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Portland, Oregon 97232

December 30, 2019

VIA ELECTRONIC FILING

Public Utility Commission of Oregon
201 High Street SE, Suite 100
Salem, OR 97301-3398

Attn: Filing Center

RE: Docket UM 1050—2020 PacifiCorp Inter-Jurisdictional Allocation Protocol

PacifiCorp d/b/a Pacific Power encloses for filing in this docket the following documents:

- The Stipulation between PacifiCorp, Staff of the Public Utility Commission of Oregon, the Oregon Citizens' Utility Board, the Alliance of Western Energy Consumers, and Sierra Club; and
- Joint Testimony in Support of the Stipulation.

If you have questions about this filing, please contact Cathie Allen, Regulatory Affairs Manager, at (503) 813-5934.

Sincerely,

A handwritten signature in black ink, appearing to read "Etta Lockey". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Etta Lockey
Vice President, Regulation

Enclosures

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

UM 1050

In the Matter of
PACIFICORP, d/b/a PACIFIC POWER,
Petition for Approval of the 2020 Inter-
Jurisdictional Allocation Protocol.

STIPULATION

1 This Stipulation addresses all the issues among PacifiCorp d/b/a Pacific Power
2 (PacifiCorp), Public Utility Commission of Oregon (Commission) Staff, the Oregon
3 Citizens’ Utility Board (CUB), the Alliance of Western Energy Consumers (AWEC),
4 and Sierra Club (collectively the Stipulating Parties) regarding the 2020 PacifiCorp
5 Inter-Jurisdictional Allocation Protocol (2020 Protocol) filed in Docket No. UM 1050
6 on December 3, 2019.

PARTIES

7
8 1. The parties to this Stipulation are PacifiCorp, Staff, CUB, AWEC, and Sierra
9 Club. All of the Stipulating Parties are signatories to the 2020 Protocol. Other Parties
10 to this proceeding are Calpine Energy Solutions, LLC (Calpine), Northwest &
11 Intermountain Power Producers Coalition (NIPPC), NW Energy Coalition (NWEC),
12 Portland General Electric (PGE), and the Renewable Energy Coalition. This Stipulation
13 is a full settlement of the issues by the Stipulating Parties.

BACKGROUND

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15 2. On December 3, 2019, PacifiCorp filed the 2020 Protocol, with direct
16 testimony and exhibits from Etta Lockey, Michael G. Wilding, and Steven E.

1 McDougal. The 2020 Protocol was the result of multi-year negotiations through
2 PacifiCorp’s Multi-State Process (MSP). Docket No. UM 1050 is an ongoing
3 investigation in which PacifiCorp submits its allocation method for Commission
4 approval following the MSP stakeholder process.

5 3. On April 4, 2002, CUB filed its notice of intervention. On March 13, 2002,
6 AWEC (fka Industrial Customers of Northwest Utilities) filed its petition to intervene.

7 4. On May 9, 2002, PGE filed its petition to intervene.

8 5. On October 10, 2003, NWECC filed its petition to intervene

9 6. On March 3, 2016, Calpine (fka Noble Americas Energy Solutions LLC)
10 filed its petition to intervene.

11 7. On March 31, 2016, NIPPC filed its petition to intervene.

12 8. On February 21, 2017, Sierra Club filed its petition to intervene.

13 9. On December 10, 2019, Administrative Law Judge Nolan Moser issued a
14 prehearing conference memorandum adopting a procedural schedule for this proceeding.

15 10. On December 16, 2019, Small Business Utility Advocates filed its petition to
16 intervene.

17 **AGREEMENT**

18 11. The Stipulating Parties support Commission approval of the 2020 Protocol as
19 the basis for allocating all components of PacifiCorp’s regulated service for the purpose
20 of establishing just and reasonable rates in Oregon during the term of the 2020 Protocol.

21 12. The Stipulating Parties agree that the 2020 Protocol governs inter-
22 jurisdictional allocation issues only, and that the Commission alone remains responsible
23 for establishing just and reasonable rates for PacifiCorp’s Oregon customers.

1 13. The Stipulating Parties agree to submit this Stipulation to the Commission
2 and request that the Commission approve the Stipulation and 2020 Protocol as filed.
3 The Stipulating Parties agree that this Stipulation and the 2020 Protocol are in the public
4 interest and that the allocation methodology in the 2020 Protocol will result in rates that
5 are fair, just, and reasonable, as required by ORS 756.040.

6 14. This Stipulation will be offered into the record of this proceeding as evidence
7 pursuant to OAR 860-001-0350(7). The Stipulating Parties agree to support this
8 Stipulation throughout this proceeding and any appeal, provide witnesses to sponsor this
9 Stipulation at any hearing before the Commission, and recommend that the Commission
10 issue an order adopting the settlements contained herein. The Stipulating Parties also
11 agree to cooperate in drafting and submitting joint testimony or a brief in support of the
12 Stipulation in accordance with OAR 860-001-0350(7).

13 15. If this Stipulation is challenged, the Stipulating Parties agree that they will
14 continue to support the Commission’s adoption of the terms of this Stipulation. The
15 Stipulating Parties agree to cooperate in cross-examination and put on such a case as
16 they deem appropriate to respond fully to the issues presented, which may include
17 raising issues that are incorporated in the settlements embodied in this Stipulation.

18 16. The Stipulating Parties have negotiated this Stipulation as an integrated
19 document. If the Commission rejects all or any material part of this Stipulation or adds
20 any material condition to any final order that is not consistent with this Stipulation, each
21 Stipulating Party reserves its right, pursuant to OAR 860-001-0350(9), to present
22 evidence and argument on the record in support of the Stipulation or to withdraw from
23 the Stipulation. To withdraw from the Stipulation, a Stipulating Party must provide

1 written notice to the Commission and other Stipulating Parties within five days of
2 service of the final order rejecting, modifying, or conditioning this Stipulation.
3 Stipulating Parties shall be entitled to seek rehearing or reconsideration pursuant to
4 OAR 860-001-0720 in any manner that is consistent with the agreement embodied in
5 this Stipulation.

6 17. By entering into this Stipulation, no Stipulating Party shall be deemed to
7 have approved, admitted, or consented to the facts, principles, methods, or theories
8 employed by any other Stipulating Party in arriving at the terms of this Stipulation, other
9 than those specifically identified in the body of this Stipulation. No Stipulating Party
10 shall be deemed to have agreed that any provision of this Stipulation is appropriate for
11 resolving issues in any other proceeding, except as specifically identified in this
12 Stipulation.

13 18. The Stipulating Parties agree that this Stipulation represents a compromise in
14 the positions of the Stipulating Parties. Without the written consent of each Stipulating
15 Party, evidence of conduct or statements, including but not limited to term sheets or
16 other documents created solely for use in settlement conferences in this docket, are
17 confidential and not admissible in the instant or any subsequent proceeding, unless
18 independently discoverable or offered for other purposes allowed under ORS 40.190.

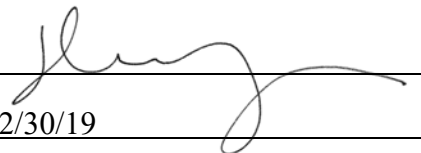
19 19. This Stipulation is not enforceable by any Stipulating Party unless and until
20 adopted by the Commission in a final order. Each signatory to this Stipulation
21 acknowledges that they are signing this Stipulation in good faith and that they intend to
22 abide by the terms of this Stipulation unless and until the Stipulation is rejected or

1 adopted only in part by the Commission. The Stipulating Parties agree that the
2 Commission has exclusive jurisdiction to enforce or modify the Stipulation.

3 20. This Stipulation may be executed in counterparts and each signed counterpart
4 shall constitute an original document.

5 21. This Stipulation is entered into by each Stipulating Party on the date entered
6 below such Stipulating Party's signature.

PACIFICORP

By: 
Date: 12/30/19

**STAFF OF THE PUBLIC UTILITY
COMMISSION OF OREGON**

By: _____
Date: _____

**OREGON CITIZENS' UTILITY
BOARD (CUB)**

By: _____
Date: _____

**ALLIANCE OF WESTERN ENERGY
CONSUMERS (AWEC)**

By: _____
Date: _____

SIERRA CLUB

By: _____
Date: _____

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PACIFICORP

By: _____

Date: _____

**STAFF OF THE PUBLIC UTILITY
COMMISSION OF OREGON**

By:  _____

Date: 12/30/19 _____

**OREGON CITIZENS' UTILITY
BOARD (CUB)**

By: _____

Date: _____

**ALLIANCE OF WESTERN ENERGY
CONSUMERS (AWEC)**

By: _____

Date: _____

SIERRA CLUB

By: _____

Date: _____

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PACIFICORP

**STAFF OF THE PUBLIC UTILITY
COMMISSION OF OREGON**

By: _____


By: _____

Date: _____

Date: _____

**OREGON CITIZENS' UTILITY
BOARD (CUB)**

**ALLIANCE OF WESTERN ENERGY
CONSUMERS (AWEC)**

By: 

