

**BEFORE THE PUBLIC UTILITY COMMISSION  
OF OREGON**

UM 1857

In the Matter of

PACIFICORP, dba PACIFIC POWER,

Draft Storage Potential Evaluation.

ORDER

DISPOSITION: STIPULATION ADOPTED

**I. SUMMARY**

In this order, we adopt a stipulation outlining an agreed approach to the development of two energy storage projects by PacifiCorp, dba Pacific Power. We describe the projects, review settlement provisions, and find that each proposal is consistent with our guidelines, reasonably balances the value for customers of storage and the costs and benefits of the installations, and is in the public interest.

**II. BACKGROUND**

House Bill 2193 requires PacifiCorp to submit to the Commission a proposal to develop energy storage systems and procure any authorized projects by January 1, 2020. The storage systems must have the capacity to store at least 5 MWh of energy, and the total capacity acquired may not exceed one percent of an electric company's peak load in 2014, unless a project has statewide significance. HB 2193 also requires that each energy storage proposal be accompanied by the electric company's evaluation of storage potential in its system.

In our Order Nos. 16-504, 17-118 and 17-291, we provided direction on the development of electric company evaluation tools and proposals. Under the legislation, we are permitted but not required to apply existing or new competitive bidding guidelines to storage projects developed according to HB 2193.<sup>1</sup>

Finally, in our review of HB 2193 storage projects, we must:

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<sup>1</sup> HB 2193 provides that: "If authorized to develop a project under subsection (3) of this section, an electric company shall develop the project in accordance with any competitive bidding guidelines prescribed by the Commission."

[E]valuate each proposal to determine whether the proposal: (A) Is consistent with the guidelines adopted by the commission under subsection (1) of this section: (B) Reasonably balances the benefits of qualifying energy storage systems to ratepayers and the development of energy storage systems and the technology necessary to construct, operate and maintain energy storage systems; and (C) Is in the public interest.<sup>2</sup>

### **III. PROCEDURAL HISTORY**

On December 29, 2017, PacifiCorp filed its initial application for a Draft Storage Potential Evaluation and Storage Projects, which outlined how PacifiCorp proposed to use the evaluation to create energy storage project proposals. Along with Commission Staff, the following intervenors participated in this docket: the Oregon Citizens' Utilities Board (CUB), the Alliance of Western Energy Consumers (AWEC, formerly ICNU), Renewable Northwest (Renewable NW), the Community Renewable Energy Association (CREA), and the Oregon Department of Energy (ODOE).

On April 2, 2018, PacifiCorp filed its final Energy Storage System Project Proposals and Energy Storage Potential Evaluation. On July 18, 2018, a stipulation and joint supporting testimony was filed by PacifiCorp, Staff, and CUB. The stipulation is attached as Appendix A.

### **IV. STIPULATION**

The stipulation seeks approval of two energy storage project proposals and includes support for a storage potential evaluation methodology. The stipulation modifies in part the storage proposals and storage potential evaluation as originally filed by PacifiCorp.

#### **A. General Terms**

The stipulation requires PacifiCorp to file an annual update on the progress of the pilot projects, and a comprehensive evaluation of the projects after three years of operation, and another comprehensive evaluation at the end of the sixth year of operation. The stipulation notes that the Commission may direct PacifiCorp to include additional data, topics or other information in the update. As part of the update, PacifiCorp will provide a quantitative review of the costs and benefits of Project #1 relative to all other PacifiCorp ESS projects.

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<sup>2</sup> Oregon Laws 2015, chapter 312, section 3(a), directs the Commission to examine the potential value of applying energy storage system technology.

**B. Pilot Project #1**

For this project, PacifiCorp will partner with a single customer to study distributed storage applications alongside a blend of renewable and conventional generation to identify uses for storage with the PacifiCorp network. The project has two phases.

