables that influence the economics of early coal plant retirement, *i.e.*, coal contract constraints, fixed costs, impacts on the fixed and operating costs of other coal units at multi-unit plants.[28] PacifiCorp argues the approach it used in the 2015 IRP, *i.e.*, analyzing alternative coal unit retirement scenarios, is more robust than allowing the model to endogenously select units and timing because the impact of early retirements on other units and system fixed costs is explicitly included.[29] Further, PacifiCorp explains it evaluates the options surrounding compliance with the relevant regulations in Volume III of the IRP on an ongoing basis. PacifiCorp insists early retirements, conversions, and emissions reducing equipment upgrades all are considered in its ongoing analysis.

In addressing the Proposed CPP Rule, PacifiCorp argues the rate-based approach sets a maximum emission rate target that is consistent with the Proposed CPP Rule. While the 2015 IRP addresses both rate-based and mass-based approaches, PacifiCorp contends it had little guidance from the Proposed CPP Rule explaining how states would develop or adopt mass-based targets.[30] PacifiCorp also notes the Synapse Report confirms that the Preferred Portfolio appears to comply with the final mass-based goals and demonstrates that the Preferred Portfolio is lower

[27] *See* PacifiCorp Reply Comments, September 25, 2015, at 19.
[28] *See id.*
[29] *See id*.
[30] *See id.* at 22.

cost than the alternative portfolios modeled using the Synapse Report's preferred methods and assumptions.[31]

Regarding concerns about costly SCR investment, PacifiCorp notes it has evaluated regional haze compliance alternatives in Volume III of its 2015 IRP and the analysis supports the 2015 IRP action items, none of which call for installation of SCR equipment. PacifiCorp argues its use of different regional haze scenarios is informative of potential costs associated with different requirements. PacifiCorp contends the SCRs included in the Preferred Portfolio will be analyzed in future IRPs prior to making investment decisions. Further, PacifiCorp argues the modeling of the Proposed CPP Rule recognizes potential changes in the regulations. PacifiCorp states future IRPs will continue to incorporate current policy assumptions and utilize scenarios to evaluate policy uncertainties. PacifiCorp argues the 2015 IRP shows mid- to longer-term policy uncertainties have limited to no impact on near-term resource actions identified in the 2015 IRP action plan.

PacifiCorp also responds that analysis of final costs and the impact on customers will be completed prior to making final CPP compliance decisions. PacifiCorp is aware there could be implications for interstate cost allocations but believes this issue is better addressed through the multi-state process on cost allocations. PacifiCorp commits to updating its modeling in the 2015 IRP update and future IRPs consistent with assumptions based on the CPP Final Rule, and the latest information on state CPP implementation plans.

[31] *See id.* at 26.

We recognize the disposition of the existing fleet of coal generation plants over the course of the coming decades and the best path for addressing environmental requirements are likely the matters of greatest disagreement between PacifiCorp and some intervening parties in the IRP process. We also recognize the complexity surrounding the evaluation of options to comply with the CPP draft and Final Rule. While we agree PacifiCorp will need to continue to refine its evaluation of environmental compliance options to determine least cost and least risk approaches, and it commits to do so, we agree with the Division and Office and accept PacifiCorp's work in the 2015 IRP as a reasonable analytical approach at the time the 2015 IRP was filed.

We also note the prudence of PacifiCorp's investments will be subject to review and scrutiny in future rate proceedings. We assume PacifiCorp will use the information it acquires through the IRP and other internal processes to select the course of action it concludes represents the best alternative available to meet its obligations. We urge PacifiCorp to give priority in the public process of its 2017 IRP to discuss and weigh alternative approaches for determining the least cost path, adjusting for risk and uncertainty, for addressing federal environmental compliance requirements.

B. Energy Gateway Transmission Analysis

The Office notes that the 2015 IRP discusses the history and need for Energy Gateway, though the IRP only seeks acknowledgement of a small part of it, the Wallula to McNary line.[32]

[32] We note this docket is not the appropriate proceeding to acknowledge or approve PacifiCorp's decision to build a given segment of Energy Gateway. Rather, we will address the Wallula to McNary line investment decision in the appropriate rate proceeding.