By: _____

Date: 12-30-19

Date: _____

SIERRA CLUB

By: _____

Date: _____

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PACIFICORP

By: _____

Date: _____

**STAFF OF THE PUBLIC UTILITY
COMMISSION OF OREGON**

By: _____

Date: _____

**OREGON CITIZENS' UTILITY
BOARD (CUB)**

By: _____

Date: _____

**ALLIANCE OF WESTERN ENERGY
CONSUMERS (AWEC)**

By:  _____

Date: 12/30/19 _____

SIERRA CLUB

By: _____

Date: _____

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PACIFICORP

**STAFF OF THE PUBLIC UTILITY
COMMISSION OF OREGON**

By: _____

By: _____

Date: _____

Date: _____

**OREGON CITIZENS' UTILITY
BOARD (CUB)**

**ALLIANCE OF WESTERN ENERGY
CONSUMERS (AWEC)**

By: _____

By: _____

Date: _____

Date: _____

SIERRA CLUB

By: 

Date: 12.30.19

Docket No. UM 1050
Stipulating Parties/100
Witnesses: Lockey-Storm-
Jenks-Mullins-Hausman

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

PACIFICORP

**Stipulating Parties' Joint Testimony of
Etta Lockey, Steve Storm, Bob Jenks, Bradley G. Mullins, and
Ezra Hausman**

December 2019

JOINT TESTIMONY OF STIPULATING PARTIES

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ATTACHED EXHIBITS

- Stipulating Parties/101—Qualifications of Ms. Etta Lockey
- Stipulating Parties/102—Qualifications of Mr. Steve Storm
- Stipulating Parties/103—Qualifications of Mr. Bob Jenks
- Stipulating Parties/104—Qualifications of Mr. Bradley G. Mullins
- Stipulating Parties/105—Qualifications of Dr. Ezra Hausman

PURPOSE OF TESTIMONY

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Q. Who is sponsoring this testimony?

A. This testimony is jointly sponsored by PacifiCorp d/b/a Pacific Power (PacifiCorp or the Company), Staff of the Public Utility Commission of Oregon (Staff), the Oregon Citizens' Utility Board (CUB), the Alliance of Western Energy Consumers (AWEC), and Sierra Club (collectively, the Stipulating Parties).

Q. Please provide your names and qualifications.

A. Our names are Etta Lockey, Steve Storm, Bob Jenks, Bradley G. Mullins, and Ezra Hausman. The qualifications for Ms. Lockey, the sponsor for PacifiCorp, are set forth in Exhibit STIPULATING PARTIES/101. The qualifications for Mr. Storm, the sponsor for Staff, are set forth in STIPULATING PARTIES/102. The qualifications for Mr. Jenks, the sponsor for CUB, are set forth in Exhibit STIPULATING PARTIES/103. The qualifications for Mr. Mullins, the sponsor for AWEC, are set forth in Exhibit STIPULATING PARTIES/104. The qualifications for Dr. Hausman, the sponsor for Sierra Club, are set forth in Exhibit STIPULATING PARTIES/105.

Q. What is the purpose of this joint testimony?

A. This joint testimony describes and supports the stipulation filed in Docket No. UM 1050, which recommends adoption of the 2020 PacifiCorp Inter-Jurisdictional Allocation Methodology (2020 Protocol), as filed by PacifiCorp on December 3, 2019 (Stipulation).

1 **Q. Has any party to Docket No. UM 1050 objected to the Stipulation?**

2 A. No party has objected as of the filing of this Joint Testimony. The Stipulation is
3 supported by the Stipulating Parties, all of whom participated in PacifiCorp's Multi-
4 State Process (MSP) negotiations and have signed the 2020 Protocol. Pursuant to the
5 procedural schedule in this docket, all parties may object to the Stipulation by
6 January 14, 2020.

7 **BACKGROUND ON DOCKET NO. UM 1050**

8 **Q. Please describe how Docket No. UM 1050 began.**

9 A. On March 5, 2002, PacifiCorp filed a request with the Commission to open an
10 investigation to consider the Company's status as a multi-jurisdictional utility and
11 endorse an MSP for considering the issues surrounding that status. On March 26,
12 2002, the Commission granted PacifiCorp's request and opened an investigation into
13 the inter-jurisdictional allocation of PacifiCorp's costs.¹

14 **Q. What was the scope of the investigation?**

15 A. In Order No. 02-193, the Commission agreed to open the investigation to:
16 (1) determine an allocation methodology that will allow PacifiCorp an opportunity to
17 recover its prudently incurred costs associated with its investment in generation
18 resources; (2) ensure that Oregon's share of PacifiCorp's costs is equitable in relation
19 to other states; and (3) meet the public interest standard in Oregon. The Commission
20 also required that PacifiCorp allow representatives from customer groups to
21 participate in its MSP.

¹ *In the matter of PacifiCorp*, Docket No. UM 1050, Order No. 02-193 (Mar. 26, 2002).

1 **Q. Has the MSP continued since that time?**

2 A. Yes. PacifiCorp has convened MSP working groups to discuss allocation issues and
3 methodologies since 2002. Over the course of this time, various persons representing
4 numerous organizations in the states of Oregon, California, Idaho, Utah, Washington,
5 and Wyoming met periodically to discuss issues and allocation methodologies for
6 PacifiCorp.

7 **Q. Has the Commission approved other allocation methodologies developed**
8 **through the MSP in this docket?**

9 A. Yes. In September 30, 2003, PacifiCorp filed for approval of an Inter-Jurisdictional
10 Allocation Protocol (Protocol) with the public utility commissions in four states:
11 Oregon, Idaho, Utah, and Wyoming. Discussions and negotiations with parties
12 resulted in certain revisions to the Protocol. On January 12, 2005, the Commission
13 ratified PacifiCorp's Revised PacifiCorp Inter-Jurisdictional Cost Allocation Protocol
14 (Revised Protocol) for use in future rate cases to determine how PacifiCorp's
15 generation, transmission and distribution costs, and wholesale revenues would be
16 allocated among the utility's service territories.² The Revised Protocol was also
17 adopted by Idaho, Utah, and Wyoming. Washington rejected the Revised Protocol in
18 favor of allocating costs pursuant to the West Control Area Inter-Jurisdictional
19 Allocation Methodology (WCA). California adopted the Revised Protocol in
20 PacifiCorp's 2009 general rate case.

21 On September 15, 2010, PacifiCorp filed a petition requesting approval of
22 certain amendments to the Revised Protocol (2010 Protocol). Parties to the

² *In the matter of PacifiCorp*, Docket No. UM 1050, Order No. 05-021 (Jan. 12, 2005).

1 proceeding filed a stipulation requesting that the 2010 Protocol be adopted by the
2 Commission with certain modifications, and applied in all PacifiCorp general rate
3 cases filed in Oregon. The 2010 Protocol included an expiration date of
4 December 31, 2016, at which time Oregon was—absent alternative direction by the
5 Commission—to revert to the Revised Protocol for determining allocations to
6 Oregon. On July 5, 2011, the Commission adopted the 2010 Protocol, as amended by
7 the stipulation.³ The 2010 Protocol was also adopted by Idaho, Utah, and Wyoming.

8 PacifiCorp continued to meet with stakeholders through the MSP in
9 anticipation of the 2010 Protocol expiration date. On December 30, 2015, PacifiCorp
10 filed the 2017 PacifiCorp Inter-Jurisdictional Allocation Protocol (2017 Protocol).
11 Through the MSP, PacifiCorp and certain stakeholders negotiated the 2017 Protocol
12 as a short-term, non-precedential inter-jurisdictional allocation approach that would
13 allow parties to continue working towards a permanent solution, while providing
14 some certainty for PacifiCorp. The 2017 Protocol was signed by parties from
15 Oregon, Idaho, Utah, and Wyoming, including Staff and CUB. The Commission
16 approved use of the 2017 Protocol on August 23, 2016, for a two-year term until
17 December 31, 2018.⁴ Subsequently, the Commission approved a one-year extension,
18 until December 31, 2019, in Order No. 17-124.⁵ The 2017 Protocol was also adopted,
19 and extended, by Idaho, Utah, and Wyoming.

20 **Q. Did PacifiCorp explore other allocation methodologies or options?**

21 A. Yes. As part of the 2017 Protocol, PacifiCorp agreed to certain state-specific

³ *In the matter of PacifiCorp, dba Pacific Power*, Docket No. UM 1050, Order No. 11-244 (Jul. 5, 2011).

⁴ *In the matter of PacifiCorp, dba Pacific Power*, Docket No. UM 1050, Order No. 16-319 (Aug. 23, 2016).

⁵ *In the matter of PacifiCorp, dba Pacific Power*, Docket No. UM 1050, Order No. 17-124 (Mar. 29, 2017).

1 provisions. One of the Oregon provisions was a requirement to assess alternative
2 inter-jurisdictional allocation methods, including a corporate structural alternative.
3 Failure to conduct such assessments would have resulted in financial penalties levied
4 by the Commission. PacifiCorp conducted those assessments and discussed its
5 review with the MSP parties and at a commissioner forum.⁶

6 **PACIFICORP’S PETITION**

7 **Q. What did the Company request of the Commission in its Petition for Approval of**
8 **the 2020 Protocol filed on December 3, 2019 (Petition)?**

9 A. In its December 3, 2019, filing PacifiCorp requested approval of the 2020 Protocol
10 for use in regulatory proceedings through 2023. The 2020 Protocol is an agreement
11 negotiated among the participants to PacifiCorp’s MSP and replaces the 2017
12 Protocol for California, Idaho, Oregon, Utah, and Wyoming and the WCA for
13 Washington. The Petition was accompanied by direct testimony from Etta Lockey,
14 Michael G. Wilding, and Steven R. McDougal, and supporting exhibits. The 2020
15 Protocol was attached to the direct testimony of Ms. Lockey as PAC/101.

