BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Application of PacifiCorp (U 901-E), an Oregon company, for Approval of its Proposed Net Billing Tariff to Compensate Eligible Customers.

Application No. 19-04-____ (Filed April 19, 2019)

APPLICATION OF PACIFICORP (U 901-E) FOR APPROVAL OF ITS PROPOSED TARIFF TO COMPENSATE ELIGIBLE DISTRIBUTED GENERATION CUSTOMERS

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TABLE OF CONTENTS

I.	Intro	duction	1
II.	Back	sground	1
III.	Net]	Billing Program	4
	A.	Eligible Customers	6
	B.	Net Billing Program Structure	6
	C.	Exported Credit Elements	7
IV.	Statu	tory and Regulatory Requirements	9
	A.	Legal Name and Principal Place of Business	9
	B.	Correspondence or Communications	9
	C.	Categorization, Hearings, and Issues to be Considered 1	0
V.	Pray	er for Relief 1	3

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I. Introduction

In accordance with Articles 1 and 2 of the California Public Utilities Commission (Commission) Rules of Practice and Procedure and General Order 96-B, PacifiCorp d/b/a Pacific Power (PacifiCorp), submits this application for approval of its proposed Net Billing program. The Net Billing program is designed to encourage the growth of renewable distributed generation in PacifiCorp's service territory given the upcoming closure of PacifiCorp's Net Energy Metering (NEM) program on June 30, 2020 (Application).

II. Background

PacifiCorp is a multi-jurisdictional utility providing retail electric service to customers in California, Idaho, Oregon, Utah, Washington, and Wyoming. In northern California, PacifiCorp serves approximately 45,000 customers spread over more than 11,000 square miles in portions of Del Norte, Modoc, Shasta, and Siskiyou counties. These customers account for approximately two percent of PacifiCorp's 1.9 million customers in six states. PacifiCorp is uniquely situated in comparison to the other investor-owned utilities (IOUs) in California because not only does it have load-service obligations in six states, but PacifiCorp's California customers are geographically-dispersed. PacifiCorp only has approximately four customers per square mile.

1

PacifiCorp's unique characteristics have been recognized by both the Legislature and the Commission with respect to implementing California's NEM program, as PacifiCorp has not been subject to the same NEM requirements as the Large IOUs. California's NEM program was initiated in 1995 with the enactment of Senate Bill 656.¹ The statute originally ordered "every electric utility in the state ... to develop a standard contract or tariff providing for net energy metering."² NEM means "measuring the difference between the electricity supplied through the electrical grid and the electricity generated by an eligible customer-generator and fed back to the electrical grid over a 12-month period"³ The statute requires "every electric utility [to] develop a standard contract or tariff] available to eligible customer-generators, upon request, on a first-come-first-served basis until the time that the total rated generating capacity used by eligible customer-generators exceeds 5 percent of the electric utility's aggregate customer peak demand."⁴

The initial NEM program allowed customers who install and operate small (one megawatt (MW) or less) renewable generation facilities that meet certain technical requirements to receive a full retail-rate bill credit for power generated by their on-site system that is fed back into the power grid during times when generation exceeds on-site energy demand. The credit is used to offset a customer's electricity bill, and may be rolled over to subsequent bills for up to a year.

¹S.B. 656, (1995 Reg. Session), *available at* <u>http://www.leginfo.ca.gov/pub/95-96/bill/sen/sb_0651-0700/sb_656_bill_950804_chaptered.html</u>.

² Id.

³ Cal. Pub. Util. Code § 2827(b)(6).

⁴ Pub. Util. Code § 2827(c)(1).

Assembly Bill 327⁵ required the Commission to develop a successor tariff for the NEM program. Public Utilities Code Section 2827.1(b) specifies that the Commission must develop the successor tariff by December 31, 2015, to be implemented by July 1, 2017, or upon reaching the five percent NEM limit, whichever is earlier. However, the successor tariff is only required for customers of "a large electrical corporation", which is defined as "an electrical corporation with more than 100,000 service connections in California."⁶ Accordingly, smaller utilities like PacifiCorp are not required to implement a successor NEM tariff. Instead, smaller utilities would continue offering the existing NEM program to new customers "until the time that the total rated generating capacity used by eligible customer-generators exceeds 5 percent of the electric utility's aggregate customer peak demand."⁷ After reaching the five percent NEM limit, small utilities are not obligated to provide a NEM program to additional customers because they are not required to offer the successor NEM tariff.

The NEM cap outlined in statute has been confirmed by the Commission. Decision (D.) 13-11-026 provides that upon reaching the NEM cap, "no new customers can sign up for the NEM tariff offered by that utility."⁸ Although PacifiCorp was not obligated to offer NEM to

⁵ AB 327 was enacted on October 7, 2013 and is available at <u>http://www.leginfo.ca.gov/pub/13-14/bill/asm/ab_0301-0350/ab_327_bill_20131007_chaptered.pdf</u>.

⁶ Pub. Util. Code §§ 2827.1(b) and 2827(b)(5).

⁷ Pub. Util. Code §2827(c)(1); *see also* Pub. Util. Code § 2827(c)(4)(A): "An electric utility that is not a large electrical corporation is not obligated to provide net energy metering to additional eligible customer-generators in its service area when the combined total peak demand of all electricity used by eligible customer-generators served by all the electric utilities in that service area furnishing net energy metering to eligible customer-generators exceeds 5 percent of the aggregate customer peak demand of those electric utilities."

⁸ D.13-11-026 provides: "The NEM program is established by statute, namely Public Utilities Code section 2827. The Legislature has chosen to make the NEM program available only to a limited number of utility customers who meet specific criteria. One of the constraints placed on the NEM program by section 2827 has been a limit on the amount of generation that can participate in the program. (See former Pub. Util. Code, § 2827, subd. (d), adopted by Sen. Bill No. 656 (1995-1996 Reg. Sess.) contained in Stats 1995, ch. 369, p. 1918.) When a utility reaches its generation limit, no new customers can sign up for the NEM tariff offered by that utility." (D.13-11-026, p. 2, footnote omitted.)

additional customers beyond its five percent NEM cap, PacifiCorp submitted Advice Letter 567-E requesting modifications to the NEM program in order to voluntarily continue offering NEM beyond the statutory cap. As of March 31, 2019, the company had 9.4 MWs of interconnected customer generation participating in the NEM program, compared to a 7.9 MW NEM cap for the company. Even though the company has exceeded the NEM cap, the company plans to continue to accept NEM applications until June 30, 2020, unless this successor program is approved prior to that time.

To continue providing opportunities to customers to install behind-the-meter generation after the closure of the NEM program, PacifiCorp is proposing to implement the Net Billing program which will provide payment incentives for customers that provide electricity to the grid.

III. Net Billing Program

The proposed Net Billing program is designed to provide for the growth of renewable distributed generation in PacifiCorp's service territory by appropriately compensating customers for excess generation that is supplied to PacifiCorp's system. At the same time, the Net Billing program is structured to ensure that other customers of PacifiCorp not participating in the Net Billing program are not harmed.⁹ To ensure customers are appropriately compensated for excess generation that is supplied to PacifiCorp's system, while seeking to ensure that the Net Billing program costs approximate the program benefits and therefore do not prejudice other customers,

⁹ As noted in D.16-01-044:

[[]W]hen a NEM customer's consumption of electricity from the grid is netted against the customer's exports to the grid of energy not used on-site, the NEM customer has a smaller volume of electricity to pay for than the customer would have paid for in the absence of netting. Because the full range of IOUs' costs are mostly recovered in volumetric charges from residential customers, the netting process results in a loss of volume on which the IOU could otherwise collect costs through the volumetric rate, and a consequent increase in rates to balance that out. (D.16-01-044, p. 56, footnote omitted.)

the Net Billing program is designed to provide compensation based on costs that PacifiCorp would otherwise expend to obtain electricity (as outlined more fully below).

Through this Application, PacifiCorp requests that the Commission approve the following requests:

- Approve the proposed tariff establishing a Net Billing Program for customers that install new customer generation, Schedule NB-136 with an effective date of February 1. 2020.
- (2) Approve closing Schedule NEM-35 for new applications, effective January 1, 2020.
- (3) Approve an application fee for customers that apply to interconnect a customer generation system under the Net Billing program. This fee will reflect the onetime cost to the company associated with processing and reviewing customer generation interconnection requests.
- (4) Acknowledge that sites that have applied for or completed interconnection prior to the closing of the current NEM program on January 1, 2020, will be grandfathered on the current NEM program at that site for a 20-year period after the NEM program is closed to new applications or until January 1, 2040.
- (5) Acknowledge that projects that apply for interconnection prior to January 1, 2020, must complete their interconnection by January 1, 2021, in order to be eligible for participation in the current NEM program.
- (6) Authorize the company to recover the exported energy credits from the NetBilling program through the company's annual Energy Cost Adjustment Clause

application. This is consistent with the methodology approved by the

Commission to recover the costs for net metering surplus compensation.

(7) Authorize the company to submit an annual tier 1 advice letter on November 1 to update the export credit rates effective January 1 of the following calendar year.

A. Eligible Customers

The Net Billing program is available to customers of PacifiCorp that own and operate a renewable generation facility. Customers wishing to participate in the Net Billing program must complete the company's Application for Interconnection and execute an interconnection agreement with PacifiCorp. Additionally, the generation facility utilized by the customer generator must satisfy the following eligibility requirements:

- Be owned and operated by the customer;
- Utilize renewable energy technology (*e.g.*, solar, wind, etc.);
- Not exceed 1 MW in size;
- Be located on and connected to the customer's rented, leased, or owned establishment;
- Be interconnected to and operate in parallel with PacifiCorp's transmission and distribution facilities;
- Be sized to primarily offset part or all of the customer's own electrical requirements; and
- Utilize the metering equipment required by the company for administering this program.

If the customers satisfy the requirements outlined in the proposed tariff attached to the Direct

Testimony of Mr. Robert M. Meredith, customers may install and interconnect their generation

facility and participate in the Net Billing program.

B. Net Billing Program Structure

The program will provide export credits to customer generators for all energy exported to the grid from their generation system. At the same time, all energy usage provided by the company to the customer would be billed under the standard applicable tariff. Energy generated and consumed on-site will serve to offset kilowatt-hours that would otherwise have been imported from the company to the customer. On the company's proposed Net Billing program, customer generators would be paid an export credit rate that is fair, accurate, and updated annually. This ensures that costs are not shifted onto other customers and the prices paid for exported energy evolve with their value over time. The concept of being credited at a price for energy sent to the grid and paying the same rates as other customers for energy taken from the grid is also simple and easy for customers to understand. Further details on the structure of this Net Billing program are provided in the Direct Testimony of Mr. Meredith.

C. Exported Credit Elements

PacifiCorp proposes to provide exported energy credits based on the costs that PacifiCorp would otherwise expend for electricity. This will provide fair compensation to Net Billing program customers for their excess generation that is supplied to PacifiCorp's electric grid, while ensuring that the Net Billing program costs are approximate to the program benefits. Namely, PacifiCorp's proposed Net Billing program consists of five separate elements that customergenerators will receive compensation for: (1) avoided energy costs; (2) avoided line losses; (3) integration costs; (4) avoided Greenhouse Gas (GHG) emission compliance costs; and (5) Avoided Renewables Portfolio Standard (RPS) compliance costs. PacifiCorp also requests the ability to annually update each compensation element by submitting a tier 1 advice letter. PacifiCorp proposes to submit a single tier 1 advice letter to update all compensation elements. Additionally, PacifiCorp is proposing that the exported energy credit prices be differentiated by time of export. Differentiating the price of exported energy better reflects the costs and benefits of distributed energy resources and encourages customers to build and operate their systems in ways that are the most beneficial to the power grid. Each of the proposed compensation

7

elements are summarized below and described in greater detail in the Direct Testimony of Mr. Daniel J. MacNeil:

- Avoided Energy Cost: When customer generation is exported to the grid, the company can reduce the output of its generation resources or reduce the volume of its market purchases. The resulting reduction in fuel expense and purchased power cost is the avoided energy cost.
- Avoided Line Losses: Line losses are the difference between the total generation injected into the grid, and the total metered volume at customer sites. As a result, a kilowatt-hour produced by a generator is not equivalent to a kilowatt-hour delivered to a customer. The company's avoided energy costs are typically measured based on generation and market purchases at transmission voltages, while the metered volumes for residential generation exports are measured at the secondary voltage level. It is appropriate to adjust avoided energy costs to account for the resulting avoided line losses.
- Integration Cost: The company uses flexible resources to accommodate fluctuations in the balance of its system attributable to load, wind, solar, and other resources that are not under the company's control. Integration costs represent the cost of holding reserves with flexible resources to reliably maintain the load and resource balance.
- Avoided GHG Compliance Cost: The non-emitting resources which will be eligible for export credits reduce PacifiCorp's system GHG emissions and GHG compliance costs.