The Office states the Energy Gateway contains very long and expensive transmission lines costing billions of dollars. The Office argues many of the planning initiatives underlying justification of the Energy Gateway Project are now stale, *i.e.,* new resource development in Wyoming. The Office understands justification for new transmission is complex and can serve many purposes. However, the Office notes the 2015 IRP did not include any new resources, renewable or thermal, to be built in Wyoming throughout the first 10-year period of the planning horizon. With these considerations in mind, the Office recommends PacifiCorp provide a fresh discussion on transmission planning, especially the need for further segments of Energy Gateway, in future IRPs. In response, PacifiCorp agrees to provide the necessary justification when proposing new transmission.

The Division concludes that PacifiCorp's formation of a System Operational and Reliability Benefits Tool ("SBT") stakeholder group, along with the associated workshops, met the Commission's direction in the January Order. While the SBT was not used in the 2015 IRP, the Division anticipates it will be used in future IRPs and recommends that any transmission project relying on the SBT should be subject to stochastic risk analysis to determine risk and other performance metrics. As such, the Division recommends devoting an entire meeting to the SBT if PacifiCorp intends to rely on it for future analysis. PacifiCorp agrees a full discussion on transmission analytical tools would be beneficial in any future IRP that includes action items targeting potential construction of future Energy Gateway Project segments.

The Division also questions the nexus of the IRP process and PacifiCorp's treatment of Federal Energy Regulatory Commission Order 1000 and associated requirements for cost allocation and interregional planning. PacifiCorp responds that it will provide information in the

2015 IRP update and in future IRPs, as necessary, to explain the interaction of these requirements with any Energy Gateway project.

We agree with the points raised by the Division and the Office related to suitability of the SBT. We are encouraged by PacifiCorp's commitment to provide the requested information. We clarify that if PacifiCorp plans to use this type of a transmission analytical tool in future IRPs PacifiCorp should introduce and vet the tool in an IRP workshop setting prior to utilizing the tool.

C. Renewable Resource Assumptions

Interwest and the Joint Parties argue PacifiCorp's base wind and utility-scale solar resource cost estimates are too high and cite the 2013 Wind Technologies Market Report ("WTMR") or the Synapse Report as relevant information of lower prevailing costs than PacifiCorp assumed in the 2015 IRP. UCE notes that even with significantly lower renewable resource prices, the System Optimizer did not select renewable energy in the Synapse Report and UCE is concerned the model contains a constraint prohibiting selection of renewable resources. UCE recommends PacifiCorp perform sensitivity analysis to examine this issue in the 2015 IRP update.

PacifiCorp argues its wind resource costs are reasonable and asserts the examples cited in the WTMR are not reliable. PacifiCorp compares its 2015 IRP costs with the Synapse Report costs, converted to reflect AC rather than DC power, and costs developed in an E3 study.[33] PacifiCorp contends this comparison demonstrates its cost assumptions are reasonable.

[33] *See* E3, "Capital Cost Review of Power Generation Technologies – Recommendations for WECC's 10- and 20-Year Studies," March 2014.

We recognize there are differences of opinion and degrees of uncertainty regarding renewable resource cost assumptions, and that these crucial inputs are important for planning. In future IRP processes we encourage PacifiCorp to provide a stronger demonstration of the reasonableness of the range of renewable resource costs analyzed.

D. Distributed Generation Modeling

The Division and UCE disagree with PacifiCorp's modeling of DG as a reduction in load instead of a supply-side resource. The Division argues DG is different than DSM and therefore warrants different treatment than only adjusting load.[34] The Division also recommends PacifiCorp consider DG as a separate supply-side resource *rather than* a reduction to load in future IRPs[35] and provide an updated DG potential study in the 2017 IRP. UCE supports the Division's recommendation because it will provide important information about the value that this resource provides to the system.

PacifiCorp argues that reducing load due to DG reflects the utility impact of customer-sited DG. PacifiCorp explains it models a reduction to load, based on the Navigant study, consistent with the expected generation profiles of the DG resources during specific hours of a day and in different seasons. PacifiCorp agrees DG has the potential to impact future resource decisions and will continue to monitor and update assumptions.