⁶ See Order No. 17-124 at 4 (“[W]e find that PacifiCorp has met the requirements of Section XIV, paragraph 3 of the 2017 Protocol by timely providing the results of its assessment of alternative inter-jurisdictional allocation methods, including a corporate structural alternative. Accordingly, we acknowledge that financial penalties in the 2017 Protocol are not warranted.”).

1 **STIPULATION**

2 **Q. How did the Stipulating Parties arrive at the Stipulation?**

3 A. All of the Stipulating Parties participated in the MSP negotiations and have signed the
4 2020 Protocol. The Stipulating Parties agree that the 2020 Protocol can be used to set
5 just and reasonable rates in Oregon.

6 **Q. Has any participant to the MSP stated its opposition to the 2020 Protocol?**

7 A. No. The 2020 Protocol was negotiated with the intent to address concerns from
8 participants from all states.

9 **Q. Do the Stipulating Parties agree that approval of the 2020 Protocol by the
10 Commission meets the goals established in Docket No. UM 1050?**

11 A. Yes. The Stipulating Parties agree that the 2020 Protocol can be used to set just and
12 reasonable rates for PacifiCorp in Oregon during the Interim Period,⁷ provides
13 PacifiCorp an opportunity to recover its prudently incurred costs, results in an
14 Oregon-allocated share of PacifiCorp's costs that is equitable, and meets the public
15 interest standard in Oregon. The Commission will still make case-specific prudence
16 determinations in any rate setting proceeding.

17 **Q. Please explain how the Stipulating Parties reached that conclusion.**

18 A. First, the 2020 Protocol establishes an allocation methodology that is substantially
19 similar to the allocation methodology under the 2017 Protocol, previously approved
20 by the Commission. One exception is the termination of the equalization adjustment
21 to the embedded cost differential, as discussed in the testimony of Ms. Lockey.⁸

⁷ The 2020 Protocol defines "Interim Period," which will terminate no later than December 31, 2023 (see; e.g., Exhibit PAC/100 Lockey/11).

⁸ PAC/100.

1 Termination of the equalization adjustment reduces the allocated costs to Oregon
2 compared to the 2017 Protocol. The 2020 Protocol also identifies specific service and
3 depreciable lives for PacifiCorp’s coal-fueled generation resources for use in Oregon,
4 along with a process for identifying the costs of decommissioning those resources.

5 Second, the 2020 Protocol does not prejudge the prudence of any cost or the
6 extent to which any cost may be reflected in rates. Nothing in the 2020 Protocol
7 limits or expands the Commission’s right or obligation to: (1) determine fair, just, and
8 reasonable rates; (2) consider the effect of changes in laws, regulations, or
9 circumstances when determining fair, just, and reasonable rates; or (3) establish
10 different allocation policies and procedures for purposes of allocating costs and
11 revenue within that state to different customers or customer classes.

12 Third, the 2020 Protocol does not affect or negate the Stipulating Parties right
13 to address changed or unforeseen circumstances and will not bind or be used against a
14 party if that party concludes the 2020 Protocol no longer produces results that are
15 just, reasonable, or in the public interest. It does not constitute an acknowledgment of
16 the validity or invalidity of a particular method, theory, or principle of regulation, cost
17 recovery, cost of service, or rate design. The 2020 Protocol allocates Company costs,
18 which will then be subject to Commission review.

19 THE 2020 PROTOCOL

20 **Q. What does the 2020 Protocol address?**

21 A. The 2020 Protocol describes the method by which all components of PacifiCorp’s
22 regulated service, including costs, revenues, and benefits associated with generation,

1 transmission, distribution, and wholesale transactions, should be allocated and
2 assigned among PacifiCorp's six state service territories through 2023.

3 **Q. Please clarify the effect of the Commission's approval of the 2020 Protocol in**
4 **this case.**

5 A. The 2020 Protocol contains sections that address allocation issues during the Interim
6 Period and a framework for developing a future allocation methodology. The parties
7 to the 2020 Protocol had differing levels of agreement regarding more extensive
8 revisions to PacifiCorp's allocation methodology, as well as a basis for continued
9 discussions for a Post-Interim allocation methodology. Commission approval of the
10 2020 Protocol indicates approval of Sections 3 and 4, among other sections, which set
11 forth the Interim Period Allocation Method and the Implemented Issues. The Interim
12 Period Allocation Method largely extends the 2017 Protocol, subject to the exceptions
13 set forth in Section 3 of the 2020 Protocol. The Implemented Issues, set forth in
14 Section 4, taking effect during the Interim Period are: States' decisions to exit coal-
15 fueled existing resources; reassignment of coal-fueled existing resources;
16 decommissioning costs; and treatment of qualified facilities. Approval of the 2020
17 Protocol does not, however, pre-determine ratemaking treatment, prudence or
18 reasonableness of costs, closure dates for coal-fueled resources, or approval of Post-
19 Interim Period Implementation Issues.

20 **Q. If approved, does the 2020 Protocol bind the Stipulating Parties or the**
21 **Commission to the resolved provisions in Section 5 of the 2020 Protocol?**

22 A. No. The resolved issues are part of a future post-interim period method agreement.
23 No party to the 2020 Protocol is committed to such an agreement until all aspects can

1 be reviewed in their entirety. Only if and when a post-interim period method
2 agreement is reached, will the parties to such a future agreement seek Commission
3 approval. Nothing in this filing, or the 2020 Protocol, prejudices that subsequent
4 filing. Accordingly, the Commission is essentially approving Sections 3 and 4 for use
5 in regulatory proceedings at this time.

6 **Q. Does the 2020 Protocol have an expiration date?**

7 A. Yes. The 2020 Protocol provides an allocation method to be used by PacifiCorp until
8 no later than December 31, 2023, and outlines a framework for ongoing discussions
9 to develop the cost allocation methodology to be used after the expiration of the 2020
10 Protocol. The ongoing discussions will address several “framework issues” that
11 require additional time for parties to reach agreement.

12 **Q. Are the Stipulating Parties planning to continue to participate in resolving the
13 framework issues?**

14 A. Yes. Resolution of the framework issues is critical to developing a post-2023 cost
15 allocation method for PacifiCorp.

16 **Q. Did PacifiCorp provide studies, analysis and other information to the parties
17 regarding the 2020 Protocol in UM 1050?**

18 A. Yes. Staff, CUB, AWEC, and Sierra Club participated in PacifiCorp’s MSP
19 negotiations. Throughout those negotiations, PacifiCorp provided studies, analysis
20 and other information supporting the Company’s position and in response to requests
21 for information from stakeholders to inform the negotiations.

1 **Q. What do the Stipulating Parties request regarding the Stipulation?**

2 A. The Stipulating Parties request that the Commission grant PacifiCorp's request and
3 adopt the Stipulation and approve Sections 3 and 4 of the 2020 Protocol for use in
4 PacifiCorp regulatory proceedings through 2023, and request that the Commission
5 include the terms and conditions of the Stipulation in its final order in this case.

6 **Q. Does this conclude your joint testimony?**

7 A. Yes.

Docket No. UM 1050
Stipulating Parties/101
Witnesses: Lockey-Storm-
Jenks-Mullins-Hausman

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

PACIFICORP

**Exhibit Accompanying Joint Testimony of Stipulating Parties
Qualifications of Ms. Etta Lockey**

December 2019

WITNESS QUALIFICATION STATEMENT

NAME: Etta Lockey

EMPLOYER: PacifiCorp

TITLE: Vice President, Regulation

ADDRESS: 825 NE Multnomah Street, Suite 2000
Portland, OR 97232

EDUCATION: Bachelor of Arts, Political Science
University of Oregon, Eugene, OR

Juris Doctorate
Northwestern School of Law of Lewis and Clark College, Portland, OR

EXPERIENCE: Provided testimony in docket UM 1050 supporting PacifiCorp's Petition for Approval of the 2020 Inter-Jurisdictional Allocation Protocol.

Docket No. UM 1050
Stipulating Parties/102
Witnesses: Lockey-Storm-
Jenks-Mullins-Hausman

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

PACIFICORP

**Exhibit Accompanying Joint Testimony of Stipulating Parties
Qualifications of Mr. Steve Storm**

December 2019

WITNESS QUALIFICATION STATEMENT

NAME Steve Storm

EMPLOYER Public Utility Commission of Oregon

TITLE Senior Economist

ADDRESS 201 High Street SE, Suite 100
Salem, OR 97301

EDUCATION MBA; University of Oregon; Eugene, Oregon
AB (Economics); Harvard University; Cambridge, Massachusetts

EXPERIENCE I have been employed by the Public Utility Commission of Oregon since October 2018 as a Senior Economist. I was previously employed by the Commission as a Senior Economist 2007-2008, as the Program Manager of the Economic and Policy Analysis section 2008-2012, and as an Economist 4 2012-2013. My responsibilities have included performing as well as leading a team of analysts performing economic and financial research and providing technical support on a wide range of policy issues involving electric, natural gas, and telecommunications utilities. I have testified before the Commission on policy and technical issues in multiple dockets.

