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BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

In the Matter of the Collaborative Stakeholder Process for Rocky Mountain Power's Grid Modernization and Rate Design	Docket No. 21-035-16 **COMMENTS OF WESTERN RESOURCE ADVOCATES**

Western Resource Advocates (WRA) submits these comments on PacifiCorp's informational filing in accordance with the Public Service Commission's Scheduling Order and Notices of Technical Conference, Comment Period, and Scheduling Conference (issued March 17, 2021).

I. INTRODUCTION AND SUMMARY

WRA appreciates the effort and thought that went into preparing PacifiCorp's informational filing on a short timeframe. The filing provided baseline information to initiate the collaborative stakeholder process. These comments will offer a response to the informational filing, with an additional intent to inform future stakeholder discussions. In Section II, we provide comments on PacifiCorp's "AMI Roadmap for Grid Modernization" (hereinafter referred to as the roadmap). In Section III, we provide more specific commentary on

technologies or use cases PacifiCorp highlighted in the roadmap. In Section IV, we respond to PacifiCorp's recommendation to address cost of service methodologies and rate "unbundling" as part of the stakeholder process.

II. COMMENTS ON PACIFICORP'S "AMI ROADMAP FOR GRID MODERNIZATION"

Advanced Metering Infrastructure (AMI) is a key technology for grid modernization that is being deployed across the United States. AMI is considered foundational for a "smart grid." The technology has been in common use in the energy industry for over a decade and approximately 70% of the 150 million meters in the United States are now AMI.[1] Full AMI deployment by a utility is composed of AMI meters at every customer location, hardware and software at utility offices to transmit and receive data from the AMI meters, and a robust communication system that provides bi-directional data flow between the utility and the customer's meter. A recent white paper drafted for the state of New Mexico provides a very good description of AMI and associated smart grid functionality and benefits.[2]

PacifiCorp is currently implementing an "advanced metering network" that establishes the communications infrastructure for future distribution grid applications.[3] While installing the communications infrastructure is the first step, PacifiCorp is evaluating specific use cases for potential implementation of full AMI. PacifiCorp's plan "involves several independent technologies that will develop and converge over time to produce a modernized grid that benefits customers."[4] The technologies or use cases under evaluation include improved outage management using newly situated AMI meters at some customer locations and existing AMR

[1] Estimate based on: https://www.eia.gov/tools/faqs/faq.php?id=108&t=3.
[2] http://www.emnrd.state.nm.us/ECMD/GridModernization/documents/AMI_1.29.21.pdf.
[3] Informational filing, page 2.
[4] *Id.,* page 3.

meters at most customer locations; an advanced distribution management system; communicating faulted circuit indicators (CFCI); full Fault Location, Isolation, and Service Restoration (FLISR) capability; interactive volt-VAR optimization; smart charging of electric vehicles; advanced demand response (load control) programs; and enhanced energy usage tools. PacifiCorp explains, "These technologies may be implemented in the future depending on how each technology integrates with the AMI system and its subsequent applicability in solving specific business and customer needs."[5] PacifiCorp provides a table of these use cases, business drivers, and general time-frames for evaluation (between zero and seven years).

Within the informational filing, PacifiCorp presents useful baseline information; however, WRA recommends that PacifiCorp provide additional information for discussion and feedback.

First, for each technology or use case, PacifiCorp should outline specific actions and timelines for evaluating the technologies presented in the roadmap. For example, if CFCI technology is being deployed within the next one to three years, when will the physical installation be finished; when will data collection and analysis occur; and when will the evaluation be complete? With regard to the Advanced Distribution Management System (ADMS), the process associated with evaluating the project over the next seven years is unclear. Given that ADMS is the "brains" of a full smart grid system, WRA is interested in understanding process for evaluating available ADMS options and whether additional technologies are dependent on the selection of a specific ADMS.

Second, for each technology or use case, PacifiCorp should provide metrics the Company will use to evaluate the technology for potential investment and deployment. According to

[5] *Id.*

PacifiCorp, many of these technologies are in the "evaluation" stage, but it is not clear what metrics will be used to evaluate the technologies. What is the threshold for these technologies to go from evaluation to actual implementation? It would be helpful to understand what considerations or metrics eventual implementation will depend on. For example, how will technical feasibility, specific metrics, and/or customer benefits factor into a decision to implement a technology? When identifying the key metrics and their target values, it may be helpful to present these by business driver and/or technology.