• Avoided RPS Compliance Cost: Those customers who choose to register their generator and sell renewable energy credits for their exported generation to the company will reduce RPS compliance costs.

IV. Statutory and Regulatory Requirements

A. Legal Name and Principal Place of Business

PacifiCorp is a public utility organized and existing under the laws of the state of Oregon.

PacifiCorp's legal name is PacifiCorp. PacifiCorp engages in the business of generating,

transmitting, and distributing electric energy in portions of northern California and in the states

of Idaho, Oregon, Utah, Washington, and Wyoming. PacifiCorp's principal place of business is

825 NE Multnomah Street, Suite 2000, Portland, Oregon 97232.

B. Correspondence or Communications

Correspondence and communications regarding this Application should be addressed to:

Pooja Kishore Regulatory Affairs Manager PacifiCorp 825 NE Multnomah, Suite 2000 Portland, OR 97232 Telephone: (503) 813-7314 Facsimile: (503) 813-7274 Email: <u>californiadockets@pacificorp.com</u>

Jessica Ralston Senior Attorney PacifiCorp 825 NE Multnomah, Suite 1800 Portland, OR 97232 Telephone: (503) 813-5817 Facsimile: (503) 813-7252 Email: jessica.ralston@pacificorp.com Jedediah J. Gibson Ellison Schneider Harris & Donlan LLP 2600 Capitol Avenue, Suite 400 Sacramento, CA 95816 Telephone: (916) 447-2166 Facsimile: (916) 447-3512 Email: jjg@eslawfirm.com

In addition, PacifiCorp respectfully requests that all data requests in this case be addressed to:

By e-mail (preferred):	datarequest@pacificorp.com
By regular mail:	Data Request Response Center PacifiCorp 825 NE Multnomah, Suite 2000 Portland, OR 97232

C. Categorization, Hearings, and Issues to be Considered

1. Categorization

Consistent with Rules 2.1(c) and 7.1 of the Commission's Rules of Practice and Procedure, PacifiCorp proposes to categorize this Application as a ratesetting proceeding (as defined in Rule 1.3(f)).

2. Need for Hearings

The need for hearings in this proceeding, and the issues to be considered in such hearings, is dependent upon protests to this Application. PacifiCorp requests that if there are no disputed material issues, the Commission forego hearings.

3. Issues to be Considered

The issues to be considered are described in this Application and the accompanying testimony, including the attached appendices.

In D. 16-01-017, the Commission amended Rule 2.1(c) to require that applications clearly state the "relevant safety considerations." The company is committed to promoting the health, safety, comfort, and convenience of customers and the public at large. Safety for

PacifiCorp employees, customers, and stakeholders is one of PacifiCorp's six core principles. PacifiCorp has developed and implemented various programs to help customers, employees, and stakeholders understand their own personal safety. In 2012 PacifiCorp received Prestigious Member Recognition from the National Safety Council for holding safety as a core value and making safety a priority in business. In 2013, 2015, and 2016 PacifiCorp received the Occupational Excellence Achievement Award from the National Safety Council for working to reduce on the job injuries. PacifiCorp was recognized for its safety achievement by the Edison Electric Institute by being in the top one percent of the safest electrical utilities in America for 2015. PacifiCorp also holds its contractors to a high standard of safety by requiring its contractors to register with a third-party evaluator of the contractor's safety performance.

The company complies with all applicable safety codes, including, but not limited to, the National Electric Safety Code, the Occupational Health and Safety Act, and any applicable state health and safety act requirements, at all of its generation facilities. Certain safety codes may also be applicable to the operation of the company's transmission and distribution facilities. PacifiCorp has developed standards that meet or exceed the National Electrical Safety Code. Employees are trained in work practice regulations along with company construction standards designed to achieve the highest standards and consistency.

The company also works to develop teamwork to mitigate safety risks and has developed and implemented programs to ensure ongoing improvements in safety. For example, the company continuously communicates safety goals in order to stay consistently on message across the organization. The company's safety programs include training and communicating from the top down, consistently delivering the same safety message and programs to all locations, and auditing of these communications and programs. The company sends daily emails

11

to all of its employees noting accident reports and containing general reminders about safety. Other examples of the company's commitment to safety include periodic emails with general safety tips for workplace and personal safety, safety committees for each floor of its corporate offices and field offices, annual safety training requirements which are linked to each employee's performance review, daily hazard assessment meetings for field offices, and annual evacuation drills.

The company prioritizes safety for all resources and to the benefit of all employees,

customers, and stakeholders

4. List of Testimony and Appendices Accompanying this Application

PacifiCorp's submissions to support this Application include the following:

PacifiCorp's submissions to support this application include the following:

Exhibits PAC/100	Direct Testimony of Etta Lockey
Exhibits PAC/200	Direct Testimony of Daniel J. MacNeil
PAC/201	Value of Export Credit Summary
Exhibits PAC/300	Direct Testimony of Robert M. Meredith
PAC/301	Proposed Schedule NB-136 and Proposed Revisions to NEM-35
PAC/302	Average Savings for Energy Generated Under Proposed Net Billing Program
PAC/303	Estimated Payback Period under Proposed Net Billing Program
PAC/304	Calculation of Application Fee

5. Procedural Schedule

PacifiCorp proposes the following schedule, which allows for expedited Commission

resolution of the Application:

Application Filed	April 19, 2019
Protest/Responses to Application	TBD
Prehearing Conference	May 29, 2019
Scoping Memo	June 19, 2019
Proposed Decision	November 5, 2019
Final Commission Decision	December 5, 2019
Tariff Effective	February 1, 2020

6. Organization and Qualification to Transact Business

A certified copy of PacifiCorp's Articles of Incorporation, as amended, and presently in effect, was filed with the Commission in A.97-05-011, which resulted in Commission issuance of D.97-12-093 and is incorporated herein by reference pursuant to Rule 2.2.

V. Prayer for Relief

PacifiCorp respectfully requests that the Commission approve this Application as filed.

Respectfully submitted,

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OFFICER VERIFICATION

(Rule 1.11)

I am an officer of the reporting corporation herein, and am authorized to make this verification on its behalf. The statements in the foregoing document are true of my own knowledge, except as to matters which are therein stated on information or belief, and as to those matters I believe them to be true.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on April 19, 2019, at Portland, Oregon.

Etta Lockey

Vice President, Regulation PacifiCorp

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

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Application No. 19-04-____ (Filed April 19, 2019)

CERTIFICATE OF SERVICE

I hereby certify that I have this day caused a copy of the foregoing

APPLICATION OF PACIFICORP (U 901-E) FOR APPROVAL OF ITS PROPOSED TARIFF TO COMPENSATE ELIGIBLE DISTRIBUTED GENERATION CUSTOMERS

to be served on Chief ALJ Anne Simon via e-mail and overnight delivery.

Chief ALJ Anne Simon California Public Utilities Commission Division of Administrative Law Judges 505 Van Ness Avenue San Francisco, California 94102 Email: <u>anne.simon@cpuc.ca.gov</u>

Executed on April 19, 2019, at Portland, Oregon.

atil Savar

Katie Savarin Coordinator, Regulatory Operations

Application No. 19-04-____ Exhibit PAC/100 Witness: Etta Lockey

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

PACIFICORP

Direct Testimony of Etta Lockey

Policy

April 2019

TABLE OF CONTENTS

I.	QUALIFICATIONS	1
II.	PURPOSE AND SUMMARY OF TESTIMONY	1
III.	OVERVIEW OF PACIFICORP'S CURRENT NEM PROGRAM	2
IV.	OVERVIEW OF PACIFICORP'S PROPOSED NET BILLING PROGRAM	4
V.	COMMITMENT TO RENEWABLE ENERGY	7
VI.	INTRODUCTION OF WITNESSES	9

1	Q.	Please state your name, business address, and present position with PacifiCorp
2		(PacifiCorp or Company).
3	A.	My name is Etta Lockey. My business address is 825 NE Multnomah Street, Suite
4		2000, Portland, Oregon 97232. My current position is Vice President, Regulation.
5		I. QUALIFICATIONS
6	Q.	Please describe your education and business experience.
7	A.	I graduated from the University of Oregon with a bachelor's degree in political
8		science. I received my juris doctorate from the Northwestern School of Law of Lewis
9		and Clark College in Portland, Oregon. I joined PacifiCorp in 2013, and until 2017
10		provided legal representation to the company in a wide range of regulatory and
11		legislative issues in California, Oregon, and Washington including general rate cases,
12		administrative investigations, and rulemakings. I became Vice President of
13		Regulation in 2017. In my current role, I oversee regulatory affairs for California,
14		Oregon, and Washington.
15		II. PURPOSE AND SUMMARY OF TESTIMONY
16	Q.	What is the purpose of your testimony?
17	A.	The purpose of my testimony is to introduce and support the company's tariff filing to
18		establish a Net Billing program as a successor customer generator program to the
19		existing Net Energy Metering (NEM) program offered by the company (Company
20		Filing) under tariff Schedule NEM-35. I will give an overview of the major
21		components of the company's filings, explain why the company's proposals should be
22		approved and identify the witnesses who will further support the details of this filing.

Q. Please summarize your testimony. 2 My testimony provides a general overview of the company's application to establish a A. 3 Net Billing program to replace the NEM program offered by the company, the history 4 and requirements that have shaped the existing NEM program, the current level of 5 interconnected projects under the existing NEM program, PacifiCorp's recent filing 6 extending the existing NEM program through June 2020, and the characteristics of 7 the company's proposal. Finally, my testimony introduces other witnesses providing 8 testimony on behalf of PacifiCorp. 9 III. **OVERVIEW OF PACIFICORP'S CURRENT NEM PROGRAM** 10 **O**. What is NEM? 11 NEM is a billing mechanism for customer generators interconnected to the grid, A. 12 where they are allowed to net and bank their energy exported to the grid against the 13 energy for which they are billed. In other words, NEM customers are compensated 14 for their exported energy at the same price as retail energy charges. 15 **Q**. Why does the company currently offer the NEM Program? 16 Α. The company developed the NEM program in response to Senate Bill 656¹ in 1995. 17 That legislation ordered "(e)very electric utility in the state ... to develop a standard contract or tariff providing for net energy metering."² 18 19 Q. How long is the company required to offer the NEM program? 20 A. The current net metering program authorized by statute requires the company to offer 21 NEM until the total rated generating capacity used by eligible customer-generators

1

¹S.B. 656, (1995 Reg. Session), available at http://www.leginfo.ca.gov/pub/95-96/bill/sen/sb 0651-0700/sb 656 bill 950804 chaptered.html. 2 Id.

1		exceeds five percent of PacifiCorp's aggregate customer peak demand. ³ Unlike the
2		three largest investor owned utilities in California, PacifiCorp, as an electrical
3		corporation serving only 45,000 customers in California, is not required to continue
4		offering NEM once its five percent cap is met.
5	Q.	Where does PacifiCorp stand in relation to this five percent NEM cap?
6	A.	The total interconnected generating capacity exceeds PacifiCorp's five percent NEM
7		cap. As of March 31, 2019, the company had 9.4 megawatts of interconnected
8		customer generation participating in the NEM program, which compares to a 7.9
9		megawatt NEM cap for the company. On September 4, 2018, PacifiCorp submitted
10		Advice Letter 567-E requesting modifications to tariff Schedule NEM-35. This filing
11		requested modifications to PacifiCorp's NEM program to voluntarily allow the
12		company to continue offering NEM beyond the statutory cap, and established a
13		timeline for closing the current NEM program. PacifiCorp also pledged to file a
14		replacement tariff for the current NEM program. Even though the company has
15		exceeded the NEM cap, the company plans to continue to accept NEM applications
16		until June 30, 2020, unless a successor program is approved prior to that time. ⁴ Once
17		the successor program is approved, the current Schedule NEM-35 will be closed to
18		new service.
19	Q.	Why is the company continuing to accept customers into the NEM program

- 20 beyond the program cap?
- PacifiCorp is a partner to our customers as they look for opportunities to install 21 A.