I have over 35 years of professional experience performing and directing the performing of economic, financial, and other quantitative analysis.

I was employed by NW Natural as a Senior Economist in its IRP team 2013-2018, with responsibilities that included customer and industrial load forecasting; performing cost of service and related financial analysis on a variety of infrastructure projects and alternatives; and preparing quarterly economic information for executive communications.

I was a self-employed financial planner for eight years following an 18 year career in management positions responsible for pricing and cost analysis; financial analysis, planning and management; and strategic planning in the publishing and telecommunications industries. I managed the pricing and cost accounting functions for Pacific Northwest Bell's Directory department and its successor company, US WEST Direct, for five years. I managed the departmental budgeting and management reporting functions at US WEST Direct for three years and had seven years management experience in capital budgeting, financial analysis, and strategic planning functions at US WEST Communications. I managed the corporate financial planning, analysis, and management reporting functions for one year at Electric Lightwave.

Docket No. UM 1050
Stipulating Parties/103
Witnesses: Lockey-Storm-
Jenks-Mullins-Hausman

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

PACIFICORP

**Exhibit Accompanying Joint Testimony of Stipulating Parties
Qualifications of Mr. Bob Jenks**

December 2019

WITNESS QUALIFICATION STATEMENT

NAME: Bob Jenks

EMPLOYER: Oregon Citizens' Utility Board

TITLE: Executive Director

ADDRESS: 610 SW Broadway, Suite 400
Portland, OR 97205

EDUCATION: Bachelor of Science, Economics
Willamette University, Salem, OR

EXPERIENCE: Provided testimony or comments in a variety of OPUC dockets, including UE 88, UE 92, UM 903, UM 918, UE 102, UP 168, UT 125, UT 141, UE 115, UE 116, UE 137, UE 139, UE 161, UE 165, UE 167, UE 170, UE 172, UE 173, UE 207, UE 208, UE 210, UE 233, UE 246, UE 283, UG 152, UM 995, UM 1050, UM 1071, UM 1147, UM 1121, UM 1206, UM 1209, UM 1355, UM 1635, UM 1633, and UM 1654. Participated in the development of a variety of Least Cost Plans and PUC Settlement Conferences. Provided testimony to Oregon Legislative Committees on consumer issues relating to energy and telecommunications. Lobbied the Oregon Congressional delegation on behalf of CUB and the National Association of State Utility Consumer Advocates.

Between 1982 and 1991, worked for the Oregon State Public Interest Research Group, the Massachusetts Public Interest Research Group, and the Fund for Public Interest Research on a variety of public policy issues.

MEMBERSHIP: National Association of State Utility Consumer Advocates
Board of Directors, OSPIRG Citizen Lobby
Telecommunications Policy Committee, Consumer Federation of America
Electricity Policy Committee, Consumer Federation of America
Board of Directors (Public Interest Representative), NEEA

Docket No. UM 1050
Stipulating Parties/104
Witnesses: Lockey-Storm-
Jenks-Mullins-Hausman

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

PACIFICORP

**Exhibit Accompanying Joint Testimony of Stipulating Parties
Qualifications of Mr. Bradley G. Mullins**

December 2019

1 **REGULATORY APPEARANCES OF BRADLEY G. MULLINS**

2 **Q. PLEASE SUMMARIZE YOUR EDUCATION AND WORK EXPERIENCE.**

3 A. I have a Master of Accounting degree from the University of Utah. After obtaining my
4 master’s degree, I worked at Deloitte in San Jose, California, where I specialized in
5 performing research and development tax credit studies. I later worked at PacifiCorp as
6 an analyst involved in power cost forecasting. I have been performing independent
7 energy and utilities consulting services for approximately six years and provide services
8 to utility customers on matters such as revenue requirement, power cost forecasting, and
9 rate development. I have sponsored testimony in regulatory jurisdictions around the
10 United States, including before the Public Utility Commission of Oregon.

11 **Q. PLEASE PROVIDE A LIST OF YOUR REGULATORY APPEARANCES.**

- 12 A. I have sponsored testimony in the following regulatory proceedings:
- 13 • Avista Corporation 2020 General Rate Case, Wa.UTC Docket No. UE-190334 (Cons.)
 - 14 • In re Cascade Natural Gas Corporation Application for Approval of a Safety Cost
15 Recovery Mechanism, Or. PUC Docket No. UM 2026
 - 16 • In re Avista Corporation, Request for a General Rate Revision, Or.PUC Docket No. UG
17 366.
 - 18 • In re Portland General Electric, 2020 Annual Update Tariff (Schedule 125), Or.PUC
19 Docket No UE 359.
 - 20 • In re PacifiCorp 2020 Transition Adjustment Mechanism, Or.PUC Docket No. UE 356.
 - 21 • In re PacifiCorp 2020 Renewable Adjustment Clause, Or.PUC Docket No. UE 352.
 - 22 • 2020 Joint Power and Transmission Rate Proceeding, Bonneville Power Administration,
23 Case No. BP-20.
 - 24 • In the Matter of the Application of MSG Las Vegas, LLC for a Proposed Transaction
25 with a Provider of New Electric Resources, PUC Nv. Docket No. 18-10034.

Qualifications of Bradley G. Mullins

- 1 • Puget Sound Energy 2018 Expedited Rate Filing, Wa.UTC Dockets UE-180899/UG-
2 180900 (Cons.).
- 3 • Georgia Pacific Gypsum LLC's Application to Purchase Energy, Capacity, and/or
4 Ancillary Services from a Provider of New Electric Resources, PUC Nv. Docket No. 18-
5 09015.
- 6 • Joint Application of Nevada Power Company d/b/a NV Energy for approval of their
7 2018-2038 Triennial Integrated Resource Plan and 2019-2021 Energy Supply Plan,
8 PUCN Docket No. 18-06003.
- 9 • In re Cascade Natural Gas Corporation Request for a General Rate Revision, Or.PUC,
10 Docket No. UG 347.
- 11 • In re Portland General Electric Company Request for a General Rate Revision, Or.PUC
12 Docket No UE 335.
- 13 • In re Northwest Natural Gas Company, dba NW Natural, Request for a General Rate
14 Revision, Or.PUC Docket No. UG 344.
- 15 • In re Cascade Natural Gas Corporation Request for a General Rate Revision, Wa.UTC,
16 Docket No. UE-170929.
- 17 • In the Matter of Hydro One Limited, Application for Authorization to Exercise
18 Substantial Influence over the Policies and Actions of Avista Corporation, Or.PUC,
19 Docket No. UM 1897.
- 20 • In re PacifiCorp, dba Pacific Power, 2016 Power Cost Adjustment Mechanism, Or.PUC,
21 Docket No. UE 327.
- 22 • In re Avista Corporation 2018 General Rate Case, Wa.UTC Dockets UE-170485 and
23 UG-170486 (Consolidated).
- 24 • Application of Nevada Power Company d/b/a NV Energy for authority to adjust its
25 annual revenue requirement for general rates charged to all classes of electric customers
26 and for relief properly related thereto, PUCN. Docket No. 17-06003.
- 27 • In re the Application of Rocky Mountain Power for Authority to Decrease Current Rates
28 by \$15.7 Million to Refund Deferred Net Power Costs Under Tariff Schedule 95 Energy
29 Cost Adjustment Mechanism and to Decrease Current Rates By \$528 Thousand Under
30 Tariff Schedule 93, REC and SO2 Revenue Adjustment Mechanism, Wy. PSC, Docket
31 No. 20000-514-EA-17 (Record No. 14696).
- 32 • In re the 2018 General Rate Case of Puget Sound Energy, Wa.UTC, Docket No. 170033
33 (Cons.).

- 1 • In re PacifiCorp, dba Pacific Power, 2018 Transition Adjustment Mechanism, Or.PUC,
2 Docket No. UE 323.
- 3 • In re Portland General Electric Company, Request for a General Rate Revision, Or.PUC,
4 Docket No. UE 319.
- 5 • In re Portland General Electric Company, Application for Transportation Electrification
6 Programs, Or.PUC, UM 1811.
- 7 • In re Pacific Power & Light Company, Application for Transportation Electrification
8 Programs, Or.PUC, Docket No. UM 1810.
- 9 • In re the Public Utility Commission of Oregon, Investigation to Examine PacifiCorp, dba
10 Pacific Power's Non-Standard Avoided Cost Pricing, Or.PUC, Docket No. UM 1802.
- 11 • In re Pacific Power & Light Co., Revisions to Tariff WN U-75, Advice No. 16-05, to
12 modify the Company's existing tariffs governing permanent disconnection and removal
13 procedures, Wa.UTC, Docket No. UE-161204.
- 14 • In re Puget Sound Energy's Revisions to Tariff WN U-60, Adding Schedule 451,
15 Implementing a New Retail Wheeling Service, Wa.UTC, Docket No. UE-161123.
- 16 • 2018 Joint Power and Transmission Rate Proceeding, Bonneville Power Administration,
17 Case No. BP-18.
- 18 • In re Portland General Electric Company Application for Approval of Sale of Harborton
19 Restoration Project Property, Or.PUC, Docket No. UP 334 (Cons.).
- 20 • In re An Investigation of Policies Related to Renewable Distributed Electric Generation,
21 Ar.PSC, Matter No. 16-028-U.
- 22 • In re Net Metering and the Implementation of Act 827 of 2015, Ar.PSC, Matter No. 16-
23 027-R.
- 24 • In re the Application of Rocky Mountain Power for Approval of the 2016 Energy
25 Balancing Account, Ut.PSC, Docket No. 16-035-01
- 26 • In re Avista Corporation Request for a General Rate Revision, Wa.UTC, Docket No. UE-
27 160228 (Cons.).
- 28 • In re the Application of Rocky Mountain Power to Decrease Current Rates by \$2.7
29 Million to Recover Deferred Net Power Costs Pursuant to Tariff Schedule 95 and to
30 Increase Rates by \$50 Thousand Pursuant to Tariff Schedule 93, Wy.PSC, Docket No.
31 20000-292-EA-16.