Third, PacifiCorp should outline the sequencing of various technologies in relation to each other. For example, is it necessary or strategic to invest in one application before another? Is it necessary to fully deploy AMI meters in order to achieve the benefits of certain applications? Are there specific technologies that "unlock" other opportunities? It would be additionally helpful to have known investments, such as updating the customer billing system, included among this information.

With regard to the foregoing recommendations, WRA is attaching a document with examples of how PacifiCorp might present this information. Please see *WRA Attachment A*.

III. COMMENTS ON SPECIFIC APPLICATIONS AND USE CASES HIGHLIGHTED IN THE ROADMAP

A. Electric Vehicles

The AMI Roadmap for Grid Modernization appropriately includes a section for Electric Vehicles. However, WRA believes that the roadmap is missing the most important component for EV integration: smart charging. The Roadmap states, "Currently the Company expects plug-in electric vehicles to only be a new load on the system; continued future development and innovation is required to utilize this customer technology as a distributed energy resource (aka

vehicle-to-grid)."[6] While vehicle-to-grid (V-to-G) is important for the long run, it is not the most immediate application needed to smoothly integrate EVs into the energy system. V-to-G is a promising way that electric vehicles can improve the function of the electric grid, but it is still an emerging technology that is mostly being deployed in small pilots across the country. In the near term, however, smart electric vehicle charging must be an integral part of the improved functionality of the grid, utilizing time-varying residential rates, advanced Demand Response (DR) programs to initiate or suspend charging, and other programs that will help to tune EV charging with grid loads and capacities. These charging optimization strategies are more scalable in the immediate future and can be critical to ensuring EV charging is generally occurring in off-peak periods and is available for managing capacity constraints on the grid.

Electric vehicle adoption has the potential to significantly affect the distribution system and the grid as a whole in the coming years; therefore, WRA recommends that PacifiCorp and stakeholders develop more concrete plans related to electric vehicle charging load management. The potential load growth associated with electric vehicles is significant. A 2019 report prepared for the U.S. Department of Energy found that nationwide electric vehicle load growth through 2030 could be as high as the dispatchable generating capacity added to the grid in an average year.[7] With this significant load growth anticipated on the system, it is imperative to account for potential impacts to the distribution system. Unmanaged EV charging load could lead to grid constraints that require expensive—and possibly unnecessary—infrastructure investments.

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[6] Informational filing, page 7-8.

[7] "Summary Report on EVs at Scale and the U.S. Electric Power System," U.S. Driving Research and Innovation for Vehicle Efficiency and Energy Sustainability, *available at:* https://www.energy.gov/sites/prod/files/2019/12/f69/GITT%20ISATT%20EVs%20at%20Scale%20Grid%20Summary%20Report%20FINAL%20Nov2019.pdf. The report states: "…the U.S. electric power system added an average dispatchable generating capacity of 12 GW per year, with years that exceeded 25 GW when including intermittent resources. In an unmanaged charging scenario intentionally chosen as an illustrative worst case, 12 GW of dispatchable generating capacity is equivalent to the aggregate demand of nearly 6 million new EVs. This accounts to 1 to 3 times the projected EV market growth through 2030 in the high and medium scenarios respectively."

Managed charging could help ensure that electric vehicles charge at off-peak times, avoiding grid constraints and unnecessary ratepayer costs. In an electrification study, the National Renewable Energy Laboratory states, "A better understanding of the potential impacts of electrification on load shapes and opportunities to influence them *is critical to minimizing overall costs*."[8]

PacifiCorp should provide additional details on its plans to conduct a proof-of-concept related to electric vehicles, as included in Figure 1 of the informational filing. In alignment with the above discussion regarding load growth and managed charging, WRA recommends that such a proof-of-concept evaluate electric vehicle grid impacts as well as managed charging strategies—not just vehicle-to-grid technology. For example, PacifiCorp should assess the following:

- Expected peak load growth associated with transportation electrification over time, *with and without* managed charging, by hour, and how this peak load growth would affect distribution investments and costs.
- Potential strategies for managed charging, by surveying customer interests, preferences, and expected uptake.
- Managed charging technologies available in the market, testing one or more technologies through a proof-of-concept demonstration.