Phase one objectives include:

- The study of ancillary services and validation of models through test data
- The testing of system integration for future deployment
- The development of operational experience in energy storage controls and optimization
- Review of research opportunities

Phase two of the project, which PacifiCorp expects to commence in 2023 will include the following additional objectives:

- Integration of additional storage
- Review of tariff structure, ownership models, and interconnection issues
- Continued research opportunities

PacifiCorp will progress to the second phase of the project based on the following criteria:

- The successful deployment, integration and operation of Phase one
- Successful validation of anticipated in-service capital spending
- Continued support from the identified partner
- A refresh to the evaluation of costs and benefits
- Benefit and Cost ratio review

The stipulation caps costs that will be recoverable from ratepayers at \$3.0 million for phase one, and \$1.5 million for phase two. All costs will be subject to standard prudence review. The parties to the stipulation agree that the minimum ESS capacity/energy for phase one will be 2 MW/6 MWh and phase two 800kW/1MWh. PacifiCorp confirmed in the stipulation that O&M will not be capitalized.

**C. Pilot Project #2**

PacifiCorp will provide financial assistance for up to four energy storage installation projects that will seek to support community resiliency while also providing benefits to the utility as identified through technical assistance. That technical assistance will be in the form of an expert consultant that will provide limited on-site technical assistance and engineering analysis to select facilities critical for emergency response or disaster recovery for resiliency-focused storage projects. PacifiCorp will review a series feasibility and utilization criteria to determine whether or not a specific project should be supported.

The stipulation commits PacifiCorp to file a revised plan for Pilot Project #2 after selecting a technical assistance concept consultant and completing a limited number of initial studies. The stipulation limits cost recovery for this portion of the project to no more than \$200,000. The revised plan will estimate costs, benefits, and anticipated learnings associated with Pilot Project #2. In the stipulation, Staff agrees to make a best effort to provide a recommendation on approval of the plan to the Commission at a public meeting.

**D. Energy Storage Potential Evaluation**

The stipulation commits PacifiCorp to file a detailed written explanation of a plan to improve its energy storage modeling capability to estimate all of the energy storage benefits as directed in our Order Nos. 16-504, 17-118 and 17-375. PacifiCorp will file an Energy Storage Evaluation plan within 90 days from Commission approval of the stipulation. In the stipulation, Staff agrees to make a best effort to provide a recommendation on approval of the evaluation plan to the Commission at a public meeting. PacifiCorp will include newly estimated benefits along with all costs associated with ESS pilots in a filing in docket UM 1857 to be made no later than June 3, 2019.

**H. Commission Resolution**

We encourage Staff and parties to voluntarily resolve issues to the extent that settlement is in the public interest. Staff and parties entered into a stipulation that resolves all but one primary issue in this proceeding, and no party has filed an objection to the stipulation.

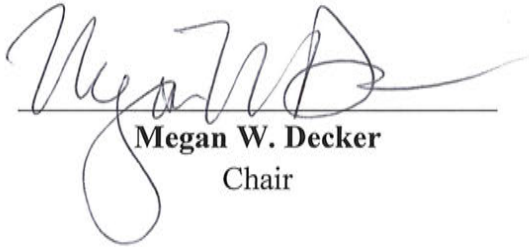
We find that each ESS proposal is consistent with adopted guidelines, reasonably balances the value for customers of storage and the costs and benefits of the installations, and is in the overall public interest.

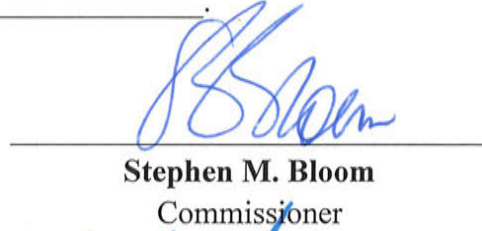
**ORDER**

IT IS ORDERED that:

1. The stipulation attached as Appendix A is adopted.

Made, entered, and effective SEP 04 2018

  
\_\_\_\_\_  
**Megan W. Decker**  
Chair

  
\_\_\_\_\_  
**Stephen M. Bloom**  
Commissioner

  
\_\_\_\_\_  
**Letha Tawney**  
Commissioner



A party may request rehearing or reconsideration of this order under ORS 756.561. A request for rehearing or reconsideration must be filed with the Commission within 60 days of the date of service of this order. The request must comply with the requirements in OAR 860-001-0720. A copy of the request must also be served on each party to the proceedings as provided in OAR 860-001-0180(2). A party may appeal this order by filing a petition for review with the Court of Appeals in compliance with ORS 183.480 through 183.484.