- 1 • In re PacifiCorp, dba Pacific Power, 2017 Transition Adjustment Mechanism, Or.PUC,
2 Docket No. UE 307.
- 3 • In re Portland General Electric Company, 2017 Annual Power Cost Update Tariff
4 (Schedule 125), Or.PUC, Docket No. UE 308.
- 5 • In re PacifiCorp, Request to Initiate an Investigation of Multi-Jurisdictional Issues and
6 Approve an Inter-Jurisdictional Cost Allocation Protocol, Or.PUC, UM 1050.
- 7 • In re Pacific Power & Light Company, General rate increase for electric services,
8 Wa.UTC, Docket No. UE-152253.
- 9 • In The Matter of the Application of Rocky Mountain Power for Authority of a General
10 Rate Increase in Its Retail Electric Utility Service Rates in Wyoming of \$32.4 Million Per
11 Year or 4.5 Percent, Wy.PSC, Docket No. 20000-469-ER-15.
- 12 • In re Avista Corporation, General Rate Increase for Electric Services, Wa.UTC, Docket
13 No. UE-150204.
- 14 • In re the Application of Rocky Mountain Power to Decrease Rates by \$17.6 Million to
15 Recover Deferred Net Power Costs Pursuant to Tariff Schedule 95 to Decrease Rates by
16 \$4.7 Million Pursuant to Tariff Schedule 93, Wy.PSC, Docket No. 20000-472-EA-15.
- 17 • Formal complaint of The Walla Walla Country Club against Pacific Power & Light
18 Company for refusal to provide disconnection under Commission-approved terms and
19 fees, as mandated under Company tariff rules, Wa.UTC, Docket No. UE-143932.
- 20 • In re PacifiCorp, dba Pacific Power, 2016 Transition Adjustment Mechanism, Or.PUC,
21 Docket No. UE 296.
- 22 • In re Portland General Electric Company, Request for a General Rate Revision, Or.PUC,
23 Docket No. UE 294.
- 24 • In re Portland General Electric Company and PacifiCorp dba Pacific Power, Request for
25 Generic Power Cost Adjustment Mechanism Investigation, Or.PUC, Docket No. UM
26 1662.
- 27 • In re PacifiCorp, dba Pacific Power, Application for Approval of Deer Creek Mine
28 Transaction, Or.PUC, Docket No. UM 1712.
- 29 • In re Public Utility Commission of Oregon, Investigation to Explore Issues Related to a
30 Renewable Generator's Contribution to Capacity, Or.PUC, Docket No. UM 1719.

- 1 • In re Portland General Electric Company, Application for Deferral Accounting of Excess
2 Pension Costs and Carrying Costs on Cash Contributions, Or.PUC, Docket No. UM
3 1623.
- 4 • 2016 Joint Power and Transmission Rate Proceeding, Bonneville Power Administration,
5 Case No. BP-16.
- 6 • In re Puget Sound Energy, Petition to Update Methodologies Used to Allocate Electric
7 Cost of Service and for Electric Rate Design Purposes, Wa.UTC, Docket No. UE-
8 141368.
- 9 • In re Pacific Power & Light Company, Request for a General Rate Revision Resulting in
10 an Overall Price Change of 8.5 Percent, or \$27.2 Million, Wa.UTC, Docket No. UE-
11 140762.
- 12 • In re Puget Sound Energy, Revises the Power Cost Rate in WN U-60, Tariff G, Schedule
13 95, to reflect a decrease of \$9,554,847 in the Company's overall normalized power
14 supply costs, Wa.UTC, Docket No. UE-141141.
- 15 • In re the Application of Rocky Mountain Power for Authority to Increase Its Retail
16 Electric Utility Service Rates in Wyoming Approximately \$36.1 Million Per Year or 5.3
17 Percent, Wy.PSC, Docket No. 20000-446-ER-14.
- 18 • In re Avista Corporation, General Rate Increase for Electric Services, RE, Tariff WN U-
19 28, Which Proposes an Overall Net Electric Billed Increase of 5.5 Percent Effective
20 January 1, 2015, Wa.UTC, Docket No. UE-140188.
- 21 • In re PacifiCorp, dba Pacific Power, Application for Deferred Accounting and Prudence
22 Determination Associated with the Energy Imbalance Market, Or.PUC, Docket No. UM
23 1689.
- 24 • In re PacifiCorp, dba Pacific Power, 2015 Transition Adjustment Mechanism, Or.PUC,
25 Docket No. UE 287.
- 26 • In re Portland General Electric Company, Request for a General Rate Revision, Or.PUC,
27 Docket No. UE 283.
- 28 • In re Portland General Electric Company's Net Variable Power Costs (NVPC) and
29 Annual Power Cost Update (APCU), Or.PUC, Docket No. UE 286.
- 30 • In re Portland General Electric Company 2014 Schedule 145 Boardman Power Plant
31 Operating Adjustment, Or.PUC, Docket No. UE 281.
- 32 • In re PacifiCorp, dba Pacific Power, Transition Adjustment, Five-Year Cost of Service
33 Opt-Out (adopting testimony of Donald W. Schoenbeck), Or.PUC, Docket No. UE 267.

Docket No. UM 1050
Stipulating Parties/105
Witnesses: Lockey-Storm-
Jenks-Mullins-Hausman

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

PACIFICORP

**Exhibit Accompanying Joint Testimony of Stipulating Parties
Qualifications of Dr. Ezra Hausman**

December 2019

WITNESS QUALIFICATION STATEMENT

NAME: Ezra D. Hausman

PARTY REPRESENTED: Sierra Club

TITLE: Independent Consultant

ADDRESS: 77 Kaposia Street
Auburndale, MA 02466

EDUCATION: Ph.D., Earth and Planetary Sciences. Harvard University
Department of Earth and Planetary Sciences, Cambridge,
Massachusetts, 1997

S.M., Applied Physics. Harvard University School of
Engineering and Applied Sciences, Cambridge, Massachusetts,
1993

M.S., Water Resource Engineering. Tufts University
Department of Civil and Environmental Engineering, Medford,
Massachusetts, 1990

B.A., Psychology. Wesleyan University. Middletown,
Connecticut, 1985

EXPERIENCE: Provided expert testimony in numerous proceedings before state
and federal energy regulatory commissions (see attached
curriculum vitae).

EZRA HAUSMAN CONSULTING

Ezra D. Hausman, Ph.D.

Curriculum Vitae

I am an independent consultant in energy and environmental economics.

I have worked for over twenty years as an electricity market expert with a focus on market design and market restructuring, environmental regulation in electricity markets, and pricing of energy, capacity, transmission, losses and other electricity-related services. I have performed market analysis, provided expert testimony, led workshops and working groups, made presentations and participated on panels, and provided other support to clients in a number of areas in both regulated and restructured electricity markets. My clients include federal and state agencies; offices of consumer advocate; legislative bodies; cities and towns; non-governmental organizations; foundations; industry associations; and resource developers.

I previously served as Vice President and Chief Operating Officer of Synapse Energy Economics, Inc. of Cambridge, Massachusetts. In addition to my consulting portfolio, this management role entailed responsibility for day-to-day operations of the company including overseeing finance, HR, communications & marketing, quality assurance, client service, and professional development of staff. I had overall responsibility for ensuring that project managers and project teams had the tools, information, and training they needed to successfully serve client's needs and to produce high-quality deliverables on time and on budget. I was also a resource available to any of our clients to address any issues of customer service, quality, or any other issues.

I hold a Ph.D. in atmospheric science from Harvard University, an S.M. in applied physics from Harvard University, an M.S. in water resource engineering from Tufts University, and a B.A. in psychology from Wesleyan University.

PROFESSIONAL EXPERIENCE

Ezra Hausman Consulting, Newton, MA. President, March 2014 – Present.