B. Energy Usage Tools

WRA appreciates the efforts that PacifiCorp has made to develop energy usage tools for customers, and agrees that detailed usage information can help customers make informed energy

[8] Trieu Mai., et al., "Electrification Futures Study: Scenarios of Electric Technology Adoption and Power Consumption for the United States," National Renewable Energy Laboratory (emphasis added), *available at:* https://www.nrel.gov/docs/fy18osti/71500.pdf.

decisions and manage costs. A 2016 literature review from the American Council for an Energy-Efficient Economy (ACEEE) found that real-time feedback of energy usage data can reduce household energy consumption by 5% to 10%.[9] However, to maximize opportunities for customers to achieve energy and bill savings, we recommend that PacifiCorp prioritize adding functionality to this tool to allow customers to authorize third-party vendors to access their energy data. WRA also suggests the exploration of direct connectivity between AMI meters and Home Area Networks (HAN) as described below.

During the technical conference held on May 10, 2021, PacifiCorp explained that it has not prioritized adding functionality to allow customers to authorize third-party vendor services because relatively few customers have used the energy usage tool to date. WRA believes that this is actually an argument *for* enabling authorized vendor access, rather than against it, because third-party vendors can help customers effectively interpret and act on their data. WRA understands that, at this point, PacifiCorp is not planning to offer "real-time" information to customers; rather, PacifiCorp's planned energy usage tools will provide access to after-the-fact information to inform customer choices. However, as PacifiCorp deploys AMI meters, granular interval data presents new energy management opportunities for customers through partnerships with vendors. Among others, these new opportunities include:

- Services to "disaggregate" data for customers, in which vendors use advanced algorithms on interval data to parse out which equipment is using energy at different times.
- Services to assist business customers in minimizing demand charges.

[9] Paolo Bertoldi, et al., "Consumer Feedback Systems: How Much Energy Saving Will They Deliver and for How Long?," American Council for an Energy-Efficient Economy, *available at:* https://www.aceee.org/files/proceedings/2016/data/papers/12_769.pdf.

- Services to remind customers to respond to time-based rates and offer personalized strategies to save money.

While PacifiCorp's proposed energy usage tool sets the foundation for customers to pursue energy-efficiency, additional strategies—such as receiving the aforementioned personalized feedback and reminders through vendor services—can support deeper energy savings and bill reductions.[10] Individual customers may not have the time, resources, or knowledge to analyze their own energy data, whereas third-party vendors have the expertise to interpret data, develop tailored energy reduction recommendations for individual customers, regularly engage with customers, and report results. In some cases, these services may require ongoing access to and analysis of data.

PacifiCorp states that, with the planned energy usage tool, customers will be able to download 24 months of historical data, which they can send to a third-party vendor if desired. While this functionality *enables* the customer to partner with a third-party vendor, it does not *facilitate* that partnership—it places a burden on customers pursuing energy-efficiency opportunities, as they would need to regularly transfer data to their energy management vendor. Alternatively, removing this barrier would result in an improved experience for customers partnering with vendors, helping energy management vendors acquire and retain more customers and driving greater energy and bill savings.

As PacifiCorp begins to explore advanced rates in the coming years, it will become increasingly important for customers to understand how to reduce energy usage during peak times. In support of modern energy management strategies and advanced rate designs, WRA

[10] *Id.*, at 9. This report describes the strategies that lead to the most effective real-time feedback offerings, including: tailoring feedback to the customer; accompanying data with advice for reducing energy consumption; delivering feedback regularly and with high frequency; providing information by appliance, if possible; and associating feedback with a well-defined goal and/or making comparisons to similar groups ("social norming").

recommends that PacifiCorp develop functionality to allow customers to authorize vendor access to their individual data in the energy usage tool. At the least, PacifiCorp and stakeholders should evaluate what other states are doing to enable this functionality for the benefit of customers.

Finally, in addition to an energy usage tool, PacifiCorp and stakeholders should explore direct connectivity between AMI meters and Home Area Networks (HAN). A HAN allows customer devices—such as thermostats, energy display devices, and smart appliances—to communicate with the customer's AMI meter. This functionality unlocks even more complex energy management strategies. For example, a HAN could help enable customer smart appliances to automatically respond to time- or demand-based rates, if desired by the customer. Studies have shown that advanced rates paired with enabling technology drive significantly higher load reductions than advanced rates by themselves.[11] As such, a HAN offers greater customer connectivity and control, resulting in more energy and bill management opportunities. PacifiCorp should consider this customer value when evaluating the benefits of deploying full AMI, which is likely a prerequisite to HAN implementation.