**BEFORE THE PUBLIC UTILITY COMMISSION  
OF OREGON**

**UM 1857**

In the Matter of  
PACIFICORP d/b/a PACIFIC POWER  
Draft Storage Potential Evaluation

**STIPULATION**

**INTRODUCTION**

PacifiCorp d/b/a Pacific Power (PacifiCorp), Staff of the Public Utility Commission of Oregon (Staff), and the Oregon Citizens’ Utility Board (CUB) (collectively the Stipulating Parties) enter into this Stipulation to resolve all issues in docket UM 1857, PacifiCorp’s energy Final Storage Project Proposals and Final Storage Potential Evaluation.

**BACKGROUND**

In accordance with House Bill (HB) 2193, Order No. 16-504, Order No. 17-118, and Order No. 17-375, PacifiCorp filed its initial draft Storage Potential Evaluation and Storage Project Proposals on December 29, 2017, proposing a storage potential evaluation and two storage project proposals. On February 23, 2018 PacifiCorp held a stakeholder workshop on the proposals in Portland. Stakeholders filed comments on March 14, 2018.

On April 2, 2018 PacifiCorp filed its Final Energy Storage Potential Evaluation and Final Storage Project Proposals. On May 22, 2018, PacifiCorp held a Commissioner Workshop to present its project proposals to the Commissioners. On May 29, 2018, a settlement conference was held where intervening parties expressed support for, concerns with, and suggestions for improvement of various aspects of PacifiCorp’s proposed pilot programs. Based on this discussion, the Stipulating Parties worked collaboratively to reach

consensus on clarifications, modifications and additional requirements for the proposed pilot programs. As a result, the Stipulating Parties enter into this agreement herein (Stipulation). The other intervening parties to this docket, including the Alliance of Western Energy Consumers, Community Renewable Energy Association, Oregon Department of Energy, and Renewable Northwest, chose to not take part in settlement discussions but each has indicated they have no objections to this Stipulation.

### **AGREEMENT**

1. The Stipulating Parties agree that this Stipulation settles all issues in this docket and modifies the Final Storage Potential Evaluation and Final Storage Project Proposals proposed by PacifiCorp in its April 2, 2018 filing as described in the terms below.
2. The Stipulating Parties agree to submit this Stipulation to the Commission and request that the Commission approve the Stipulation as presented. The Stipulating Parties agree that this Stipulation is a reasonable resolution of the issues in this proceeding and meets the three approval requirements set out in HB 2193.<sup>1</sup>

### **Energy Storage Potential Evaluation**

3. PacifiCorp agrees to file in this docket a detailed written explanation of its Energy Storage Potential Evaluation plan that includes the incremental next steps it will take to advance its energy storage modeling capability to estimate all benefits. The benefits, including sub-hourly benefits, are to be estimated for each use-case in

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<sup>1</sup> See Oregon Laws 2015, chapter 312, section 3(3)(a)(A)-(C) (“The commission shall . . . evaluate each proposal to determine whether the proposal: (A) Is consistent with the guidelines adopted under subsection (1) of this section; (B) Reasonably balances the value for ratepayers and utility operations that is potentially derived from the application of energy storage system technology and the costs of construction, operation and maintenance of energy storage systems; and (C) Is in the public interest.”).

Commission Orders No. 16-504, 17-118, and 17-375 and co-optimized; however, the Stipulating Parties recognize that, in the near-term and the long-term, the value may be zero. PacifiCorp's Energy Storage Potential Evaluation plan will set clear milestones with explanations regarding the analysis or tool development necessary to advance its methodologies to the forefront of Energy Storage System (ESS) benefit modeling. This plan must be filed within 90 days from Commission approval of this Stipulation.