³ Pub. Util. Code § 2827 (c)(1). ⁴ Advice Letter No. 567-E approved by the Commission effective October 4, 2018.

1		generation facilities to satisfy their electrical needs and lower their monthly energy
2		bill. PacifiCorp's proposal will more accurately price exported energy from NEM
3		customers, but PacifiCorp is mindful of the need to transition its customer generation
4		program offering from the current NEM program to a new Net Billing program.
5	Q.	When does PacifiCorp propose to begin offering customers service under the Net
6		Billing program?
7	A.	PacifiCorp is requesting the Commission approve the Net Billing program effective
8		February 1, 2020. As part of this request, the company also requests the Commission
9		officially close the existing NEM program to new applications effective January 1,
10		2020. The one-month gap between the closing of the existing NEM program and the
11		effective date of the Net Billing program is necessary to ensure adequate time to
12		update systems to process applications, as further discussed in the testimony of Mr.
13		Robert M. Meredith.
14	Q.	Why is it appropriate for PacifiCorp to continue accepting applications from
15		customers for the existing NEM program until January 1, 2020?
16	A.	By continuing to accept applications for the current NEM program until January 1,
17		2020, PacifiCorp is providing customers ample notice that the existing NEM program
18		will end, while proposing a replacement program that continues to allow additional
19		customer generation to interconnect while minimizing the impacts on non-
20		participating customers.
21	IV.	OVERVIEW OF PACIFICORP'S PROPOSED NET BILLING PROGRAM
22	Q.	What is the company requesting in this Application?
23	A.	In this Application, the company requests that the Commission:

1	(1) Approve the proposed tariff establishing a Net Billing program for customers
2	that install new customer generation, Schedule NB-136 with an effective date
3	of February 1, 2020.
4	(2) Approve closing Schedule NEM-35 for new applications, effective January 1,
5	2020.
6	(3) Approve an application fee for customers that apply to interconnect a
7	customer generation system under the Net Billing program. This fee will
8	reflect the one-time cost to the utility associated with processing and
9	reviewing customer generation interconnection requests.
10	(4) Acknowledge that sites that have applied for interconnection prior to January
11	1, 2020, will be grandfathered on the current NEM program at that site for 20
12	years after the NEM program is closed to new applications. The NEM
13	program would be unavailable starting January 1, 2040, and previously
14	grandfathered customers would move to the Net Billing program or whatever
15	customer generator program would be available at that time.
16	(5) Acknowledge that projects that apply for interconnection prior to January 1,
17	2020, and consequently would be eligible to participate in the current NEM
18	program, must complete their interconnection by January 1, 2021, in order to
19	be eligible for participation in the NEM program.
20	(6) Authorize the company to recover the exported energy credits from the Net
21	Billing program through the company's annual Energy Cost Adjustment Clause
22	(ECAC) application. This is consistent with the methodology approved by the
23	commission to recover the costs for net metering surplus compensation.

- (7) Authorize the company to submit an annual tier 1 advice letter on November 1
 to update the export credit rates effective January 1 of the following calendar
 year.
- 4

Q. What rate structure is the company proposing?

5 A. PacifiCorp proposes the implementation of a Net Billing program that would provide 6 credits to customer generators for all energy exported to the grid from their generation 7 system. Compensation for exported energy will vary based on the time at which 8 energy is exported with different prices for on- and off-peak times. All energy usage 9 provided by the company will be billed under the customer's standard applicable 10 tariff. Energy generated and consumed on-site will offset kilowatt-hours that would 11 otherwise have been imported from the company.

12 Q. How does the company propose to treat current NEM customers?

13 A. The company supports keeping the current NEM customers on the existing NEM 14 program for a 20 year period after the NEM program is closed to new applications. 15 We acknowledge that current customers made investments based on the current 16 structure and respect the customers' need for reasonable certainty for recovery of their 17 investments. This "grandfathering" will apply to the specific site and will allow the 18 value of the customer generation system to be sold with the property. Current 19 customers may voluntarily opt in to the new program. Customers who apply to 20 interconnect a generation facility prior to January 1, 2020, when the NEM tariff will 21 be closed to new applications, will have one year to interconnect their customer 22 generation systems and still be eligible for NEM under Schedule NEM-35.

Direct Testimony of Etta Lockey

1	Q.	How does the company plan to recover costs for exported energy credits?
2	A.	The company proposes to recover the costs for exported energy credits through its
3		annual ECAC (PacifiCorp recovers net power costs through this filing). As described
4		in the company's 2019 ECAC, net power costs are the sum of the company's fuel
5		expenses, wholesale purchase power expenses, and wheeling expenses, less wholesale
6		sales revenue. ⁵ The ECAC also includes the recovery of variable generation-related
7		costs such as fuel stock carrying charges, purchase of renewable energy credits for
8		renewables portfolio standard compliance, renewable energy production tax credits,
9		start-up fuel costs, and net metering surplus compensation costs. Recovery of costs
10		for exported energy credits through the ECAC is consistent with the recovery of costs
11		for net metering surplus compensation. The ECAC is filed annually on August 1.
12		V. COMMITMENT TO RENEWABLE ENERGY
13	Q.	Please describe PacifiCorp's commitment to the development of renewable
14		energy resources.
15	A.	PacifiCorp supports the deployment of cost-effective renewable resources. Currently,
16		the company's owned generating capability is comprised of approximately 20 percent
17		renewable energy including wind, solar, and geothermal. ⁶ The company's parent,
18		Berkshire Hathaway Energy (BHE) is the second largest, rate-regulated utility owner

⁵ See In the Matter of the Application of PacifiCorp (U901E) for Approval of its 2019 Energy Cost Adjustment Clause and Greenhouse Gas-Related Forecast and Reconciliation of Costs and Revenue, Docket No. A.18-08-001, Testimony of Michael G. Wilding at 5 (August 1, 2018).

⁶ All or some of the renewable energy attributes associated with wind, solar and geothermal facilities may be used in future years to comply with renewable portfolio standards or other regulatory requirements or sold to third parties in the form of renewable energy credits or other environmental commodities.

1		of wind resources in the U.S. according to the American Wind Energy Association. ⁷
2		More than 1,850 of PacifiCorp's California customers are currently enrolled in the
3		company's voluntary Blue Sky renewable energy program. As previously discussed,
4		the company currently has over 9.4 MWs of customer generation interconnected to
5		the system under the existing NEM program, exceeding the five percent mandate
6		from legislation, yet the company is voluntarily proposing a new program to provide
7		options for customers who seek to install customer-sited renewables.
8	Q.	Why is the company proposing the Net Billing program?
9	A.	The company supports the development of cost-effective renewable energy and its
10		customers' desire to participate in renewable energy programs, but wants to ensure
11		that the costs of its renewable energy program offerings do not shift costs onto other
12		customers. Customers who export energy from their customer generation system
13		should be compensated for their exports at a level that fairly reflects its value and
14		holds other customers economically indifferent. Transitioning to a Net Billing
15		program with time varying export prices will send accurate price signals to all
16		customers in order to maximize benefits to the utility's system, while protecting other
17		customers from unfair and unexpected cost-shifting. PacifiCorp serves approximately
18		45,000 customers in its California service territory. The company estimates nearly 40
19		percent of residential customers are eligible for CARE. Approximately one percent
20		of our customers have a customer generation system and participate in the NEM

⁷ AMERICAN WIND ENERGY ASSOCIATION, U.S. WIND INDUSTRY ANNUAL MARKET REPORT YEAR ENDING 2018, 58 (2018).

1		program. The interests of all customers must be balanced in the design of a customer
2		generation structure that is fair and equitable to all.
3		VI. INTRODUCTION OF WITNESSES
4	Q.	Please identify the witnesses supporting the company's filing and the subject of
5		their testimony.
6	A.	The company's filing is further supported by company witness Mr. Daniel J. MacNeil
7		who testifies about the value of exported energy and the elements, methodology and
8		calculation of that value (see Exhibit PAC/200 series). He will also describe the on-
9		peak and off-peak time periods for the company's proposed export credit rates, and
10		how they will be updated over time. Company witness Mr. Robert M. Meredith
11		explains the specifics of the Net Billing tariff, how the time of export rate will be
12		applied, and the interconnection application fee (see Exhibit PAC/300 series). He
13		also discusses the transition to the new Net Billing program and the potential
14		economics of customer generation for prospective customer generators.
15	Q.	Please summarize your testimony
16	A.	PacifiCorp is voluntarily bringing forth a proposal to continue to compensate
17		customers for energy exported to PacifiCorp's system. Under the company's
18		proposed Net Billing program, customers will be compensated for exported energy at
19		a rate that reflects the actual benefits of that exported energy to the company's system.
20		In order to encourage the highest benefit to the system, the rate of compensation for
21		exported energy will be based on the time that energy is exported. The company also
22		seeks to establish an interconnection application fee to properly assign the costs of
23		review to the customer seeking to interconnect. The company proposes that

customers who submit interconnection applications prior to January 1, 2020, and
interconnect within one year of that date could be on the NEM program and that all
customers participating in the NEM program would be grandfathered until January 1,
2040. The company proposes that all energy costs associated with the purchase of
exported energy will be collected through the company's ECAC filings. Based on the
foregoing, PacifiCorp requests that the Commission approve the company's proposals
set forth in this application establishing a new Net Billing tariff.

- 8 Q. Does this conclude your direct testimony?
- 9 A. Yes.

Application No. 19-04-___ Exhibit PAC/200 Witness: Daniel J. MacNeil

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

PACIFICORP

Direct Testimony of Daniel J. MacNeil

Value of Export Credit

April 2019

TABLE OF CONTENTS

I.	QUALIFICATIONS	1
II.	PURPOSE OF TESTIMONY AND RECOMMENDATION	2
III.	EXPORT CREDIT METHODOLOGY	2
IV.	ON-PEAK AND OFF-PEAK DEFINITIONS	8
V.	UPDATING EXPORT CREDIT RATES	12

ATTACHED EXHIBITS

Exhibit PAC/201 – Value of Export Credit Summary

1	Q.	Please state your name, business address, and present position with PacifiCorp
2		d/b/a Pacific Power.
3	A.	My name is Daniel J. MacNeil. My business address is 825 NE Multnomah Street,
4		Suite 600, Portland, Oregon 97232. My present position is Resource and Commercial
5		Strategy Adviser.
6		I. QUALIFICATIONS
7	Q.	Briefly describe your education and professional experience.
8	A.	I received a Master of Arts degree in International Science and Technology Policy
9		from George Washington University and a Bachelor of Science degree in Materials
10		Science and Engineering from Johns Hopkins University. Before joining the
11		company, I completed internships with the U.S. Department of Energy's Office of
12		Policy and International Affairs and the World Resources Institute's Green Power
13		Market Development Group. I have been employed by the company since 2008, first
14		as a member of the net power costs group, then as manager of that group from June
15		2015 until September 2016. In my current role, I provide analytical expertise on a
16		broad range of topics related to the company's resource portfolio and obligations,
17		including oversight of the calculation of avoided cost pricing in the company's
18		jurisdictions.
19	Q.	Have you testified in previous regulatory proceedings?
20	A.	Yes. I have provided testimony in Utah, Wyoming, Oregon, and Federal Energy
21		Regulatory Commission dockets.