We recognize the decision to build customer-owned DG originates with the customer. Therefore, it appears reasonable to model DG as a load reduction. We note PacifiCorp provides sensitivity cases with varying levels of DG penetration that show higher levels of penetration

[34] *See* Division Comments on PacifiCorp's 2015 IRP, August 25, 2015, at 26.
[35]*See id.* at 30.

reduce PVRR. We consider this valuable information and expect continued analysis regarding this issue. For increased transparency, we direct PacifiCorp to identify the amount of DG included in the baseload forecast in its load and resource table, as it does for existing DSM and curtailment.

E. Market Constraints

The Division and the Office observe PacifiCorp's Preferred Portfolio continues to show a high reliance on FOTs. The Division notes the 2015 IRP complies with the Commission's guidance in the January Order on FOTs. The Division claims PacifiCorp accomplished this by reducing reliance on FOTs as compared to the 2013 IRP and by providing core cases examining reduced availability of FOTs at the Mona and California-Oregon border trading hubs. However, both the Division and the Office recommend the Commission require that future IRPs present a contingency plan for the reliance on FOTs to be used in the event that market supplies tighten and prices increase significantly.[36]

PacifiCorp references Appendix J in Volume II of the 2015 IRP, which examines western resource adequacy. In Volume I, Chapter 9 of the 2015 IRP, PacifiCorp also addresses the near-term and long-term strategies if the availability of FOTs is limited. The Office reviewed Appendix J and agrees with PacifiCorp that there is both adequate market depth and liquidity to maintain positive regional reserve margins for several years but recommends PacifiCorp monitor the market and make adjustments as necessary. PacifiCorp agrees with the Division and the Office that monitoring FOT market liquidity and depth is a prudent planning approach.

[36] *See* Division Comments on PacifiCorp's 2015 IRP, August 25, 2015, at 30; *see also* Office Responsive Comments, September 25, 2015, at 1.

PacifiCorp also notes the potential for further expansion of its acquisition path analysis in Table 9.3.[37]

UAE notes the Preferred Portfolio relies primarily on DSM and FOTs, especially in the early years with a new, deferrable resource not included until 2028. Due to this heavy reliance, and updated estimates of DSM acquisition costs, UAE recommends including sensitivities for both FOT market limits and costs of DSM in future IRPs.

We generally agree with the parties' concerns regarding market depth. We direct PacifiCorp to continue to evaluate the depth of the western wholesale market, and to use sensitivity cases and acquisition path analysis, including development of a contingency plan, to monitor the feasibility of long-term reliance on FOTs to meet near-term load growth.

F. Planning Reserve

The Division notes PacifiCorp performed a planning reserve margin study and concluded the 13 percent planning reserve margin met the planning target at the lowest reasonable cost. The Division recommends the Commission require PacifiCorp to continue to analyze the planning reserve margin in the 2017 IRP. PacifiCorp agrees it will update its study in the 2017 IRP.[38] We accept a 13 percent planning reserve as reasonable for this IRP and recommend continued analysis of this issue in future IRPs using results from both loss of load probability ("LOLP") studies and analysis of the tradeoffs between reliability and cost.

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[37] *See* PacifiCorp Reply Comments, September 25, 2015, at 4.
[38] *See id.* at 3.

G. Load Forecasts

UCE recommends more consideration of the impact of climate change on loads, hydro availability, and thermal outages. UCE argues PacifiCorp relies only on historic temperature relationships without considering climate and weather trends. For example, UCE notes Utah's 2013 summer temperatures were the highest on record and its peak also hit an all-time high; however, the total energy demand for the year did not show much of a change. UCE argues it is important that PacifiCorp account for changing climate conditions rather than rely on average increases in peak and energy load growth based on historic data.[39] PacifiCorp contends its sensitivity analyses of its normalized peak forecast based on historical information properly evaluate the impact of potential changes in load forecast.