I provide research, analysis, expert testimony, and policy support services in regulatory, litigation, and stakeholder processes covering a wide range of electric sector and electricity market issues. The focus of my consulting work includes:

- Ratemaking and regulatory proceedings
- Wholesale market design and analysis for electricity, generating capacity, and related services
- Demand-side management program design and cost/benefit analysis
- Interaction of air quality and environmental regulations with electricity markets
- Analysis and implementation of the Clean Power Plan and other greenhouse gas rules
- Clean Air Act enforcement support

- Long-term electric power system planning
- Energy efficiency and renewable energy programs and policies
- Consumer and environmental protection
- Market power and market concentration analysis in electricity markets.

Synapse Energy Economics Inc., Cambridge, MA.

Chief Operating Officer, March 2011 – February 2014;

Vice President, July 2009 – February 2014;

Senior Associate, 2005-2009.

- Conducted research, wrote reports, and presented expert testimony pertaining to consumer, environmental, and public policy implications of electricity industry regulation. Provided expert support and representation in planning, greenhouse gas mitigation, and other stakeholder processes.
- As Vice President and Chief Operating Officer, I was also responsible for day-to-day operations of the company, quality assurance, client service, and professional development of staff.

Charles River Associates (CRA), Cambridge, MA. Senior Associate, 2004-2005

CRA acquired Tabors Caramanis & Associates in October, 2004.

Tabors Caramanis & Associates, Cambridge, MA. Senior Associate, 1998-2004

As a member of the modeling group, developed and maintained dispatch modeling capability in support of electricity market consulting practice.

Performed modeling and analysis of electricity markets, generation and transmission systems.

Projects included:

- Several market transition cost-benefit studies for development of Locational Marginal Price (LMP) based markets in US electricity markets
- Long-term market forecasting studies for valuation of generation and transmission assets,
- Valuation of financial instruments relating to transmission system congestion and losses
- Modeling and analysis of hydrologically and electrically interconnected hydropower system operations
- Natural gas market analysis and price forecasting studies
- Co-developed an innovative approach to hedging financial risk associated with transmission system losses of electricity
- Designed, developed and ran training seminars using a computer-based electricity market simulation game, to help familiarize market participants and students in the operation of LMP-based electricity markets.
- Developed and implemented analytical tools for assessment of market concentration in interconnected electricity markets, based on the “delivered price test” for assessing market accessibility in such a network
- Performed regional market power and market power mitigation studies

- Performed transmission feasibility studies for proposed new generation and transmission projects in various locations in the US
- Provided analytical support for expert testimony in a variety of regulatory and litigation proceedings, including breach of contract, bankruptcy, and antitrust cases, among others.

Global Risk Prediction Network, Inc., Greenland, NH. Vice President, 1997-1998

Developed private sector applications of climate forecast science in partnership with researchers at Columbia University. Specific projects included a statistical assessment of grain yield predictability in several crop regions around the world based on global climate indicators (Principal Investigator); a statistical assessment of road salt demand predictability in the United States based on global climate indicators (Principal Investigator); a preliminary design of a climate and climate forecast information website tailored to the interests of the business community; and the development of client base.

Hub Data, Inc., Cambridge, MA. Financial Software Consultant, 1986-1987, 1993-1997

Responsible for design, implementation and support of analytic and communications modules for bond portfolio management software; and developed software tools such as dynamic data compression technique to facilitate product delivery, Windows interface for securities data products.

Abt Associates, Inc., Cambridge, MA. Environmental Policy Analyst, 1990-1991

Quantitative risk analysis to support federal environmental policy-making. Specific areas of research included risk assessment for federal regulations concerning sewage sludge disposal and pesticide use; statistical alternatives to Most-Exposed-Individual risk assessment paradigm; and research on non-point sources of water pollution.

Massachusetts Water Resources Authority, Charlestown, MA. Analyst, 1988-1990

Applied and evaluated demand forecasting techniques for the Eastern Massachusetts service area. Assessed applicability of various techniques to the system and to regional planning needs; and assessed yield/reliability relationship for the eastern Massachusetts water supply system, based on Monte-Carlo analysis of historical hydrology.

Somerville High School, Somerville, MA. Math Teacher, 1986-1987

Courses included trigonometry, computer programming, and basic math.

EDUCATION

Ph.D., Earth and Planetary Sciences. Harvard University, Cambridge, MA, 1997

S.M., Applied Physics. Harvard University, Cambridge, MA, 1993

M.S., Civil Engineering. Tufts University, Medford, MA, 1990

B.A., Wesleyan University, Psychology. Middletown, CT, 1985

FELLOWSHIPS, AWARDS AND AFFILIATIONS

UCAR Visiting Scientist Postdoctoral Fellowship, 1997

Postdoctoral Research Fellowship, Harvard University, 1997

Certificate of Distinction in Teaching, Harvard University, 1997

Graduate Research Fellowship, Harvard University, 1991-1997

Invited Participant, UCAR Global Change Institute, 1993

House Tutor, Leverett House, Harvard University, 1991-1993

Graduate Research Fellowship, Massachusetts Water Resources Authority, 1989-1990

Teaching Fellowships:

Harvard University: *Principles of Measurement and Modeling in Atmospheric Chemistry; Hydrology; Introduction to Environmental Science and Public Policy; The Atmosphere.*

Wesleyan University: *Introduction to Computer Programming; Psychological Statistics; Playwriting and Production.*

Community Service

Vice President of Finance, Congregation Dorshei Tzedek, 2018 - Ongoing

Academic Mentor and Athletic Coach, SquashBusters Boston, 2014 - Ongoing

Judge, Cleantech Open innovation competitions, 2015-2016

President, Burr Elementary School Parent Teacher Organization, 2005-2007

EXPERT TESTIMONY AND SERVICES

PacifiCorp Multi-State Protocols Stakeholder Process – 2019-Ongoing

Participation on behalf of Sierra Club in stakeholder process to establish protocols for allocation of resource costs and benefits among PacifiCorp states.

Advisory Consulting for Natural Resources Defense Council – 2019-Ongoing

Provide advisory and technical support to analysis team.

Memphis Light, Gas and Water – Power Supply Alternatives Study (2019-Ongoing)

Expert support for Sierra Club participation in Power Supply Advisory Team.

Washington Utilities and Transportation Commission (Dockets UE-190334 and UG-190335) – 2019-Ongoing

Expert witness on behalf of the Sierra Club in Avista Energy rate case.

New Jersey Division of Rate Counsel – 2016-Ongoing

General policy and stakeholder support on matters related to energy efficiency, renewable energy, and electrification of transportation in New Jersey.

New Jersey Board of Public Utilities – 2014-Ongoing

Expert witness on behalf of the New Jersey Division of Rate Counsel, reviewing and providing testimony on cost effectiveness and program design of various New Jersey gas and electric utility energy efficiency programs.

Public Service Commission of South Carolina (Docket No. 2018-319-E) – 2019

Expert witness on behalf of the Sierra Club in Duke Energy Carolinas rate case.

Public Service Commission of South Carolina (Docket No. 2018-318-E) – 2019

Expert witness on behalf of the Sierra Club in Duke Energy Progress rate case.

Virginia State Corporation Commission (Case No. PUR-2018-00065) – 2018

Expert witness on behalf of the Sierra Club in Dominion Power IRP proceeding.

Missouri Public Service Commission (Case No. EO-2018-0038) – 2018

Expert services in support of Sierra Club's participation in integrated resource planning process.

Florida Public Service Commission (Docket No. 20170225-EI) – 2017-2018

Expert witness on behalf of the Sierra Club in FPL Determination of Need proceeding.

North Carolina Utilities Commission (Docket No. E-7, SUB 1146) – 2017-2018

Expert witness on behalf of the Sierra Club in Duke Energy Carolinas rate case.

North Carolina Utilities Commission (Docket No. E-2, SUB 1142) – 2017

Expert witness on behalf of the Sierra Club in Duke Energy Progress rate case.

Idaho Public Utilities Commission (Case No. AVU-E-17-01) – 2017

Expert witness on behalf of the Sierra Club in Avista Corporation rate case.

Iowa Utilities Board (Docket No. RPU-2017-0002) -- 2017

Expert witness on behalf of the Sierra Club for Interstate Power and Light petition for ratemaking principles for proposed 500 MW wind project.

Washington Utilities and Transportation Commission (Dockets UE-170033 and UG-170034) – 2017

Expert witness on behalf of the Sierra Club in Puget Sound Energy (PSE) rate case.

Clean Power Plan Modeling in PJM and MISO – 2016-2017

Participation on behalf of the Sustainable FERC Project in ISO initiative to model scenarios for state compliance with federal greenhouse gas mitigation rules.

California ISO/PacifiCorp Market Integration – 2015-2017

Technical support to Sierra Club in stakeholder review and participation in all relevant proceedings in California.

United States Department of Justice – US District Court Dallas, TX Division (U.S. vs. Luminant Generation Company, LLC, and Big Brown Power Company, LLC) – Ongoing

Expert witness on behalf of the United States Department of Justice on clean air act enforcement case.

United States Department of Justice – US District Court for the Eastern District of Missouri (Civil Action No. 4:11-CV-00077) – 2013-Ongoing

Expert witness on behalf of the United States Department of Justice on successful prosecution of clean air act case.

Missouri Public Service Commission (Case No. EO-2015-0084) – 2014-2015

Expert services in support of Sierra Club's participation in integrated resource planning process.

Missouri Public Service Commission (File No. ER-2014-0258) – 2014-2015

Expert witness on behalf of the Sierra Club in Ameren Missouri rate case.