1

II. PURPOSE OF TESTIMONY AND RECOMMENDATION

- 2 Q. What is the purpose of your testimony?
- 3 My testimony supports the company's proposal to create Schedule NB-136, Net A. 4 Billing Service, under which customers would be compensated for generation in 5 excess of their own load that is exported to the company's system based upon the 6 company's avoided cost. I address three primary issues. First, I describe the 7 elements, methodology, and calculation of the export credit value. Second, to better 8 ensure compensation is consistent with exported volumes, I describe on-peak and off-9 peak time of export definitions that differentiate between periods of higher and lower 10 avoided costs. Finally, I address how the export credit will be updated going forward. 11 **Q**. Have you prepared a summary of the proposed export credit values? 12 A. Yes. A summary of the export credit results is shown in Exhibit PAC 201. 13 III. EXPORT CREDIT METHODOLOGY 14 Q. What elements are included in the value of the proposed customer generation 15 export credit? 16 A. The proposed export credit includes the following elements related to the impact of 17 exported volumes on the company's system dispatch: 18 Avoided Energy Cost: When customer generation is exported to the grid, the 19 company can reduce the output of its generation resources or reduce the 20 volume of its market purchases. The resulting reduction in fuel expense and 21 purchased power cost is the avoided energy cost. 22 Avoided Line Losses: Line losses are the difference between the total 23 generation injected into the grid, and the total metered volume at customer

1		sites. As a result, a kilowatt-hour produced by a generator is not equivalent to
2		a kilowatt-hour delivered to a customer. The company's avoided energy costs
3		are typically measured based on generation and market purchases at
4		transmission voltages, while the metered volumes for residential generation
5		exports are measured at the secondary voltage level. It is appropriate to adjust
6		avoided energy costs to account for the resulting avoided line losses.
7		• Integration Cost: The company uses flexible resources to accommodate
8		fluctuations in the balance of its system attributable to load, wind, solar, and
9		other resources that are not under the company's control. Integration costs
10		represent the cost of holding reserves with flexible resources to reliably
11		maintain the load and resource balance.
12		• Avoided Greenhouse Gas (GHG) Compliance Cost: The non-emitting
13		resources which will be eligible for export credits reduce PacifiCorp's system
14		GHG emissions and GHG compliance costs.
15		Avoided Renewable Portfolio Standard (RPS) Compliance Cost: Those
16		customers who choose to register their generator and sell renewable energy
17		credits for their exported generation to the company will reduce RPS
18		compliance costs.
19	Q.	How does the company propose calculating avoided energy costs?
20	A.	In California, the company currently uses avoided cost rates approved by the Public
21		Utility Commission of Oregon for determining avoided costs for standard qualifying
22		facility resources up to at least three megawatts (MW) in nameplate capacity. The
23		use of Oregon avoided cost rates is reasonable since the company's California service

1 territory is contiguous with a significant portion of its Oregon service territory. Both 2 areas are served by the same resources and are subject to comparable transmission 3 constraints. Avoided energy costs will reflect the forecasted electricity market prices 4 underlying the approved rates and would be used in determining the proposed export 5 credit values. To account for the non-firm nature of the proposed tariff, avoided 6 energy values would reflect market prices for electricity with a non-firm price 7 adjustment of 93 percent, also from the qualifying facility contracting procedures 8 applied in Oregon.

9

Q.

Why is non-firm pricing appropriate?

10 A. Firm contracts would include credit terms, security deposits, performance guarantees, 11 liquidated damages, default provisions, and termination rights that are not found in 12 the proposed Net Billing tariff. Those contractual terms protect the utility and non-13 participating customers from non-performance and are essential to mitigating the 14 risks associated with long-term contracts. However, since exporting customers are 15 under no obligation to deliver any volumes, non-firm valuations are appropriate. If a 16 customer desires a firm or longer term contractual arrangement for their generation, it 17 has the option of self-certifying as a qualifying facility (QF) and obtaining a contract 18 under the applicable QF tariff.

- 19 Q. Are the monthly avoided energy costs sufficient for determining an export
 20 credit?
- A. No. To accurately value export volumes, the company is proposing distinct on-peak
 and off-peak rates, as discussed later in my testimony. Since the market price

1		forecast used in Oregon for standard avoided costs does not have hourly granularity,
2		an alternative hourly price shaping methodology is required.
3	Q.	What hourly price shaping methodology do you propose?
4	A.	To create an hourly shape, the company proposes using the results of Energy
5		Imbalance Market (EIM) operations. Specifically, PacifiCorp proposes using a blend
6		of 15-minute EIM load aggregation point prices for the most recent 36-month period,
7		in this instance, the 36 months ending December 2018. The blend of market prices
8		includes PacifiCorp East, PacifiCorp West, and Malin, and each is weighted based on
9		forecasted market transaction activity in these areas. The blending methodology is
10		specified by the Public Utility Commission of Oregon and is also incorporated in the
11		determination of the avoided energy costs described above.
12		The historical EIM data is used to create a market price "scalar" based on the
13		average market prices in a month during a given hour, relative to the average market
14		price in that month during all hours. For instance, if the average market price during
15		hour-ending 10 in May is \$18/megawatt-hour (MWh), and the average market price
16		during all hours in May is \$20/MWh, then the scalar for hour-ending 10 in May
17		would be 90 percent. ¹ The average of the 24 hourly scalars for a given month is
18		always 100 percent.
19	Q.	What is the proposed avoided energy value?
20	A.	The average value of avoided energy during 2020 is \$22.62/MWh. Values are further
21		distinguished by on-peak and off-peak periods, as discussed later on in my testimony.

 $^{^{1}}$ \$18/MWh / \$20/MWh = 90 percent
1	Q.	How does the company propose calculating avoided line losses?						
2	A.	The line losses incorporated in the company's current rates are from its 2009 Analysis						
3		of System Losses for California. That study identified line losses specific to the						
4		following interconnection levels:						
5		• Transmission: 4.53 percent						
6		• Primary: 7.311 percent						
7		• Secondary: 11.433 percent						
8		The company has used the results from power flow studies to calculate a marginal						
9		loss by load level and then fit it to a 12 month by 24 hour profile for each of the						
10		above interconnection levels. The result is an estimate of avoided line losses that can						
11		be differentiated for specific on-peak and off-peak periods.						
12	Q.	What level of avoided line losses are included in the proposed export credit						
13		calculation?						
14	A.	The proposed export credit is expected to be applied to resources interconnected at						
15		secondary voltage levels. However, the exported volumes will need to be transferred						
16		across the secondary distribution system to other customers. As a result, they will						
17		incur some line losses, and will therefore not be avoiding the entire line losses						
18		associated with serving load on the secondary distribution system. Instead, the						
19		company proposes crediting exports for avoiding the next higher voltage level,						
20		<i>i.e.</i> , primary voltage.						

1	Q.	What is the value of the proposed avoided line losses?
2	A.	The average value of avoided line losses during 2020 is \$2.23/MWh. Values are
3		further distinguished by on-peak and off-peak periods, as discussed later on in my
4		testimony.
5	Q.	What integration cost does the company propose incorporating in the export
6		credit value?
7	A.	It is anticipated that most of the resources exporting under the proposed program will
8		be solar generators. The company's 2017 Integrated Resource Plan (IRP) includes a
9		Flexible Reserve Study, ² which identifies how much flexible capacity is required to
10		compensate for variations in load and resources, as well as the cost of that capacity.
11		The company proposes that the solar integration cost of \$0.60/MWh (in 2016 dollars)
12		assumed in the 2017 IRP be included in the export credit calculation. After escalating
13		at inflation, the proposed integration cost is \$0.65/MWh during 2020.
14	Q.	What are the proposed avoided GHG compliance costs?
15	A.	Since only non-emitting resources will be eligible for export credits under the
16		proposed program, this element accounts for the benefits of incorporating those
17		resources in PacifiCorp's portfolio. PacifiCorp proposes that avoided GHG
18		compliance costs be calculated using the most recent publicly available values from
19		PacifiCorp's Energy Cost Adjustment Clause and Greenhouse Gas-Related Forecast
20		and Reconciliation of Costs and Revenue filing (ECAC and GHG filing). The most
21		recent filing was submitted on August 1, 2018, in docket A.18-08-001. That filing

² 2017 PACIFICORP INTEGRATED RESOURCE PLAN, Volume II, Appendix F: Flexible Reserve Study (April 4, 2017), *available at* <u>http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Integrated_Resource_Plan/2</u> 017_IRP/2017_IRP_VolumeII_2017_IRP_Final.pdf.

1	contained the company's non-confidential emissions intensity value for 2016, and the
2	forecasted compliance price for 2019.

3 Q. What is the value of the proposed avoided GHG compliance costs?

4 A. The value of the proposed avoided GHG compliance costs during 2020 is

5 \$10.96/MWh.

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6 Q. What are the proposed avoided RPS compliance costs?
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- A. When eligible resources provide renewable energy credits (RECs) to PacifiCorp they
 reduce PacifiCorp's cost of procuring RECs to meet its RPS obligations. Resources
 must be registered for their RECs to be eligible for RPS compliance and asset owners
 with small expected volumes may choose not to register. Therefore, this component
 will be an optional adder to the export credit that will only apply to resources that
- 12 deliver eligible RECs to PacifiCorp. The proposed avoided RPS compliance costs
- 13 reflect a recent forecast used in the Marginal Cost of Service Study conducted as part
- 14 of PacifiCorp's 2019 General Rate Case.

15 Q. What is the value of the proposed avoided RPS compliance costs?

- 16 A. For those resources that choose to provide RPS-eligible RECs to PacifiCorp, the
- 17 value of avoided RPS compliance costs during 2020 is \$2.00/MWh.
- 18 Q. Have you prepared a summary of the export credit results?
- 19 A. Yes. A summary of the export credit results is shown in Exhibit PAC/201.
 - IV. ON-PEAK AND OFF-PEAK DEFINITIONS
- 21 Q. What is the purpose of distinguishing between on-peak and off-peak hours?
- A. The company's marginal costs vary significantly over the course of the day. In
 addition, a customer's export output will also vary over the course of the day. If a

20

1		customer exports during a part of the day with a relatively high value, it will provide
2		greater benefits than if that customer exports during a part of the day with a relatively
3		low value. Distinguishing periods with different value ensures that exporting
4		customers receive appropriate compensation consistent with the value they provide to
5		the system. This also provides customers with an incentive to adjust their load
6		profiles to make better use of their own generation resources, as avoided purchases
7		still avoid the full cost-based retail rate.
8	Q.	Are any on-peak and off-peak definitions currently in place that are applicable
9		to residential customers?
10	А.	No. However, the official Western Electricity Coordinating Council on-peak
11		definition is 6:00 a.m. to 10:00 p.m. Pacific Prevailing Time (PPT), excluding
12		Sundays and holidays. ³ A similar definition is used for on-peak demand charges for
13		large general service customers under Schedule AT-48, spanning 6:00 a.m. to
14		10:00 p.m. PPT, Monday through Friday.
15	Q.	What on-peak and off-peak definitions do you propose?
16	A.	As previously discussed, the average EIM scalars by hour show a wide variation in
17		prices across the day, as shown in Figure 1. Ideally the value within each period
18		should be as uniform as possible, so that whenever a customer delivers in a given
19		period, the benefits are similar. At the same time, good ratemaking principles would
20		suggest that the on-peak and off-peak definitions be easy for customers to understand
21		and aligned with existing programs where possible. With that in mind, PacifiCorp is

³ NORTH AMERICAN ENERGY STANDARDS BOARD, Business Practice WEQ IIPTF (2004), *available at* <u>https://www.naesb.org//pdf/weq_iiptf050504w6.pdf</u>.

proposing that on-peak be defined as 4:00 p.m. to 10:00 p.m. PPT, Monday through

Friday. All hours other than on-peak hours are considered off-peak hours.

1

2

3



Figure 1: Hourly Energy Price Shape

4 Q. In what way are the proposed definitions an improvement over the traditional
5 on-peak definition?

A. The proposed definition has a wider spread between on-peak and off-peak than the
existing definitions. For instance, with a 6:00 a.m. to 10:00 p.m. PPT on-peak
definition, energy prices for on-peak hours are only 18 percent higher than off-peak
hours. This occurs because this definition includes hours in the middle of the day
when prices are comparable to the lowest-priced hours in the middle of the night. By
comparison, the proposed definitions have energy prices for on-peak hours that are

1 37 percent higher than off-peak hours. This indicates that the proposed definitions 2 are more uniformly distinguishing between periods of high value and low value, so 3 that deliveries during the proposed period provide more similar benefits. 4 Q. Which of the export credit elements are differentiated between on-peak and off-5 peak periods? 6 The energy, line loss, integration, and GHG elements are differentiated between on-A. 7 peak and off-peak periods. Energy and line losses are readily differentiated as the underlying source data has hourly granularity. Integration costs and GHG emissions 8 9 intensity are based on annual average values. Integration reflects the cost of holding 10 back flexible resources that could otherwise be used to serve customer load or support 11 wholesale sales. Higher hourly energy prices imply higher costs for integration and 12 higher GHG emissions, so these elements have been differentiated using the same 13 ratios as the energy element. 14 Q. Which of the export credit elements are not differentiated between on-peak and 15 off-peak periods? 16 RPS compliance costs are not differentiated between on-peak and off-peak periods. A. 17 RPS compliance is based on the retirement of RECs that can be produced at any point 18 in a given year. As a result, the timing of the energy production during the year does 19 not impact the compliance value. The use of a single RPS compliance value will also 20 simplify the handling of this optional element. 21 What are the proposed export credit values? Q. 22 A. Details on the proposed export credit values are shown in Exhibit PAC/201.