C. Advanced Rate Design

WRA supports the inclusion of advanced rate design in PacifiCorp's roadmap and expects that modern rates will deliver net benefits to customers. Studies have shown that time-based rates can significantly reduce peak demand of participants—one literature review found that time-of-use rates resulted in an average peak demand reduction of 7%, while critical peak

[11] Aman Chitkara, et al., "A Review of Alternative Rate Designs," Rocky Mountain Institute, *available at:* https://rmi.org/wp-content/uploads/2017/04/A-Review-of-Alternative-Rate-Designs-2016.pdf. According to this report, "Rates coupled with "active" technologies (which automate customer response) reduce peak load by an additional 10–20 percentage points compared to the same rate without technology." Page 6.

pricing drove an average peak demand reduction of 23%.[12] The reviewed time-based rates also reduced overall energy consumption by 2.1% on average.[13] Therefore, in addition to giving customers more control over their energy bills, advanced rates have proven to be effective in reducing demand and energy usage, which could reduce system costs.

WRA understands that PacifiCorp must update its billing system before widely offering advanced rates. In the meantime, PacifiCorp should lay a strong groundwork for new rates in the coming years. PacifiCorp has expressed intention to collaboratively discuss aspects of rate design, and WRA looks forward to participating in such conversations. Particularly, WRA recommends that at least one such discussion focus on the benefits and drawbacks of different rate types. In addition to rate design, there are other preliminary actions that PacifiCorp and stakeholders should consider prior to the completion of the billing system:

- Testing different messaging with various demographics to determine the optimal ways to market an advanced rate to different segments of customers.
- Developing educational materials to inform customers about the most effective actions they can take to reduce usage during peak times.
- Completing advanced rate design pilots prior to the next general rate case.

IV. COMMENTS ON TOPICS FOR THE COLLABORATIVE STAKEHOLDER PROCESS

In addressing where the stakeholder process should go from here, PacifiCorp explains that it would be a missed opportunity not to address cost-of-service methodology issues as well as grid modernization and advanced rate design. The Company has concerns about moving to

[12] Brendon Baatz, "Rate Design Matters: The Intersection of Residential Rate Design and Energy Efficiency," American Council for an Energy-Efficient Economy, *available at:* https://www.aceee.org/sites/default/files/publications/researchreports/u1703.pdf.
[13] *Id.*

advanced rate designs without addressing how "base net power costs are recovered from customers and ultimately flow through the energy balancing account mechanism."[14] Specifically, PacifiCorp would like to talk through its "rate unbundling" proposal from the last general rate case. WRA does not oppose having these discussions as part of this stakeholder process.

WRA's interests with regard to cost-of-service methods and rate unbundling are promoting accurate and actionable price signals that serve to elicit customer responses and align electricity consumption with grid services and needs. That is, rate "unbundling" should support rate designs that provide customer benefits and serve grid needs. Additionally, any rate unbundling mechanism should facilitate effective and equitable implementation of AMI capabilities.

The Company's unbundling proposal is a departure from past practices; therefore, WRA requests that PacifiCorp thoroughly explain how its proposed unbundled rates are translated from the Company's Class Cost of Service Study to associated tariffs, and demonstrate that the proposed rate classifications appropriately reflect the costs of serving customers and send appropriate price signals. WRA also requests that parties be provided ample opportunity to review the Company's proposals, clearly understand program components, and provide input.

Additionally, WRA is aware of certain studies and analyses concerning advanced rate design that may benefit stakeholder deliberations. These include *Electric Cost Allocation for a New Era*,[15] published by the Regulatory Assistance Project (RAP) and a study submitted to the Hawaii Public Utilities Commission, entitled, *Gridworks Advanced Rate Design Working Group Report*,[16] prepared by Ron Nelson of Strategen Consulting. To further parties' understanding of

[14] Informational filing, page 12.
[15] https://www.raponline.org/knowledge-center/electric-cost-allocation-new-era/
[16] https://dms.puc.hawaii.gov/dms/DocumentViewer?pid=A1001001A20L15B53410J00844

cost of service methodology issues, WRA is supportive of the Commission, Division, or Office requesting briefings of these reports in technical conferences. WRA is also open to additional cost of service or advanced rate design presentations that other parties may suggest.

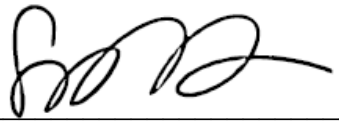
V. CONCLUSION

WRA looks forward to additional discussions in this collaborative stakeholder process. Within these comments, WRA has provided feedback on the informational filing and recommendations to inform discussions going forward.

Dated this 24th day of May 2021.

Respectfully submitted,

WESTERN RESOURCE ADVOCATES



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