In our January Order we directed PacifiCorp to present in the 2015 IRP an analysis of whether the available historical cooling degree day information, or some other alternative, is an appropriate predictor of future normal conditions. We are unable to find this discussion in the 2015 IRP and do not observe any comments on the issue. We direct PacifiCorp to address our January Order guidance on this issue in the 2015 IRP update.

UCE objects to PacifiCorp's elimination of the long-run load volatility parameter from its stochastic risk analysis. As UCE states in its reply comments: "The preferred portfolio selection process should account for the possibility that ratepayers may have to pay more for market purchases if loads tend to be higher - due to higher temperatures overall or long-lasting heat waves - than the Company's mean-reversion model predicts. Alternatively, climate change can

[39] *See* Initial Comments of UCE, August 25, 2015, at 6.

also result in lower than expected loads or seasonal load profiles that are different from historic seasonal load profiles. With climate change having significant and highly variable impacts on loads in the future, it has become more important than ever to model long-run load variability."[40]

In our January Order, we directed PacifiCorp to facilitate a discussion of this issue in the 2015 IRP cycle. The Division confirms PacifiCorp discussed the issue in public stakeholder meetings and argued it is more appropriate to study long-term load risk through load forecast scenario analysis; therefore, it continued its use of short-term volatility and mean reversion parameters to model load volatility in the 2015 IRP. The Division states PacifiCorp performed a load sensitivity analysis that supports the use of short-term volatility and mean reversion parameters to model load volatility in case S-03.

We are not persuaded of the value of including a long-run load volatility parameter in the stochastic analysis. It appears significant deviations from expected trends would be easily spotted and action could be taken to adjust forecasts and action plans long before the types of deviations this parameter produces in the out years of the model would occur.

H. Resource Acquisition Paths and Decision Mechanism

The Division believes PacifiCorp did commendable work expanding the resource acquisition path shown in Table 9.3 in the 2015 IRP. The Division notes that in the 2013 IRP, PacifiCorp focused on four load, environmental and market triggering events in its acquisition path analysis. The 2015 IRP includes ten triggering events requiring alternative near-term and long-term resource acquisition paths. The Division encourages PacifiCorp to continue

[40] *See* Reply Comments of UCE, September 25, 2015, at 2.

developing its acquisition path analysis and possibly to address other trigger events as the future unfolds.

UCE raises concerns with Table 9.3, specifically identifying the lack of costs and who bears the associated risks for a change in plan. UCE is concerned construction of new renewable resources does not appear often enough. In response, PacifiCorp notes Table 9.3 is a qualitative, not quantitative tool and argues the table is not exhaustive and not intended to capture all potential scenarios that could change PacifiCorp's plans.

PacifiCorp explains Table 9.3 offers overall guidance on how changes in the planning environment could impact resource selection, and many of the planning scenarios, to a greater or lesser degree, are captured in sensitivities presented in the 2015 IRP. Regardless, PacifiCorp states it would not proceed with actions outside of the action items listed without thorough analysis, such as the analyses performed in Volume III of PacifiCorp's 2015 IRP. As to the recently released final CPP rule, PacifiCorp commits to update modeling consistent with assumptions based on the final rule.[41] Specifically, PacifiCorp notes the 2015 IRP update and future IRPs will look at the current requirements under the CPP rule and will incorporate information as states begin to develop CPP implementation plans. Finally, PacifiCorp states Table 9.3 will continue to evolve in future IRPs.

We agree the 2015 IRP Table 9.3 is improved in comparison to previous years and expect it will continue to improve in future IRPs. For example, it is not clear how significant a triggering event must be for PacifiCorp to undertake additional analysis and consider whether to

[41] *See* PacifiCorp Reply Comments, September 25, 2015, at 7 and 11.

change course. We understand PacifiCorp is essentially always in a state of re-evaluation up until the moment contracts are issued, but the path analysis could be improved in terms of identifying potential exogenous changes that would cause a significant change in acquisition path. In future IRPs we encourage PacifiCorp to further define the critical contingencies it is monitoring and identify the magnitude of changes that would be required to potentially trigger movement to any of the different paths listed in the table.