1		V. UPDATING EXPORT CREDIT RATES
2	Q.	Will a customer's export credit be fixed or will it be updated?
3	А.	The company is proposing that the export credit be updated annually by filing a tier 1
4		advice letter proposing rates for effect January 1; this tier 1 advice letter would be
5		filed on November 1 st . This will ensure that the export credit payments continue to be
6		consistent with the company's avoided cost and will be consistent with the non-firm
7		nature of the output. This will also allow all customers participating under Schedule
8		NB-136, Net Billing Service, to receive the same export credit rates, reducing the
9		administrative complexity of assorted vintages of export credit rates and on-peak/off-
10		peak definitions.
11	Q.	What factors drive the timing of an annual export credit update?
12	A.	The proposed export credit values include avoided energy costs based on inputs from
13		published avoided cost rates which are typically updated each summer. Data for
14		avoided GHG compliance costs is from the company's annual ECAC and GHG
15		filing, which occurs in August. Since these are the two largest elements in the export
16		credit value, it would be reasonable to update export credit rates each year to
17		incorporate the most recent information. Given both of these inputs are typically
18		updated in the summer, the proposed November 1st filing date would incorporate
19		relatively recent data for these elements. Data for avoided line losses, integration
20		costs, avoided RPS compliance costs, or other inputs would be updated to reflect the
21		most recent information available at the time the annual update is prepared, and some
22		of these inputs may not change every year.

Direct Testimony of Daniel J. MacNeil

- 1 Q. Does this conclude your direct testimony?
- 2 A. Yes.

Application No. 19-04-___ Exhibit PAC/201 Witness: Daniel J. MacNeil

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

PACIFICORP

Direct Testimony of Daniel J. MacNeil

Value of Export Credit Summary

April 2019

State of California Export Credit Summary by Element PacifiCorp

Average*	Total	S/MWh	\$39.91	\$37.35	\$32.40	\$29.11	\$28.13	\$28.59	\$36.07	\$39.74	\$37.01	\$34.52	\$37.04	\$41.95	\$35.16	\$2.00	\$37.16
	Total	\$/MWh	\$37.95	\$34.94	\$30.26	\$27.10	\$26.58	\$27.68	\$33.90	\$35.71	\$34.71	\$33.53	\$35.70	\$40.26	\$33.20	\$2.00	\$35.20
	GHG	\$/MWh	\$10.43	\$10.26	\$10.24	\$10.21	\$10.36	\$10.62	\$10.32	\$9.87	\$10.30	\$10.65	\$10.57	\$10.53	\$10.36		
Off-Peak	Integration	S/MWh	(\$0.62)	(\$0.61)	(\$0.61)	(\$0.61)	(\$0.61)	(\$0.63)	(\$0.61)	(\$0.59)	(\$0.61)	(\$0.63)	(\$0.63)	(\$0.62)	(\$0.61)		
	Losses	S/MWh	\$2.73	\$2.37	\$1.81	\$1.48	\$1.35	\$1.46	\$2.16	\$2.33	\$2.02	\$1.87	\$2.25	\$2.96	\$2.07		
	Energy	S/MWh	\$25.40	\$22.92	\$18.81	\$16.03	\$15.48	\$16.23	\$22.04	\$24.10	\$23.01	\$21.64	\$23.50	\$27.39	\$21.38		
	Total	S/MWh	\$48.54	\$48.88	\$42.34	\$38.08	\$35.72	\$32.68	\$45.60	\$59.51	\$47.23	\$39.08	\$43.37	\$49.33	\$44.18	\$2.00	\$46.18
	GHG	S/MWh	\$13.26	\$14.30	\$14.29	\$14.31	\$13.88	\$12.48	\$13.77	\$16.31	\$13.91	\$12.37	\$12.77	\$12.83	\$13.69		
On-Peak	Integration	S/MWh	(80.79)	(\$0.85)	(\$0.85)	(\$0.85)	(\$0.82)	(\$0.74)	(\$0.82)	(\$0.97)	(\$0.82)	(\$0.73)	(\$0.76)	(\$0.76)	(\$0.81)		
	Losses	s/MWh	\$3.79	\$3.51	\$2.64	\$2.14	\$1.94	\$1.87	\$3.26	\$4.33	\$3.08	\$2.31	\$2.98	\$3.91	\$2.98		
	Energy	S/MWh	\$32.27	\$31.92	\$26.25	\$22.48	\$20.73	\$19.07	\$29.40	\$39.84	\$31.07	\$25.13	\$28.38	\$33.36	\$28.32		
	nth		1/1/2020	2/1/2020	3/1/2020	4/1/2020	5/1/2020	6/1/2020	7/1/2020	8/1/2020	9/1/2020	0/1/2020	1/1/2020	2/1/2020	Annual*	RPS	al w/RPS

On-Peak 4pm-10pm PPT Mon-Fri Off-Peak All other * Average values reflects equal delivery in all hours **Definitions:** On-Peak

Exhibit PAC/201 Page 1 of 1 Witness: Daniel J. MacNeil

Application No. 19-04-___ Exhibit PAC/300 Witness: Robert M. Meredith

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

PACIFICORP

Direct Testimony of Robert M. Meredith

Proposed Tariff Changes

April 2019

TABLE OF CONTENTS

I.	QUALIFICATIONS	1
II.	PROPOSED TARIFF	2
III.	CUSTOMER IMPACTS	8
IV.	PROPOSED APPLICATION FEE	9
V.	CONCLUSION	1

ATTACHED EXHIBITS

Exhibit PAC/301 – Proposed Schedule NB-136 and Proposed Revisions to NEM-35

Exhibit PAC/302 – Average Savings for Energy Generated Under Proposed Net Billing

Program

Exhibit PAC/303 – Estimated Payback Period Under Proposed Net Billing Program

Exhibit PAC/304 – Calculation of Application Fee

1	Q.	Please state your name, business address and present position with PacifiCorp
2		d/b/a Pacific Power.
3	А.	My name is Robert M. Meredith. My business address is 825 N.E. Multnomah St,
4		Suite 2000, Portland, Oregon 97232. My present position is Manager, Pricing and
5		Cost of Service.
6		I. QUALIFICATIONS
7	Q.	Briefly describe your educational and professional background.
8	А.	I graduated from Oregon State University in 2004 with a Bachelor of Science degree
9		in Business Administration and a minor in Economics. In addition to my formal
10		education, I have attended various industry-related seminars. I have worked for the
11		company for 14 years in various roles of increasing responsibility in the Customer
12		Service, Regulation, and Integrated Resource Planning departments. I have over
13		eight years of experience preparing cost of service and pricing related analyses for all
14		of the six states that PacifiCorp serves. I assumed my present position in
15		March 2016.
16	Q.	Have you testified in previous regulatory proceedings?
17	A.	Yes. I have previously filed testimony on behalf of the company in regulatory
18		proceedings in California, Oregon, Washington, Utah, Wyoming, and Idaho.
19	Q.	What is the purpose of your testimony in this proceeding?
20	A.	My testimony presents the company's proposed Schedule NB-136, Net Billing
21		Service, a successor program to NEM-35, Net Metering Service, for customer
22		generators along with tariff changes to Schedule NEM-35, Net Metering Service
23		which would effectuate an orderly transition to the new program. My testimony

1		includes a description of the proposed export credit rates and renewable attribute
2		adder, a discussion of how the proposed Net Billing program would work, and a
3		presentation of an analysis that supports the company's proposed application fee.
4		II. PROPOSED TARIFF
5	Q.	Please present the company's proposed Net Billing tariff.
6	А.	The company's proposed Net Billing program is set forth in the proposed tariff
7		Schedule NB-136, Net Billing Service which is provided as Exhibit PAC/301. The
8		program will provide export credits to customer generators for all energy exported to
9		the grid from their generation system. At the same time, all energy usage provided by
10		the company to the customer would be billed under the standard applicable tariff.
11		Energy generated and consumed on-site will serve to offset kilowatt-hours that would
12		otherwise have been imported from the company to the customer.
13	Q.	What are some of the advantages of the program structure for the company's
14		proposed Net Billing program?
15	A.	In contrast to Net Energy Metering, where kilowatt-hours billed are reduced by
16		energy exported to the grid, customer generators on Net Billing are financially
17		credited for their exported energy. Under Net Energy Metering, customer generators
18		are compensated for their exported energy at a rate equal to retail energy charges
19		which at different times could be more or less than the actual value of exported
20		energy. On the company's proposed Net Billing program, customer generators would
21		be paid an export credit rate that is fair, accurate, and updated annually. This ensures
22		that costs are not shifted onto other customers and the prices paid for exported energy
23		evolve with their value over time. The concept of being credited at a price for energy

1		sent to the grid and paying the same rates as other customers for energy taken from
2		the grid is also simple and easy for customers to understand.
3	Q.	What is the proposed export credit rate for exported energy?
4	A.	The overall proposed export credit rate is 3.516 cents per kilowatt-hour. The basis for
5		this rate is described in the testimony of company witness Mr. Daniel J. MacNeil.
6		The company proposes that this export credit rate be applied to energy based upon the
7		time at which it is exported with a 4.418 cents per kilowatt-hour credit for energy
8		exported during on-peak hours of 4:00 p.m. to 10:00 p.m. and 3.320 cents per
9		kilowatt-hour credit for energy exported during all other hours which would be
10		considered off-peak.
11	Q.	Will the company credit or charge customers for kilowatt-hours which are
12		generated by the customer and consumed on-site?
13	A.	No. Kilowatt-hours generated and consumed on-site will lower the customer
14		generator's imported energy needs from the company, thereby lowering their electric
15		bill from the standard tariff. There will be no other charge or credit for these
16		kilowatt-hours under the proposed Net Billing program.
17	Q.	Why does the company propose that exported energy credit prices be
18		differentiated by time of export?
19	А.	Differentiating the price of exported energy better reflects the costs and benefits of
20		distributed energy resources and encourages customers to build and operate their
21		systems in ways that are the most beneficial to the power grid. For example,
22		customer generation is most valuable to the power grid in the early evening period.
23		Differentiated pricing encourages customers to shift their export of energy from the

Direct Testimony of Robert M. Meredith

1		low usage, middle of the day period, to the higher value, early evening period. This
2		shift helps to encourage energy production during costly periods in which the demand
3		for energy increases rapidly due to diminishing solar production and increasing net
4		residential usage. The higher compensation for exported energy during the on-peak
5		periods will spur customers to find innovative solutions to their energy needs such as
6		building west facing systems which generate more energy later in the day. Along
7		with building generation systems that produce more during on-peak periods, customer
8		generators can achieve more value from their system by shifting consumption to use
9		more of their energy production during high output off-peak periods. For example,
10		customer generators could set a timer for their dishwasher to run or their electric
11		vehicle to charge during sunny, middle of the day off-peak times. Innovations, along
12		with conscious energy choices in the home, will contribute to a more efficient power
13		grid and lower net power costs for all customers. By offering a higher credit price
14		during the on-peak period, the company is fairly compensating the customers that
15		export energy during periods in which energy is more valuable and encouraging
16		customers to invest in innovation.
17	Q.	Will there be an additional opportunity for customer generators served under
18		proposed Schedule NB-136 to get more value for their exported energy if they
19		transfer renewable energy credits (RECs) to the company?
20	A.	Yes. Proposed NB-136 would let customer generators get an additional 0.200 cents
21		per kilowatt-hour renewable attribute adder (RAA), if they meet three conditions -1)

- 22 the customer generation facility must be registered in the Western Renewable Energy
- 23 Generation Information System; 2) the customer generation facility must obtain

1		renewable portfolio standard (RPS) certification from the California Energy
2		Commission and provide proof of this certification to the company and; 3) the
3		customer generator must transfer the RECs associated with its exported energy to the
4		company. Customer generators on proposed Schedule NB-136, who transfer their
5		RPS eligible RECs to the company, would help to bring down the cost of RPS
6		compliance for the company's customers and the RAA ensures that they get
7		appropriately compensated for this additional value that they provide. The
8		calculation of the RAA value is discussed in the testimony of Mr. MacNeil.
9	Q.	How often would export credit prices be updated on proposed Schedule NB-136?
10	A.	The company proposes that export credit rates would be updated annually. By
11		November 1 st each year, the company would make a tier 1 advice letter filing with
12		updated prices to be effective January 1st of the following calendar year.
13	Q.	Under the company's proposed Net Billing program, will export credits ever
14		expire?
15	A.	Yes. The purpose for the company's proposed Net Billing program is for customers
16		to offset some or all of their energy bill with onsite generation, not for a customer to
17		become a power producer. To encourage customers to appropriately size their
18		generation systems to match actual usage at the site of the system, the company
19		proposes that export credits may be rolled over until March of each year for most
20		customers and until October for irrigation customers. This proposal allows customers
21		a reasonable opportunity to accumulate and use credits to offset actual energy use at
22		the location of the distributed energy system.