Arizona Corporation Commission (Docket No. E-01345A-11-0224) – 2014

Expert witness on behalf of the Sierra Club regarding Arizona Public Service petition for rate treatment for acquisition of an additional ownership share of the Four Corners generating units.

Missouri Public Service Commission (Docket No. ET-2014-0085) – 2013

Testimony on behalf of the Missouri Solar Energy Industries Association regarding Union Electric (d/b/a Ameren Missouri) motion to suspend payment of solar rebates.

Missouri Public Service Commission (Docket No. ET-2014-0059 and ET-2014-0071) – 2013

Testimony on behalf of the Missouri Solar Energy Industries Association regarding Kansas City Power and Light Company's motions to suspend payment of solar rebates.

Eastern Interconnect Planning Collaborative (EIPC) – 2012-2013

Expert support on behalf of coalition of NGO stakeholders in transmission and resource planning process, including development and review of modeling assumptions and interim results, and development of comments.

Puget Sound Energy (PSE) – 2012-2013

Expert participant in PSE's 2013 IRP stakeholder process on behalf of the Sierra Club.

Washington Utilities and Transportation Commission (Docket Nos. UE-111048 and UG-111049) – 2011

Testimony on behalf of the Sierra Club regarding the cost of operating the Colstrip power plant and other power procurement issues.

Kansas Corporation Commission (Docket No. 11-KCPE-581-PRE) - 2011

Presented written and live testimony on behalf of the Sierra Club regarding Kansas City Power and Light request for predetermination of ratemaking principles.

Vermont Department of Public Service - 2011

Provided scenario analysis of the costs and benefits of various electric energy resource scenarios in support of the state Comprehensive Energy Plan.

Massachusetts Department of Energy Resources – 2009-2011

Served as expert analyst and modeling coordinator for analysis related to implementation of the Massachusetts Global Warming Solutions Act.

Iowa Office of Consumer Advocate – 2010-2011

Assisted Consumer Advocate in evaluating a proposed power purchase agreement for the output of the Duane Arnold nuclear power station.

Missouri Public Service Commission (Docket No. EW-2010-0187) – 2010

Expert participant on behalf of the Sierra Club in stakeholder process to develop a "demand side investment mechanism" in Missouri.

Louisiana Public Service Commission (Docket No. R-28271 Subdocket B) – 2009-2010

Expert participant on behalf of the Sierra Club in Renewable Portfolio Standard Task Force considering RPS for Louisiana.

Joint Fiscal Committee of the Vermont Legislature – 2008-2010

Serving as lead expert advising the Legislature on economic issues related to the possible recertification of the Vermont Yankee nuclear power plant.

Town of Littleton, NH – 2006-2010

Serving as expert witness on the value of the Moore hydroelectric facility.

Nevada Public Service Commission (Docket No. 08-05014) – August 2008

Presented prefiled and live testimony on behalf of Nevadans for Clean Affordable Reliable Energy regarding the proposed Ely Energy Center and resource planning practices in Nevada.

Mississippi Public Service Commission (Docket No. 2008-AD-158) – July 2008

Presented written and live testimony on behalf of the Sierra Club regarding the resource plans filed by Entergy Mississippi and Mississippi Power Company.

Kansas House of Representatives - Committee on Energy and Utilities – February 2008

Presented testimony on behalf of the Climate and Energy Project of the Land Institute of Kansas on a proposed bill regarding permitting of power plants. Focus was on the risks and costs associated with new coal plants and on their contribute to global climate change.

Vermont Public Service Board (Docket No. 7250) – 2006-2008

Prepared report and testimony in support of the application of Deerfield Wind, LLC. For a Certificate of Public Good for a proposed wind power facility.

Iowa Utilities Board (Docket No. GCU-07-1) – October, 2007 – January 2008

Presented wrtten and live testimony on behalf of the Iowa Office of Consumer Advocate regarding the science of global climate change and the contribution of new coal plants to atmospheric CO₂.

Nevada Public Service Commission (Docket No. 07-06049) – October 2007

Presented prefiled direct testimony on behalf of Nevadans for Clean Affordable Reliable Energy regarding treatment of carbon emissions costs and coal plant capital costs in utility resource planning.

Massachusetts General Court, Joint Committee on Economic Development and Emerging Technologies – July 2007

Presented written and live testimony on climate change science and the potential benefits of a revenue-neutral carbon tax in Massachusetts.

Town of Rockingham, VT – 2006-2007

Served as expert witness on the value of the Bellows Falls hydroelectric facility.

South Dakota Public Utilities Commission (Case No EL05-22) – June 2006

Minnesota Public Utilities Commission (Docket TR-05-1275) – December 2006

Submitted prefiled and live testimony on the contribution of the proposed Big Stone II coal-fired generator to atmospheric CO₂, global climate change and the environment of South Dakota and Minnesota, respectively.

Arkansas Public Service Commission (Docket No. 06-070-U) – October 2006

Submitted prefiled direct testimony on inclusion of new wind and gas-fired generation resources in utility rate base.

Federal Energy Regulatory Commission (Docket Nos. ER055-1410-000 and EL05-148-000) – May-Sept 2006

- Participant in settlement hearings on proposed capacity market structure (the Reliability Pricing Model, or RPM) on behalf of State Consumer Advocates in Pennsylvania, Ohio and the District of Columbia
- Invited participant on technical conference panel on PJM's proposed Variable Resource Requirement (VRR) curve
- Filed Pre- and post-conference comments and affidavits with FERC
- Participated in numerous training and design conferences at PJM on RPM implementation.

Illinois Pollution Control Board (Docket No. R2006-025) – June-Aug 2006

Profile and live testimony presented on behalf of the Illinois EPA regarding the costs and benefits of proposed mercury emissions rule for Illinois power plants.

Long Island Sound LNG Task Force – January 2006

Presentation of study on the need for and alternatives to the proposed Broadwater LNG storage and regasification facility in Long Island Sound.

Iowa Utilities Board (Docket No. SPU-05-15) – November 2005

Presented written and live testimony on whether Interstate Power and Light's should be permitted to sell the Duane Arnold Energy Center nuclear facility to FP&L Duane Arnold, Inc., a subsidiary of Florida Power and Light.

PUBLICATIONS AND REPORTS

Hausman, E., The Worst of Both Worlds: Why the Ohio Legislature's OVEC Bailout Bill would Harm Consumers, Impede Competition, Increase Pollution, and Impair the Health and Welfare of Ohioans for Decades. White paper produced on behalf of The Sierra Club, June 2017.

Hausman, E., Risks and Opportunities for PacifiCorp - State Level Findings: Utah, Produced on behalf of the Sierra Club, October 2014.

Hausman, E., Risks and Opportunities for PacifiCorp - State Level Findings: Oregon, Produced on behalf of the Sierra Club, October 2014.

- Hausman, E., Risks and Opportunities for PacifiCorp in a Carbon Constrained Economy, Produced on behalf of the Sierra Club, October 2014.
- Luckow, P., E. Stanton, B. Biewald, J. Fisher, F. Ackerman, E. Hausman, 2013 Carbon Dioxide Price Forecast, Synapse Energy Economics, November 2013.
- Stanton, E., T. Comings, K. Takahashi, P. Knight, T. Vitolo, E. Hausman, Economic Impacts of the NRDC Carbon Standard: Background Report prepared for the Natural Resources Defense Council, Synapse Energy Economics for NRDC, June 2013
- Comings T., P. Knight, E. Hausman, Midwest Generation's Illinois Coal Plants: Too Expensive to Compete? (Report Update) Synapse Energy Economics for Sierra Club, April 2013
- Stanton E., F. Ackerman, T. Comings, P. Knight, T. Vitolo, E. Hausman, Will LNG Exports Benefit the United States Economy? Synapse Energy Economics for Sierra Club, January 2013
- Chang M., D. White, E. Hausman, Risks to Ratepayers: An Examination of the Proposed William States Lee III Nuclear Generation Station, and the Implications of "Early Cost Recovery" Legislation, Synapse Energy Economics for Consumers Against Rate Hikes, December 2012
- Wilson R., P. Luckow, B. Biewald, F. Ackerman, and E.D. Hausman, 2012 Carbon Dioxide Price Forecast, Synapse Energy Economics, October 2012.
- Fagan B., M. Chang, P. Knight, M. Schultz, T. Comings, E.D. Hausman, and R. Wilson, The Potential Rate Effects of Wind Energy and Transmission in the Midwest ISO Region. Synapse Energy Economics for Energy Future Coalition, May 2012.
- Hausman, E.D., T. Comings, "Midwest Generation's Illinois Coal Plants: Too Expensive to Compete? Synapse Energy Economics for Sierra Club, April 2012.
- Hausman, E.D., T. Comings, and G. Keith, Maximizing Benefits: Recommendations for Meeting Long-Term Demand for Standard Offer Service in Maryland. Synapse Energy Economics for Sierra Club, January 2012.
- Keith G., B. Biewald, E.D. Hausman, K. Takahashi, T. Vitolo, T. Comings, and P. Knight, Toward a Sustainable Future for the U.S. Power Sector: Beyond Business as Usual 2011 Synapse Energy Economics for Civil Society Institute, November 2011.
- Chang M., D. White, E.D. Hausman, N. Hughes, and B. Biewald, Big Risks, Better Alternatives: An Examination of Two Nuclear Energy Projects in the U.S. Synapse Energy Economics for Union of Concerned Scientists, October 2011.
- Hausman E.D., T. Comings, K. Takahashi, R. Wilson, and W. Steinhurst, Electricity Scenario Analysis for the Vermont Comprehensive Energy Plan 2011. Synapse Energy Economics for Vermont Department of Public Service, September 2011.
- Wittenstein M., E.D. Hausman, Incenting the Old, Preventing the New: Flaws in Capacity Market Design, and Recommendations for Improvement. Synapse Energy Economics for American Public Power Association, June 2011.