I. Storage

The Division and UCE note PacifiCorp modeled energy storage as a stand-alone supply-side resource, however it was not selected as least cost and least risk in the Preferred Portfolio. The Division and UCE suggest PacifiCorp model DG and storage together as a supply-side resource. The Division also recommends PacifiCorp file an updated energy storage screening study in its 2017 IRP and present the findings of the study at a public input meeting.[42] PacifiCorp commits to continue to update studies as needed, monitor developments in DG and energy storage, and refine IRP tools as necessary.

The Commission appreciates that PacifiCorp has expanded the range of storage options it is considering in the IRP evaluation process. We encourage PacifiCorp to file an update of the energy storage screening study in its 2017 IRP, update the storage cost assumptions, and consider modeling changes for energy storage following discussion with stakeholders. We request that PacifiCorp present the findings of the updated study, with the study authors accessible for stakeholder questions and discussion, at a public input meeting.

[42] *See* Division Comments on PacifiCorp's 2015 IRP, August 25, 2015, at 27.

J. QF Capacity

The Division and the Office recommend additional analysis in the 2015 IRP update to examine the effects of high levels of solar QFs. PacifiCorp asserts the Division provides an erroneous review of IRP sensitivities causing the Division to conclude higher penetrations of renewable QF capacity produces higher ratepayer costs. Based on its review, the Division recommends PacifiCorp perform additional sensitivities in the 2015 IRP update to test for impacts on resource acquisition and retail ratepayer costs for higher levels of solar photovoltaic capacity penetration through additional QFs. Notwithstanding PacifiCorp's assertions regarding the Division's review, PacifiCorp commits to address updates to QF activity in the future and will consider specific modeling recommendations for alternative QF scenarios.[43]

The Commission is interested in examining the impact on PVRR and investment decisions of varying levels of QFs on the system. We direct PacifiCorp to develop a set of sensitivity runs addressing this issue following discussion with interested stakeholders.

K. DSM Potentials Study

UCE/SWEEP and the Joint Parties provide extensive comments on the 2015 DSM Potentials Study. This study forms the basis for the cost and quantities of available DSM over the planning horizon.

UCE/SWEEP concludes the 2015 DSM Potentials Study improved significantly as compared to the 2013 assessment, particularly in terms of Class 2 DSM achievable potential and selections in the Preferred Portfolio. UCE/SWEEP recommends the following for future analysis

[43] *See* PacifiCorp Reply Comments, September 25, 2015, at 7.

and implementation: future studies should expand the range of load control programs; additional savings potential available through residential Class 1 and Class 2 DSM programs; opportunities to further unlock the potential within Class 3 and Class 4 DSM resources through more thorough modeling in the next IRP; DSM price curves should be corrected for states that use the total resource cost test for approving programs; and newer emerging technologies and measures should be considered in future potential assessments. UCE/SWEEP also suggests PacifiCorp consider deploying an advanced metering infrastructure in new residential developments as a pilot program to acquire and refine Class 3 DSM programs.

The Joint Parties review the 2015 DSM Potentials Study in comparison to other states in the nation and conclude the energy efficiency potential is underestimated, annual incremental savings are well below leading states and decline over the planning horizon, and the annual ramp rate for new energy efficiency is slower than expected or is negative.

In response to UCE/SWEEP's recommendations, PacifiCorp commits to continue to: review the state of Class 1 DSM resources; monitor costs and potential and re-evaluate the feasibility of a pilot for advanced metering infrastructure; capture Class 4 DSM in load forecasts; monitor market conditions, new technologies, comprehensiveness of offerings, and cost-effectiveness of residential Class 2 DSM to ensure DSM programs are optimized and meet resource planning objectives; maintain state definitions of DSM cost-effectiveness; and maintain sensitivity analysis to examine alternative levels of Class 2 DSM.