Direct Testimony of Robert M. Meredith

1	Q.	Will export credits be able to offset a customer's entire monthly bill?
2	A.	No. The company proposes that export credits be able to offset all charges on the
3		customer generator's monthly bills except for basic charges. All customers, including
4		those with onsite generation, should be responsible for paying basic charges which
5		are designed to reflect some of the basic aspects of service like having a meter and
6		getting a bill that are not avoided regardless of how much a customer generates.
7	Q.	What does the company propose for customers on the existing Net Metering
8		program?
9	A.	The company proposes that existing customer generators be grandfathered for
10		20 years under the existing Net Metering program after Schedule NEM-35 is closed
11		to new applications. Although the proposed Net Billing program better reflects costs
12		and benefits associated with distributed energy generation, the company recognizes
13		that existing net metering customers have made investments based on the current net
14		metering program rate structure. The generator site itself would be eligible for
15		grandfathering under the Net Metering program so customers would be able to retain
16		the value if selling the property in the future.
17	Q.	When does the company propose to close the current Net Metering program to
18		new service and begin billing new customers under the Net Billing program?
19	A.	The current terms of Tariff Schedule NEM-35 approved by the commission in Advice
20		Letter 567-E states:
21 22 23		"shall be available until the <u>later of the time that the</u> total rated generating capacity used by the eligible Customer-generators exceeds five (5) percent of the aggregate Customer peak demand of

1 2	the Utility <u>or the Commission approves a Replacement Tariff, but in</u> either circumstance no later than June 30, 2020." ¹
3	To ensure an orderly transition for new customer generators to the Net Billing
4	program, Schedule NEM-35 will be closed to new applications effective January 1,
5	2020. Customer generators who submit their application before this date would have
6	up to one year to interconnect and still be eligible for participation in the Net
7	Metering program. The company proposes sites on the Net Metering program be
8	grandfathered for 20 years after Schedule NEM-35 is closed to new applications with
9	the Net Metering program becoming unavailable starting January 1, 2040, and
10	previously grandfathered customers moving to the Net Billing program or whatever
11	customer generation program would be available at that time. For one month after
12	January 1, 2020, the Company would not accept customer generation applications so
13	that it could make system changes necessary for it to process application fees.
14	Therefore the company proposes a February 1, 2020 effective date for its proposed
15	Schedule NB-136 tariff. At that time, customers requesting to connect new customer
16	generation will participate in the Net Billing program. Proposed tariff revisions to
17	Schedule NEM-35 are included in Exhibit PAC/301.

¹ Emphasis Added.

1		III. CUSTOMER IMPACTS
2	Q.	Will the company's proposed Net Billing program have an impact on existing
3		customer generators?
4	A.	No. As described above, customers on the current Net Metering program will be
5		grandfathered into that program and will see no rate change as a result of the
6		proposed tariff changes.
7	Q.	How will participating in the Net Billing program impact the electric bill of
8		participants?
9	A.	A Net Billing program participant will see their electric bill decrease. First, on-site
10		consumption of the consumer-generated energy will lower the customer's overall
11		monthly energy imported from the company, thereby lowering the cost of energy
12		purchased from the company. For residential customers in particular, this energy
13		import will impact higher-priced non-baseline usage first, creating an even greater
14		benefit to the customer. Second, the customer will see a further reduction to their
15		monthly electric bill in the form of credits for energy exported to the company.
16	Q.	Taking into account the benefit of both the lower quantity of energy imported
17		and the exported energy credit, what is the estimated overall compensation for
18		each generated kilowatt-hour for the average residential customer?
19	A.	The company estimates the total compensation for generated energy for the average
20		residential customer is 9.5 cents per kilowatt-hour under the proposed Net Billing
21		program. The Company estimates that the average customer generator produces
22		11,447 kilowatt-hours a year from onsite generation or an amount equal to about
23		66 percent of total annual energy consumption. Estimated savings for this customer

Direct Testimony of Robert M. Meredith

1		is about \$1,089 per year. About \$858 of this savings would come from reduced
2		energy that the customer would take from the company at full retail rates and about
3		\$231 as an export credit to compensate the customer for energy sent to the grid.
4	Q.	Have you prepared an exhibit showing the calculation of these estimates?
5	A.	Yes. The estimated calculations are shown in Exhibit PAC/302.
6	Q.	Please describe the economics of customer generation under the proposed Net
7		Billing program.
8	A.	Under the proposed Net Billing program, the company estimates an average
9		residential customer generation system would have a simple payback period of
10		12.5 years. This payback period is within the expected lifetime of this equipment
11		since solar panels typically retain at least 80 percent effectiveness through 20 years of
12		operation and are generally expected to continue generating electricity for many years
13		after that. ² Please refer to Exhibit PAC/303 for the calculations and assumptions used
14		to estimate system payback rates.
15		IV. PROPOSED APPLICATION FEE
16	Q.	Please explain the company's proposed application fee for customers seeking
17		service on Schedule NB-136.
18	A.	The company proposes a onetime non-refundable fee of \$75 to be submitted with the
19		customer application. This fee reflects the administrative cost associated with
20		processing and approving applications for interconnection.

² See Degradation Rates - An Analytical Review published by the National Renewable Energy Labs Photovoltaic (<u>https://www.nrel.gov/docs/fy12osti/51664.pdf</u>).

1 **Q.** How

How was this application fee calculated?

A. Please refer to Exhibit PAC/304. The company reviewed actual costs incurred to
process applications for customer generation interconnections in 2017. These costs
include administrative review and processing, engineering reviews, and handling
customer service requests. The company's overall cost to process customer generator
applications in the State of California was \$6,597. Dividing this overall cost by
88 applications that were received in California in 2017 yields a cost of roughly
\$75 per application.

9 Q. Why is an application fee the appropriate mechanism for recovering these costs?

10 A. The cost of processing customer generator interconnection applications is driven by 11 the volume of those applications and it is therefore appropriate and sensible for the 12 costs of this activity to be recovered from the customers causing those costs at the 13 time those costs are incurred. A further benefit is that an application fee can limit the 14 number of unnecessary applications, thereby lowering the costs associated with their 15 processing and approval. For example, a customer or installer may submit an 16 application even if the customer is not very serious about installing a customer 17 generation system, because he or she faces no cost to apply. The company would still 18 incur costs related to that application even if no customer generation system is ever 19 installed. Charging a small application fee may prevent some of these customers 20 from applying who are not serious about installing a new customer generation system.

Q. How does the company's proposed application fee compare to application fees for other utilities in California?

3 A. The company's application fee is comparable to the application fees charged by other

4 utilities in California and is in fact at the same level as the lowest application fee

5 currently being charged by the three largest investor-owned utilities in California.

6 Please refer to Table 1 below for a comparison of PacifiCorp's proposed application

7 fee with the fees of the three largest investor-owned utilities in California:

8

 Table 1. Comparison of Customer Generation Applications Fees

	Application
Utility	Fee
Pacific Power (Proposed)	\$75.00
Pacific Gas & Electric	\$145.00
San Diego Gas & Electric	\$132.00
Southern California Edison	\$75.00

9

V. CONCLUSION

10 **Q. P**

Please summarize your testimony.

11 The company's proposed tariff revisions will facilitate closing the current Net A. 12 Metering program to new service and create a new Net Billing program that will 13 allow the company to continue providing opportunities for additional customer 14 generation in its service territory. The Net Billing program is fair, just, in the public 15 interest, and provides reasonable, cost-based compensation to customer generators for 16 their output. 17 **O**. What is your recommendation for the Commission? 18 A. The company recommends that the Commission approve the company's proposed

19 tariff NB-136, Net Billing Service.

- 1 Q. Does this conclude your direct testimony?
- 2 A. Yes.

Application No. 19-04-____ Exhibit PAC/301 Witness: Robert M. Meredith

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

PACIFICORP

Direct Testimony of Robert M. Meredith

Proposed Schedule NB-136 and Proposed Revisions to NEM-35

April 2019

Pacific Power & Light Company Portland, Oregon Canceling

Decision No.

TF6 INDEX-1.REV

Revised Cal.P.U.C.Sheet No. 4396-E Revised Cal.P.U.C.Sheet No. 4377-E

TABLE OF CONTENTS

Title Page Table of Co Table of Co Table of Co Table of Co	706-Eontents - Rate Schedules4396-Eontents - Rate Schedules, Contract Deviations & Rules4397-Eontents - Rules & Standard Forms4299-Eontents - Standard Forms4300-E	(T) (T)
PRELIMINARY	(STATEMENT:	
Part A.		
1.Ter	critory Served 1687-E	
2.Des	Scription of Service 168/-E	
J.PIC 4 Est	Tablishment of Credit and Deposits 1687-E	
5.Ger	neral 1687-1993-E	
6.Sym	nbols 1994-E	
Part B - Ca	Alifornia Alternative Rates for Energy Clause 4103-4330-E	
Part C - Me Part D - Ba	$\frac{2}{3} = \frac{2}{3} = \frac{2}$	
Part E - Tr	cansition Cost Balancing Account (TCBA) 2235-2236-2237-2238-2239-	
	2240-2241-2242-2243-2244-2245-2246-Е	
	RATE SCHEDULES	
Schedule		
A-25	General Service - Less than 20 KW 4379-2759-E	
A-32	General Service - 20 kW and Over 4380-1921-2761-E	
A-33	General Service - Partial Requirements 3/91-1442-E	
A-30 A-140	Non-Residential Energy Efficiency 3937-3938-E	
AL-6	General Service - California Alternative 2858-4269-2081*-E	
	Rates for Energy (CARE) - Non-Profit Group Living 2082*-2083*-E	
	Facilities and Migrant Farmworker Housing and Housing for	
7 ED 4 7	Agricultural Employee Housing and Privately Owned Housing	
A1-4/	Large General Service - Partial Requirements 3/93-144/-E Metered Time of Use 500 kW and Over	
AT-48	Large General Service - Metered Time of - 4382-3723-2145-E	
	Ūse − 500 kW and Over	
D	Residential Service 4383-2769-2315-E	
D-118	Home Energy Savings Program 3046-3047-E	
D-130	Residential Energy Services - Optional 22/0-22/1-E	
DE-12	Service to Utility Employees 1919-E	
DL-6	Residential Service - California Alternative 4384-4270-E	
	Rates for Energy (CARE) Optional for Qualifying Customers	
DM-9	Multi-Family Residential Service - Master 3797-2408-2113-2114-E	
	Multi-Family Posidontial Service - 3708-2773-1017-2101-F	
0-60	Submetered	
EC-1	Energy Credit For Direct Access Customers- 2832-E	
	Optional for Qualifying Customers	
E-70	Solar Incentive Program - Closed to New Service 4041-4042-4043-E	
E-72	Energy Profiler Online Optional 2933-2934-E	(L)
ECAC-94	Energy Cost Adjustment Clause Tariff Rate Rider 3893-43/2-43/3-E	(上) (工)
GHG-92	Surcharge to Recover Greenhouse Gas Carbon	(11)
0110 92	Pollution Permit Cost 4374-E	(L)
GHG-93	California Climate Credit 4375-E	(L)
	(Continued)	
Advice Letter	No. Etta Lockey Date Filed April 19, 2019)

Name VP, Regulation Effective

Title

Resolution No.