- Johnston L., E.D. Hausman, B. Biewald, R. Wilson, and D. White. 2011 Carbon Dioxide Price Forecast. Synapse Energy Economics White Paper, February 2011.
- Hausman E.D., V. Sabodash, N. Hughes, and J. I. Fisher, Economic Impact Analysis of New Mexico's Greenhouse Gas Emissions Rule. Synapse Energy Economics for New Energy Economy, February 2011.
- Hausman E.D., J. Fisher, L. Mancinelli, and B. Biewald. Productive and Unproductive Costs of CO2 Cap-and-Trade: Impacts on Electricity Consumers and Producers. Synapse Energy Economics for National Association of Regulatory Utility Commissioners, National Association of State Utility Consumer Advocates, National Rural Electric Cooperative Association, and American Public Power Association, July 2009.
- Peterson P., E. Hausman, R. Fagan, and V. Sabodash, Report to the Ohio Office of Consumer Counsel, on the value of continued participation in RTOs. Filed under Ohio PUC Case No. 09-90-EL-COI, May 2009.
- Schlissel D., L. Johnston, B. Biewald, D. White, E. Hausman, C. James, and J. Fisher, Synapse 2008 CO2 Price Forecasts. July 2008.
- Hausman E.D., J. Fisher and B. Biewald, Analysis of Indirect Emissions Benefits of Wind, Landfill Gas, and Municipal Solid Waste Generation. Synapse Energy Economics Report to the Air Pollution Prevention and Control Division, National Risk Management Research Laboratory, U.S. Environmental Protection Agency, July 2008.
- Hausman E.D. and C. James, Cap and Trade CO2 Regulation: Efficient Mitigation or a Give-away? Synapse Energy Economics presentation to the ELCON Spring Workshop, June 2008.
- Hausman E.D., R. Hornby and A. Smith, Bilateral Contracting in Deregulated Electricity Markets. Synapse Energy Economics for the American Public Power Association, April 2008.
- Hausman E.D., R. Fagan, D. White, K. Takahashi and A. Napoleon, LMP Electricity Markets: Market Operations, Market Power and Value for Consumers. Synapse Energy Economics for the American Public Power Association's Electricity Market Reform Initiative (EMRI) symposium, "Assessing Restructured Electricity Markets" in Washington, DC, February 2007.
- Hausman E.D. and K. Takahashi, The Proposed Broadwater LNG Import Terminal Response to Draft Environmental Impact Statement and Update of Synapse Analysis. Synapse Energy Economics for the Connecticut Fund for the Environment and Save The Sound, January 2007.
- Hausman E.D., K. Takahashi, D. Schlissel and B. Biewald, The Proposed Broadwater LNG Import Terminal: An Analysis and Assessment of Alternatives. Synapse Energy Economics for the Connecticut Fund for the Environment and Save The Sound, March 2006.
- Hausman E.D., P. Peterson, D. White and B. Biewald, RPM 2006: Windfall Profits for Existing Base Load Units in PJM: An Update of Two Case Studies. Synapse Energy Economics for the Pennsylvania Office of Consumer Advocate and the Illinois Citizens Utility Board, February 2006.

Hausman E.D., K. Takahashi, and B. Biewald, The Glebe Mountain Wind Energy Project: Assessment of Project Benefits for Vermont and the New England Region. Synapse Energy Economics for Glebe Mountain Wind Energy, LLC., February 2006.

Hausman E.D., K. Takahashi, and B. Biewald, The Deerfield Wind Project: Assessment of the Need for Power and the Economic and Environmental Attributes of the Project. Synapse Energy Economics for Deerfield Wind, LLC., January 2006.

Hausman E.D., P. Peterson, D. White and B. Biewald, An RPM Case Study: Higher Costs for Consumers, Windfall Profits for Exelon. Synapse Energy Economics for the Illinois Citizens Utility Board, October 2005.

Hausman E.D. and G. Keith, Calculating Displaced Emissions from Energy Efficiency and Renewable Energy Initiatives. Synapse Energy Economics for EPA website 2005

Rudkevich A., E.D. Hausman, R.D. Tabors, J. Bagnal and C Kopel, Loss Hedging Rights: A Final Piece in the LMP Puzzle. Hawaii International Conference on System Sciences, Hawaii, January, 2005 (accepted).

Hausman E.D. and R.D. Tabors, The Role of Demand Underscheduling in the California Energy Crisis. Hawaii International Conference on System Sciences, Hawaii, January 2004.

Hausman E.D. and M.B. McElroy, The reorganization of the global carbon cycle at the last glacial termination. *Global Biogeochemical Cycles*, 13(2), 371-381, 1999.

Norton F.L., E.D. Hausman and M.B. McElroy, Hydrospheric transports, the oxygen isotope record, and tropical sea surface temperatures during the last glacial maximum. *Paleoceanography*, 12, 15-22, 1997.

Hausman E.D. and M.B. McElroy, Variations in the oceanic carbon cycle over glacial transitions: a time-dependent box model simulation. Presented at the spring meeting of the American Geophysical Union, San Francisco, 1996.

PRESENTATIONS AND WORKSHOPS

American Public Power Association: Invited expert participant in APPA's roundtable discussion of the current state of the RTO-operated electricity markets. October 2013.

California Long-Term Resource Adequacy Summit (Sponsored by the California ISO and the California Public Utility Commission): Panelist on "Applying Alternative Models to the California Market Construct." February 26, 2013.

ELCON 2011 Fall Workshop: "Do RTOs Need a Capacity Market?" October 2011.

Harvard Electricity Policy Group: Presentation on state action to ensure reliability in the face of capacity market failure. February 2011.

NASUCA 2010 Annual Conference: "Addressing Climate Change while Protecting Consumers." November 2010.

NASUCA Consumer Protection Committee: Briefing on the Synapse report entitled, “Productive and Unproductive Costs of CO₂ Cap-and-Trade.” September 2009.

NARUC 2009 Summer Meeting: Invited speaker on topic: “Productive and Unproductive Costs of CO₂ Cap-and-Trade.” July, 2009.

NASUCA 2008 Mid-Year Meeting: Invited speaker on the topic, “Protecting Consumers in a Warming World, Part II: Deregulated Markets.” June 2008.

Center for Climate Strategies: Facilitator and expert analyst on state-level policy options for mitigating greenhouse gas emissions. Serve as facilitator/expert for the Electricity Supply (ES) and Residential, Commercial and Industrial (RCI) Policy Working Groups in the states of Colorado and South Carolina. 2007-2008.

NASUCA 2007 Mid-Year Meeting: Invited speaker on the topic, “Protecting Consumers in a Warming World” June 2007.

ASHRAE Workshop on estimating greenhouse gas emissions from buildings in the design phase: Participant expert on estimating displaced emissions associated with energy efficiency in building design. Also hired by ASHRAE to document and produce a report on the workshop. April, 2007.

Assessing Restructured Electricity Markets An American Public Power Association Symposium: Invited speaker on the history and effectiveness of Locational Marginal Pricing (LMP) in northeastern United States electricity markets, February, 2007.

ASPO-USA 2006 National Conference: Invited speaker and panelist on the future role of LNG in the U.S. natural gas market, October, 2006.

Market Design Working Group: Participant in FERC-sponsored settlement process for designing capacity market structure for PJM on behalf of coalition of state utility consumer advocates, July-August 2006.

NASUCA 2006 Mid-Year Meeting: Invited speaker on the topic, “How Can Consumer Advocates Deal with Soaring Energy Prices?” June 2006.

Soundwaters Forum, Stamford, CT: Participated in a debate on the need for proposed Broadwater LNG terminal in Long Island Sound, June 2006.

Energy Modeling Forum: Participant in coordinated academic exercise focused on modeling US and world natural gas markets, December 2004.

Massachusetts Institute of Technology (MIT): Guest lecturer in Technology and Policy Program on electricity market structure, the LMP pricing system and risk hedging with FTRs. 2002-2005.

LMP: The Ultimate Hands-On Seminar. Two-day seminar held at various sites to explore concepts of LMP pricing and congestion risk hedging, including lecture and market simulation exercises. Custom seminars held for FERC staff, ERCOT staff, and various industry groups. 2003-2004.

Learning to Live with Locational Marginal Pricing: Fundamentals and Hands-On Simulation.

Day-long seminar including on-line mock electricity market and congestion rights auction, December 2002.

LMP in California. Led a series of seminars on the introduction of LMP in the California electricity market, including on-line market simulation exercise. 2002.

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