In response to the Joint Parties, PacifiCorp states its 2015 DSM Potentials Study is performed by an independent, third-party contractor who utilizes industry best practice methodology. PacifiCorp cautions against comparing its DSM potential to the potential in other utility service areas because they are not directly comparable due to variability in resource need and value. With respect to declining energy savings, PacifiCorp notes the lighting backstop provision of the Energy Independence and Security Act of 2007 takes effect in 2020 and then increases year-by-year through 2024. PacifiCorp explains that DSM declines in 2025 as discretionary opportunities are assumed to be fully captured in the first 10 years of the planning horizon. In response to the recommendation to accelerate DSM, PacifiCorp notes it performed two core cases with accelerated DSM supply curves and neither case showed lower cost/risk than the Preferred Portfolio.

We appreciate the extensive review of and comment on the 2015 DSM Potentials Study by UCE/SWEEP and the Joint Parties. We also find reasonable PacifiCorp's responses to UCE/SWEEP's and the Joint Parties' specific recommendations. We observe that due to changing federal laws and standards, many of the gains associated with newer lighting technologies will occur automatically as older technologies are phased out. We encourage PacifiCorp to explain in the 2017 IRP how the effects of the federal standards on lighting technologies are accounted for in updated potentials studies or load forecasts.

L. Demand Side Resource Acquisitions

The Division and the Office raise concerns that the amount of Utah Class 2 DSM included in the 2015 IRP Preferred Portfolio may be overly aggressive and not achievable. The Division notes the 2013 and 2014 Class 2 DSM acquisitions did not achieve the levels identified in the 2013 IRP. The Division expresses concern that the amount of Utah Class 2 DSM included in the 2015 IRP Preferred Portfolio may be overly aggressive and unrealistic and that the acquisition costs may turn out to be prohibitive.

PacifiCorp agrees the projections in the 2015 IRP are aggressive compared to historical program acquisitions but believes those projections are consistent with the increased lighting opportunities across all six states as identified in the 2015 DSM Potentials Study. PacifiCorp notes the potential will be re-assessed in the 2017 IRP to identify whether any market conditions have changed that would affect the availability and/or cost-effectiveness of Class 2 DSM resources beyond 2017.

UAE notes the Preferred Portfolio relies primarily on DSM and FOTs in the early years, with a new, deferrable resource not required until 2028. UAE raises concerns with the variability of DSM costs, similar to those expressed by the Division. Due to this heavy reliance, and updated estimates of DSM acquisition costs, UAE recommends sensitivity analysis for DSM costs in future IRPs.

In addition to concerns raised about achievability of Class 2 DSM resources, the Division and UAE raise concerns that the associated acquisition costs may be prohibitive. PacifiCorp notes it continually reviews the status of the DSM balancing account with its DSM Advisory Group and Steering Committee, provides semi-annual funding forecasts, and provides cost-effectiveness information in annual reports to ensure the cost-effectiveness of DSM acquisitions. PacifiCorp believes these steps result in optimal DSM targets, which are both technically and economically feasible.

The Office raises concerns about possible jurisdictional cost allocation impacts based on Utah’s share of 20-year IRP Class 2 DSM selections relative to its share of system sales.

PacifiCorp believes the subject is best addressed through the Multi-State Process,[44] rather than in an IRP docket.

The Commission finds value in the suggestions and recommendations offered by the parties and commends PacifiCorp for its willingness to work with stakeholders on sensitivities to include in the 2017 IRP, as it did in the 2015 IRP.

We also note the Office's concerns about DSM cost allocation but agree with PacifiCorp that the IRP is generally not the forum for interstate cost allocation discussions.

M. Relationship of the 2013 IRP to Avoided Cost Determinations

UCE and Interwest note the link between the IRP results and avoided cost determinations. We accept PacifiCorp's Preferred Portfolio as the basis for avoided cost determinations for Schedule Nos. 37 and 38. The Preferred Portfolio will be considered reasonable until it is changed following review of a new action plan filed by PacifiCorp.

N. IRP Process

The Division requests the Commission continue the past practice of docketing PacifiCorp's IRP using the "2035" company-identification rather than "035" for consistency from year to year. The Division believes this will help parties locate prior IRP work more easily.