Exhibit PAC/301 Page 2 of 10 Witness: Robert M. Meredith

Pacific Power	& Light Company		Revised	Cal.P.U.C	.Sheet No.	4397 - E	
Portl	land, Oregon	Canceling	Revised	Cal.P.U.C	.Sheet No.	4378-E	
	ጣ እ թ	IF OF CONTENT	rs (Contin	ued)			
	RA	ATE SCHEDULES	(Continue	ed)			
014 1		21	-			01.00 -	(L)
GM-1 1.S-51	Grid Management (Street and Highwa	Charge av Lighting S	ervice -	4385-	-4386-4171-	2160-E -4172-E	
10 01	Utility Owned	System	CIVICC	1000	1900 11/1		
LS-52	Special Street an	nd Highway Li	ghting Ser	rvice -	4387-	-3258-E	
T 9-53	Utility-Owned	System	ahting Ser	svice -	1388-	-1380-5	
Ш5 55	Customer-Owned	d System	gilting ber	VICE	4000	4307 L	
LS-58	Street and Highwa	ay Lighting S	ervice -		4390-	-4391-E	
NB-136	Net Billing Serv	i System - No	New Servi 4398-4399	.ce)-4400-4401-	-4402-4403-	-4404-E	(N)
NEM-35	Net Metering Serv	vice	4405-428	88-4187-4188	3-4189-4190)-4191-	(T)
				4192-	4193-4194-	-4195-E	
NEMVS-139	Virtual Net Energy	gy Metering f	or Solar c g Program	n 4258- (ראמאש)	4259-42660)-4261- -4263-F	
OL-15	Outdoor Area Ligh	nting Service	g ilogiam	(SOMAII)	4392-	-1383-E	
OL-42	Airway and Athle	ic Field Lig	hting Serv	vice		4393-E	
PA-20	Agricultural Pump	oing Service			4394-	-4100-E	
RO-1	Renewable Energy	Rider - Opti	onal		3658-2843-	-3226-E	
RO-3	Renewable Energy	Rider - Opti	onal Bulk	Purchase Op	otion		
9-96	Purchase Option	war Casta Pa	corded in	Catactrophi	3659-2846-	-3228-Е	
5-90	Event Memorandum	Account	corded in	Catastrophi	4253-	-4254-E	
S-99	Surcharge to Fund	d Public Util	ities Comm	nission		4395-E	
S-100	Reimbursement	Fee Pesidential	Californi	a Alternati	170		
5 100	Rates for Energy	(CARE)	Callionni	a Aiteinati	ve	4347-E	
S-191	Surcharge to Fund	d Public Purp	ose Progra	ims		4369-E	
S-192	Surcharge to Fund	d Energy Savi	ngs Assist	ance Progra	am 2694-	4348-E	
TC-1	Transmission and	Ancillary Se	rvices Cre	edit	3414-2172-	-3498-е	
	for Direct Access	s Customers -	Optional	for Qualify	ying Custon	ners	
300	Charges as Define	ed by the Rul	es and Reg	gulations	4301-	-3953-Е	
List	of Contracts and De	eviations	DEVIATION	15	3855-	-1903-е	
		RULI	ES				
Rule No.	Dofinitiona		2054	- 4202 - 4202	1201-1205	4206-E	
2	Types of Service		5954	-4292-4293-	2706-2707-	-4290-E -2708-E	
2.1	Description of Se	ervice				2835-E	
3	Application for S	Service			2710-	-2711-E	
5	Special Informat:	lon Required	on Forms		2713-	-2714-E	
6	Establishment and	d Re-Establis	hment of C	Credit	3923-	-3448-E	
7	Deposits					3681-E	
9	Billing			2718-	-4302-3450-	-3451-E	
10	Disputed Bills			4	270-4271*-	-4272-E	
11	Discontinuance an	nd Restoratio	n of Servi	ce	2723-2724	1-4269-	
13	Rates and Optiona	al Rates			2019-	-2727-е 2728-е	
14	Shortage of Suppl	Ly and Interr	uption of	Deliver		2729 - E	
15	Line Extensions	395	5-3956-395	57-3958-3959	-3960-3961	L-2737-	
16	Customer Respons:	bilities		2742-	-3620-3621-	-3622-е	
17	Meter Tests and A	Adjustment of	Bills for	Meter Erro	or 2746	5-3452-	
17 1	Unauthorized Uco				3453-4303-	-4304-E	
± / • ±	JHAULHUIIZEU USE	(Conti	nued)		2/49-	2/JU-E	
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TF6 INDEX-2.LEG

Resolution No._____

Exhibit PAC/301 Page 3 of 10 Witness: Robert M. Meredith

Pacific Power & Light Company Portland, Oregon

Original Cal.P.U.C.Sheet No. 4398-E Cal.P.U.C.Sheet No. Canceling

(N)

Schedule No. NB-136 NET BILLING SERVICE

APPLICABILITY

Applicable on a first-come, first-served basis to a residential, small commercial, commercial, industrial, or agricultural Customer that owns and operates a renewable electricity generation facility, a facility that uses biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation, digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current, with a capacity of not more than one megawatt that is located on the Customer's owned, leased, or rented premises, is interconnected and operates in parallel with the Utility's transmission and distribution facilities, and is intended primarily to offset part or all of the Customer's own electrical requirements.

TERRITORY

Within the entire territory served in California by the Utility.

DEFINITIONS

Customer-Generator: A Customer with a renewable electric generation system taking service under this schedule.

Imported Energy: Energy imported by the Customer-Generator from the Utility for use by the Customer-Generator.

Exported Energy: Energy exported by the Customer-Generator to the Utility to be used by the Utility to serve the Utility's load requirements.

On-Peak Period: Monday through Friday: 4:00 p.m. to 10:00 p.m.

Off-Peak Period: All hours that are not On-Peak hours.

METERING

Metering for service under this schedule must separately measure Imported Energy and Exported Energy. Such metering must be installed in accordance with the Utility's metering rules. Energy generated by the Customer-Generator and consumed on site by the Customer-Generator will not be measured by the Utility.

APPLICATION FEE

A non-refundable application fee of \$75.00 per generation facility will be assessed to each Customer seeking to interconnect a generation facility to the Utility system. This fee will be charged at the time of application for interconnection.

	Issued by	
Advice Letter No.	Etta Lockey	Date Filed April 19, 2019
	Name	
Decision No.	VP, Regulation	Effective
	Title	
		Resolution No.

TF6 NB-136-1.NEW

Exhibit PAC/301 Page 4 of 10 Witness: Robert M. Meredith

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Pacific Power & Light Company Portland, Oregon

Canceling

Original Cal.P.U.C.Sheet No. Cal.P.U.C.Sheet No.

Schedule No. NB-136 <u>NET BILLING SERVICE</u> (Continued)

BILLING FOR IMPORTED ENERGY A Customer-Generator will be billed for all Imported Energy at the applicable standard tariff rate.

CREDITS FOR EXPORTED ENERGY

A Customer-Generator will be credited for all Exported Energy at the credit rates set forth in this schedule. Exported Energy will be valued dependent upon the time of day in which the energy is exported. All kilowatt-hours exported during the On-Peak Period will be credited at On-Peak Energy Credit below. All kilowatt-hours exported during the Off-Peak Period will be credited at the Off-Peak Energy Credit below.

> Exported Energy Credits: On-Peak Energy Credit, per kWh 4.418¢ Off-Peak Energy Credit, per kWh 3.320¢

Credits for Exported Energy will be applied to the Customer's energy bill from the Utility to offset all charges, except Basic Charges, to the Customer for their Imported Energy.

Any Exported Energy Credits in excess of the charges eligible for offset on the Customer's monthly energy bill will be rolled forward to a subsequent billing period and may be used to offset any eligible charges in that billing period. Unused Exported Energy Credits will expire at the end of the March billing period for all Net Billing Customers except Customers taking service under an agricultural pumping rate schedule. Unused Exported Energy Credits for Net Billing Customers taking service under an agricultural pumping rate schedule will expire at the end of the October billing period.

OPTIONAL RENEWABLE ATTRIBUTES ADDER

Net Billing Customers will have the option to receive an additional Renewable Attributes Adder ("RAA") credit per kilowatt-hour of Exported Energy if they meet the following three conditions:

- 1)the Customer's generation facility must be registered in the Western Renewable Energy Generation Information System ("WREGIS")
- 2)the Customer's generation facility must obtain renewable portfolio standard ("RPS") certification from the California Energy Commission ("CEC") and provide proof of this certification to the Utility
- 3) the Customer-Generator must transfer the Renewable Energy Certificates ("REC"s) associated with its Exported Energy to the Utility.

In order to receive the Renewable Attributes Adder credit, the Customer must request and complete the Utility's Renewable Attributes Adder form. The customer must complete all requirements and are responsible for all costs related to certification and registration of the RECs with all required certification entities. The RAA will be credited to the customer after the transfer of the RECs to the utility is complete through a credit on the bill.

Renewable Attributes Adder, per kWh 0.200¢

	(Continued)		ľ
	Issued by		
Advice Letter No.	Etta Lockey	Date Filed April 19, 2019	
	Name		
Decision No.	VP, Regulation	Effective	
	Title		
		Resolution No.	

TF6 NB-136-2.NEW

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Pacific Power & Light Company Portland, Oregon

Canceling

Original Cal.P.U.C.Sheet No. Cal.P.U.C.Sheet No.

Schedule No. NB-136 NET BILLING SERVICE (Continued)

SPECIAL CONDITIONS

- 1. Customer must complete an interconnection agreement with the Utility prior to interconnecting a generation facility.
- If the Utility is not the Customer's energy supplier, the Utility 2. may recover from the Customer-Generator's energy supplier the incremental costs of metering and billing service related to net energy billing in an amount set by the Commission.
- 3. Customer shall furnish and install on Customer's side of the meter a safety disconnect switch which shall be capable of fully disconnecting the Customer's energy generating equipment from the Utility's electric service. The disconnect switch shall be located adjacent to the Utility's meters and shall be of the visible break type in a metal enclosure which can be secured by a padlock. The disconnect switch shall be accessible to utility personnel at all times. The Utility shall have the right to disconnect the Facility from The Utility's supply at the disconnect switch when necessary to maintain safe electrical operating conditions or, if in The Utility's sole judgment, the Facility at any time adversely affects The Utility's operation of its electrical system or the quality of The Utility's service to other Customers.
- A customer generation facility shall include, at the Customer's own 4. expense, all equipment necessary to meet applicable safety, power quality, and interconnection requirements established by the National Electrical Code, National Electrical Safety Code, the Institute of Electrical and Electronics Engineers, and Underwriters Laboratories. The Utility's written approval of the Customer's protection-isolation method to ensure generator disconnection in case of a power interruption from the Utility is required before service is provided under this Schedule.
- Any Customer with an existing electrical generation facility over 5. 30 kilowatts and meter who enters into a new net energy billing contract shall complete and submit a copy of Form 3584, the NEM Inspection Report, to the Utility, unless the electrical generating facility and meter have been installed and inspected within the previous three years. The NEM Inspection Report shall be prepared by a California licensed contractor who is not the owner or operator of the facility and meter. A California licensed electrician shall perform the inspection of the electrical portion of the facility and meter and sign the NEM Inspection Report. If an inspection is required, the Customer shall submit the completed NEM Inspection Report to the Utility within 90 days of becoming the customer of record, or disconnect the generating facility and inform the Utility that the Customer will discontinue Schedule NB-136 service. The NEM Inspection Report shall be incorporated into the net energy billing contract.

	(Continued)	
	Issued by	
Advice Letter No.	Etta Lockey	Date Filed April 19, 2019
	Name	
Decision No.	VP, Regulation	Effective
	Title	
		Resolution No.

TF6 NB-136-3.NEW

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Exhibit PAC/301 Page 6 of 10 Witness: Robert M. Meredith

Pacific Power & Light Company Portland, Oregon Original Cal.P.U.C.Sheet No. Canceling Cal.P.U.C.Sheet No.