4. Nothing in this Stipulation shall preclude the Commission from directing PacifiCorp to refile its Energy Storage Potential Evaluation plan.
5. Staff agrees to make best efforts to provide a recommendation on approval of the Energy Storage Potential Evaluation plan to the Commission at a public meeting no later than 90 days from the date of PacifiCorp's filing.
6. Upon approval, PacifiCorp will implement the approved Energy Storage Potential Evaluation plan, and will include the newly estimated benefits along with all costs associated with the ESS pilot in a filing in docket UM 1857 to be made no later than June 3, 2019.

**Pilot Project #1**

7. The Stipulating Parties agree that Phase 1 and Phase 2 of Pilot Project #1 as modified by the terms of this Stipulation are consistent with the Commission guidelines adopted pursuant to subsection (1) of HB 2193 (2015); reasonably balances the value for ratepayers and utility operations potentially derived from the application of energy storage system technology and the costs of construction, operation, and maintenance of energy storage systems; and is in the public interest.



8. The Stipulating Parties agree that costs recoverable from ratepayers for Pilot Project #1 shall be capped as follows:

Phase 1 Capital Costs	Phase 2 Capital Costs
\$3.0 million	\$1.5 million

9. Consistent with standard utility practice, the Stipulating Parties agree that all costs, including the capital costs, whether falling above or below the cap listed above, are subject to standard prudence review.
10. PacifiCorp confirms that no Operations & Maintenance costs will be capitalized.
11. For purposes of project evaluation and cost recovery, the Stipulating Parties agree that Pilot Project #1 will have a 15-year asset life.
12. The Stipulating Parties agree that the minimum ESS capacity/energy for Phase I will be 2 megawatts (MW)/6 megawatt-hours (MWh) and for Phase II will be 800 kilowatts (kW)/1 MWh.
13. The Stipulating Parties agree that the cost recovery method for this project will be determined at a future time, and PacifiCorp agrees to serve the parties to docket UM 1857 with a copy of its application for cost recovery for Pilot Project #1 at the time it is filed.
14. PacifiCorp agrees to provide a breakdown of how capacity was modeled to test each use case planned for Pilot Project #1.

**Pilot Project #2**

15. PacifiCorp agrees to file a revised plan for Pilot Project #2 after selecting a Technical Assistance Concept Consultant and completing a limited number of initial studies. The Stipulating Parties agree that PacifiCorp may recover from customers no more than \$200,000 in prudently incurred costs to complete this initial work. The revised

plan will estimate in detail the costs, benefits, and anticipated learnings associated with Pilot Project #2.

16. Staff agrees to make best efforts to provide a recommendation on whether or not to approve the revised plan for Pilot Project #2 to the Commission at a public meeting no later than 90 days from the date of PacifiCorp's filing.

**Additional Items**

17. The areas to be studied and the learnings to be gained from Project #1 that were agreed to by the Stipulating Parties are included in Appendix A to this Stipulation.
18. PacifiCorp agrees to file an annual update on the progress of the Pilot Project #1 (and Pilot Project #2 if PacifiCorp's revised plan is approved), and will also file a comprehensive evaluation of the pilot projects after the energy storage systems have been in operation for three years, as well as after the end of the 6th year in operation, and after the end of the 10th year in operation. The content of these evaluations will include a comparison to the performance of PacifiCorp's other ESSs. The Commission may direct PacifiCorp to include additional topics and/or data in the annual update and/or evaluations to ensure that adequate learning and data collection is achieved from the pilot projects.
19. These annual updates will include a narrative explanation of EIM benefits that have been achieved, and if not, why they have not been achieved.
20. Also included in the annual updates, PacifiCorp agrees to provide parties to docket UM 1857 with a copy of the annual Sustainable Transportation and Energy Plan Project Status Report (Report) that is filed with Utah Public Service Commission for a period not beyond the lower of the: life of Project Project #1, or the life of the

storage project being built in Panguitch, Utah. Along with this Report, PacifiCorp will also provide a quantitative evaluation of the costs and benefits of the ESS in Project #1 relative to all other ESSs operated by PacifiCorp, and a narrative discussion on whether any learnings from PacifiCorp's other storage projects can be applied in Oregon. If such a comparison is not appropriate or applicable to Oregon, PacifiCorp will provide a narrative discussion explaining why.