The Division also opines that often the time set aside to discuss supplemental studies in public meetings is insufficient and that the outside authors or relevant experts PacifiCorp relies on for several inputs into the IRP process are not always available at the public meetings. The Division further requests PacifiCorp explain to the larger stakeholder group all of the state-

[44] *See* Docket No. 02-035-04, In the Matter of the Application of PacifiCorp for an Investigation of Inter-Jurisdictional Issues.

specific programs or reports that affect the IRP *i.e.*, assumptions related to the Energy Trust of Oregon and the Northwest Power Pool and Council.[45] Although PacifiCorp disagrees with the Division that subject experts and report authors are not available at pertinent meetings, it commits to continue to have experts available at future meetings. PacifiCorp also states it will work with the Division to clarify concerns and work to resolve them.[46]

We support the continued availability of relevant experts to discuss the development and results of the various studies and inputs underlying the IRP analysis. We also note that while the "2035" designation originally distinguished between PacifiCorp and Utah Power dockets, it continued for some IRP dockets. We do not see a reason to continue use of the "2035" designation, but we have added a list of historic integrated resource plans to our "Electric Utility Information" website.[47]

O. Link to Business Plan

PacifiCorp did not present the Business Plan as a sensitivity case in the 2015 IRP contrary to our direction in the January Order at 30. We remind PacifiCorp the requirement remains for future IRPs. If PacifiCorp has substantive objections to this requirement, PacifiCorp should file a motion for Commission action within 90 days of this order explaining the objection and requesting relief.

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[45] Division Comments on PacifiCorp's 2015 IRP, August 25, 2015, at 3-4.
[46] PacifiCorp Reply Comments, September 25, 2015, at 7.
[47] http://psc.utah.gov/utilities/electric/index.html.

IV. SUMMARY AND CONCLUSIONS

We recognize the substantial body of work completed by PacifiCorp in preparing the 2015 IRP and in incorporating much of the guidance contained in our previous IRP orders. We also appreciate the diligence and thoughtful comments provided by all parties. These comments will serve to ensure continued improvement and usefulness of the IRP process and foster communication and understanding between PacifiCorp and parties. We acknowledge the growing complexity involved in PacifiCorp's preparation of its IRP and parties' participation in the process.

We note PacifiCorp filed extensive documentation and work papers with this IRP. The level of detail is useful and the information provided is well labeled. We commend PacifiCorp for making this information readily available and encourage it to continue to provide such detailed back-up data in future IRPs.

While we view the IRP as an evolving process, we find PacifiCorp has sufficiently complied with the Guidelines. As stated above, we acknowledge the 2015 IRP. We have provided additional guidance in this order to assist in achieving greater usefulness of IRP results and encourage wider ranges of sensitivity cases and greater use of resource acquisition path analysis for transparency of PacifiCorp decisions as market and regulatory changes occur. Per Utah Administrative Code Rule 746-430-1, we will provide notice of a scheduling conference each time the Company submits an IRP action plan to facilitate discovery and comments.

V. ORDER

We acknowledge the 2015 IRP as filed.

DATED at Salt Lake City, Utah, January 8, 2016.

/s/ Thad LeVar, Chair

/s/ David R. Clark, Commissioner

/s/ Jordan A. White, Commissioner

Attest:

/s/ Gary L. Widerburg
Commission Secretary
DW#271280

Notice of Opportunity for Agency Review or Rehearing

Pursuant to Utah Code Ann. §§ 63G-4-301 and 54-7-15, a party may seek agency review or rehearing of this order by filing a request for review or rehearing with the Commission within 30 days after the issuance of the order. Responses to a request for agency review or rehearing must be filed within 15 days of the filing of the request for review or rehearing. If the Commission fails to grant a request for review or rehearing within 20 days after the filing of a request for review or rehearing, it is deemed denied. Judicial review of the Commission's final agency action may be obtained by filing a Petition for Review with the Utah Supreme Court within 30 days after final agency action. Any Petition for Review must comply with the requirements of Utah Code Ann. §§ 63G-4-401, 63G-4-403, and the Utah Rules of Appellate Procedure.

CERTIFICATE OF SERVICE

I CERTIFY that on January 8, 2016, a true and correct copy of the foregoing was served upon the following as indicated below:

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