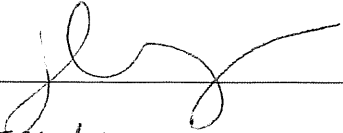
21. The Stipulating Parties agree that this Stipulation represents a compromise in the positions of the Stipulating Parties. Without the written consent of all Stipulating Parties, evidence of conduct or statements, including but not limited to term sheets or other documents created solely for use in settlement conferences in this docket, and conduct or statements made at settlement conferences, are confidential and not admissible in the instant or any subsequent proceeding, unless independently discoverable or offered for other purposes allowed under ORS 40.190.
22. The Stipulating Parties have negotiated this Stipulation as an integrated document. If the Commission rejects all or any material part of this Stipulation, or adds any material condition to any final order that is not consistent with this Stipulation, each Stipulating Party reserves its right: (i) to withdraw from the Stipulation, upon written notice to the Commission and the other Stipulating Parties within five (5) business days of service of the final order that rejects this Stipulation, in whole or material part, or adds such material condition; (ii) pursuant to OAR 860-001-0350(9), to present evidence and argument on the record in support of the Stipulation, including the right to cross-examine witnesses, introduce evidence as deemed appropriate to respond fully to issues presented, and raise issues that are incorporated in the

settlements embodied in this Stipulation; and (iii) pursuant to ORS 756.561 and OAR 860-001-0720, to seek rehearing or reconsideration, or pursuant to ORS 756.610 to appeal the Commission order. Nothing in this paragraph provides any Stipulating Party the right to withdraw from this Stipulation as a result of the Commission's resolution of issues that this Stipulation does not resolve.

23. This Stipulation will be offered into the record in this proceeding as evidence pursuant to OAR 860-001-0350(7). The Stipulating Parties agree to support this Stipulation throughout this proceeding and in any appeal, provide witnesses to support this Stipulation (if specifically required by the Commission), and recommend that the Commission issue an order adopting the settlements contained herein. By entering into this Stipulation, no Stipulating Party shall be deemed to have approved, admitted or consented to the facts, principles, methods or theories employed by any other Stipulating Party in arriving at the terms of this Stipulation. Except as provided in this Stipulation, no Stipulating Party shall be deemed to have agreed that any provision of this Stipulation is appropriate for resolving issues in any other proceeding.
24. This Stipulation may be signed in any number of counterparts. Each counterpart is an original. Together, all counterparts form one single document.

ORDER NO. 18 327

**For PacifiCorp:**

Signature:  \_\_\_\_\_

Name: ETTA LOCKEY

Title: Vice President, Regulation

Date: 7/18/18

**For Staff:**

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

**For CUB:**

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

ORDER NO. **18 327**

**For PacifiCorp:**

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

**For Staff:**

Signature: Kaylie Klein

Name: Kaylie Klein

Title: AAG for Staff

Date: 7/18/18

**For CUB:**

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

ORDER NO. 18 327

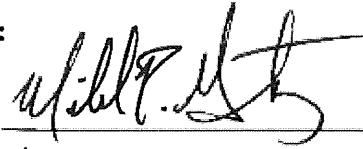
For CUB:

Signature:

Name:

Title:

Date:



MIKE GOETZ

Staff Attorney

7/18/18

## Appendix A

The areas to be studied and learnings to be gained through the construction, integration, and implementation of Pilot Project #1 are as follows:

- Effective charge and discharge rates
- Roundtrip efficiency
- Capacity factor
- Charging time
- Discharging time
- Idle time
- Daily operating cost
- List of applications
- Planned maintenance costs
- Unplanned maintenance cost
- Energy storage availability
- Use case testing and evaluation
- State of charge performance