4401-E

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Schedule No. NB-136 <u>NET BILLING SERVICE</u> (Continued)

SPECIAL CONDITIONS (continued)

- 5. Net Billing Aggregation
 - a) Except as otherwise provided for below under this Special Condition, all other terms and conditions of this schedule shall be applicable to Customers receiving service under this Special Condition. Under this Special Condition, an eligible Customer-Generator with multiple meters("Aggregated Accounts") may elect to aggregate, for purposes of applying Exported Energy Credits under this Schedule, the meters located on the property where the renewable energy generation facility ("Generating Account") is located and on all property adjacent or contiguous to the property on which the renewable energy generating facility is located, provided that all properties are solely owned, leased, or rented by the eligible Customer-Generator that elects to aggregate its electric load pursuant to this Special Condition. All of the Aggregated Accounts, including a single Generating Account, that are billed together under this Special Condition are referred to as an Aggregation Arrangement.
 - b) For the purposes of Net Billing Aggregation only, parcels that are divided by a street, highway, or public thoroughfare are considered contiguous, provided they are within an unbroken chain of otherwise contiguous parcels and are all solely owned, leased or rented by the Customer. Customers are also eligible to participate in Net Billing Aggregation where all meters in an Aggregation Arrangement are located within an unbroken chain of contiguous parcels that are all solely owned, leased, or rented by the Customer. For example, if there are three parcels (A, B and C), all of which are solely owned, leased or rented by the Customer, where A contains the renewable electrical generation facility and A abuts B, B abuts C, but A and C are separated by B, then the loads of all three parcels shall be eligible to participate in Net Billing Aggregation. Refer to Diagram 1 (for illustrative purposes only). In addition, if there are five parcels (A, B, C, D and E) that form a cluster of contiguous parcels, where A contains the renewable electrical generation facility, and D and E are separated from A, B, and C by a street, highway or public thoroughfare, for the purposes of participating in Net Billing Aggregation only, all five parcels are considered contiguous, provided they are otherwise contiguous and all solely owned, leased or rented by the Customer. Refer to Diagram 2 (for illustrative purposes only). In addition, an irrevocable easement granting sole use and control to the Customer-Generator for an entire parcel can be used to establish contiguity. Otherwise, a Customer-Generator's easement on a third party owned parcel will not be sufficient to establish parcel contiguity.

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Advice Letter No.	Etta Lockey	Date Filed April 19, 2019	
	Name		
Decision No.	VP, Regulation	Effective	
	Title		
		Resolution No.	

TF6 NB-136-4.NEW

Exhibit PAC/301 Page 7 of 10 Witness: Robert M. Meredith



Decision No.

VP, Regulation Title

Resolution No.

Effective

TF6 NB-136-5.NEW

Exhibit PAC/301 Page 8 of 10 Witness: Robert M. Meredith

Pacific Power & Light Company Portland, Oregon

Cal.P.U.C.Sheet No. Canceling

Original Cal.P.U.C.Sheet No. 4403-E

(N)

Schedule No. NB-136 NET BILLING SERVICE

(Continued)

SPECIAL CONDITIONS (continued)

- d) The maximum capacity of the renewable electrical generation facility, or a combination of those facilities, eligible for participation under this Special condition is 1 MW. The Customer-Generator must provide Pacific Power with a list of additional Aggregated Accounts on the Net Billing Aggregation Form that are to be included in the Aggregation Arrangement.
- e) A Customer-Generator may have more than one Aggregation Arrangement, but accounts may not be shared across multiple arrangements.
- f) A Customer-Generator may elect to modify the Aggregated Accounts included in an Aggregation Arrangement provided a minimum of 60-days' notice is provided to Pacific Power prior to the change taking effect, and such change remains in effect for a minimum of 12 months and doesn't result in the renewable electrical generation facility being oversized compared to the electrical requirements of the Aggregation Arrangement.
- g) All accounts in an Aggregation Arrangement will be placed on the same billing cycle, and will be billed individually pursuant to this schedule. The Exported Energy Credits earned by the renewable electrical generation facility in a monthly billing period will be applied on by a proportional allocation basis to each of the accounts in the Aggregation Arrangement. Under no circumstances will Exported Energy Credits be used to offset Basic Charges on any account.
- h) Any Exported Energy Credits that exceed the amount of charges eligible for offset will be carried forward to a subsequent billing period as described above for non-aggregated accounts. Credits carried forward will be applied to Aggregated Accounts proportionally in the same manner as described above.
- i) Accounts included in an Aggregation Arrangement are permitted to have non-net billing eligible generating facilities interconnected to them.
- j) Existing Net Billing Customers electing to create an Aggregation Arrangement who also have executed an interconnection agreement and who are making no modifications to their renewable electrical generation facilities other than electing aggregation will not be required to complete a new interconnection agreement, nor conduct new interconnection studies.

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	Issued by		
Advice Letter No.	Etta Lockey	Date Filed April 19, 2019	
	Name		
Decision No.	VP, Regulation	Effective	
	Title		
		Resolution No.	

TF6 NB-136-6.NEW

Exhibit PAC/301 Page 9 of 10 Witness: Robert M. Meredith

Pacific Power & Light Company Portland, Oregon

Canceling

Cal.P.U.C.Sheet No.

Schedule No. NB-136 NET BILLING SERVICE

(Continued)

SPECIAL CONDITIONS (continued)

k) The Net Billing Aggregation Customer may elect to follow the standard Net Billing interconnection model where the renewable electrical generation facility is located behind an existing billing account meter. In this case no additional metering equipment is necessary. Customers may also request an additional service from Pacific Power for the purposes of interconnecting the renewable electrical generation facility. This additional service and associated metering must comply with the same locational constraints placed on all Aggregated Accounts by being located on the same or contiguous properties as the load of the Aggregated Accounts. The location must be approved by Pacific Power and must not result in adverse impacts to the electrical system, as determined by Pacific Power. No additional load other than the incidental load related to the inverters and support of the renewable electrical generation facility may be registered on this additional metered service. All costs associated with the installation of the new service location must be paid by the Customer.

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Advice Letter No.	Etta Lockey	Date Filed April 19, 2019
	Name	
Decision No.	VP, Regulation	Effective
	Title	
		Resolution No.

TF6 NB-136-7.NEW

Original Cal.P.U.C.Sheet No. 4404-E

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Exhibit PAC/301 Page 10 of 10

			Witness: Ro	bert M. Meredith	
Pacific Power & Light Company		Revised	Cal.P.U.C.Sheet No.	4405-E	
Portland, Oregon	Cancelinq	Original	_Cal.P.U.C.Sheet No.	<u>4287-E</u>	
	Schedule No	o. NEM-35			
	NET METERIN	G SERVICE			(
CLOSED TO APPLICA	TIONS FOR NEW	SERVICE AS	OF JANUARY 1, 2020		(11)
APPLICABILITY Applicable on a firs commercial, commercial, ir operates a renewable elec biomass, solar thermal, renewable fuels, small hyd: waste conversion, landfill with a capacity of not more owned, leased, or rented p with the Utility's transmi primarily to offset part or Notwithstanding the definit shall also include the Cal (CDCR) as set forth in Spe States Armed Forces (USAF) NEM-35.	et-come, first ndustrial, or tricity gener photovoltaic, roelectric gen gas, ocean w e than one mego remises, is i ssion and dis r all of the (ion of applica ifornia Depart cial Condition , as set fort	-served ba agricultu ation faci wind, ge eration, co ave, ocean awatt that nterconnec stribution Customer's ability pro- ment of Co h 12 of So h in Spec	asis to a residenti ral Customer that lity, a facility othermal, fuel cel digester gas, munici n thermal, or tidal is located on the C ted and operates in facilities, and is own electrical requ ovided above, such co prrections and Rehak chedule NEM-35 and t ial Condition 13 of	al, small owns and that uses lls using pal solid current, Customer's parallel intended pirements. definition che United Schedule	
NEM-35. This provision shall were submitted prior to mid year to interconnect a cus still qualify for service service under this schedul January 1, 2040, previously or whatever customer genera	l be available Inight on Janua stomer generat under this s e shall be gr grandfathered tion program i	for appli ary 1, 2020 ion system chedule. candfathere d sites woo s availabl	cations for new ser D. Applicants shall a after applying in Customer sites tha ed until January 1, uld take service und e at that time.	vice that have one order to t receive 2040. On der NB-136	(C) (C)
TERRITORY Within the entire ter	ritory served	in Califor	nia by the Utility.		
DEFINITIONS Net Energy Metering i the electric grid and elec and fed back to the electri	s the differen tricity gener c grid over a	ice between ated by ar 12-month p	electricity supplie eligible Customer- eriod.	ed through -generator	
Replacement Tariff r propose in an upcoming appl	efers to the ication.	NEM succe	essor tariff Pacifi	Corp will	
BILLING An eligible resident: billed, at the end of the final interconnection of th for electricity used durin eligible Customer-generator during that time period.	ial or small 12-month peri- neir system, a g that period was a net con	commercial od followi nd on the . The Ut nsumer or a	Customer-generator ng the date of the anniversary date th ility shall determin a net producer of el	shall be Utility's hereafter, ne if the Lectricity	
If the electricity generated by the eligible the eligible residential or consumer and shall be bil. follows:	supplied by residential o small commerce led for the r	the Utili r small co cial Custon net energy	ty exceeds the el ommercial Customer-o mer-generator is a r supplied to the U	lectricity generator, net energy tility as	
	loopti	nued)			

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Advice Letter No.	Etta Lockey	Date Filed	April 19, 2019
	Name		
Decision No.	VP, Regulation	Effective	
	Title		

TF6 NEM-35-1.REV

Resolution No._____

Application No. 19-04-___ Exhibit PAC/302 Witness: Robert M. Meredith

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

PACIFICORP

Exhibit Accompanying Direct Testimony of

Robert M. Meredith

Average Savings for Energy Generated Under Proposed Net Billing Program

April 2019
PacifiCorp	State of California	Estimated Average Savings for Generated Energy Under Proposed Net Billing Programs
------------	---------------------	--

Average Bill	Current Net Metering									Average Credit per		
	Total Energy U	Jsage*		Net Metering	t Usage		Bill Savii	ngs	Energy Generation	Generation kWh		
Month	kWh	Bill**		kWh	Bill**		kWh	Bill**	kWh	Bill**		
July	1,115	\$184.40		181	\$28.04		(934)	(\$156.36)	1,345	-11.63		
August	1,206	\$200.26		203	\$31.44		(1,003)	(\$168.81)	1,317	-12.82		
September	1,107	\$183.32		209	\$32.37		(868)	(\$150.95)	1,142	-13.22		
October	1,076	\$177.60		234	\$36.24		(842)	(\$141.36)	914	-15.47		
November	1,173	\$191.51		394	\$61.03		(677)	(\$130.48)	582	-22.42		
December	1,748	\$291.29		857	\$136.01		(891)	(\$155.27)	507	-30.63		
January	2,336	\$393.76		1,318	\$216.35		(1,018)	(\$177.41)	582	-30.48		
February	1,852	\$310.70		1,016	\$165.01		(836)	(\$145.69)	653	-22.31		
March	1,777	\$296.34		759	\$118.93		(1,018)	(\$177.41)	940	-18.87		
April	1,481	\$245.19		493	\$76.36		(988)	(\$168.83)	1,044	-16.17		
May	1,227	\$203.92		238	\$36.86		(686)	(\$167.05)	1,226	-13.63		
June	1,052	\$173.74 Avg	Rate	166	\$25.71	Avg Rate	(886)	(\$148.03)	1,239	-11.95		
	17,150	\$2,852.02	16.63	6,068	\$964.36	15.89	(11,082)	(\$1,887.66)	11,491	-16.43		
Average Bill	Proposed Net Billing	with 3.516¢/kWh F	Export Crec	lit						Proposed Credit for		
										Exported kWh	Total	
	Total Energy U	Jsage*		Delivered U	Jsage		Bill Savii	ngs	Energy Exported	-3.52 ¢/kW	h Savings	Energy Generat
Month	kWh	Bill**		kWh	Bill**		kWh	Bill**	kWh	Bill**		kWh
July	1,115	\$184.40		705	\$112.95		(410)	(\$71.45)	935	(\$32.87)	(\$104.	33) 1,5
	2001	20000		710	0115 21		(100)	1005 041	000	(\$1015)	V 11 07	

										Credit Ior			Average
										Exported kWh	Total		Credit per
	Total Energy U	lsage*		Delivered (Usage		Bill Savin	ŝ	Energy Exported	-3.52 ¢/kWh	Savings	Energy Generation	Generation kWh
Month	kWh	Bill**		kWh	Bill**		kWh	Bill**	kWh	Bill**		kWh	cents per kWh
July	1,115	\$184.40		705	\$112.95		(410)	(\$71.45)	935	(\$32.87)	(\$104.33)	1,345	-7.76
August	1,206	\$200.26		718	\$115.21		(488)	(\$85.04)	829	(\$29.15)	(\$114.19)	1,317	-8.67
September	1,107	\$183.32		724	\$116.58		(383)	(\$66.75)	758	(\$26.65)	(\$93.40)	1,142	-8.18
October	1,076	\$177.60		756	\$121.84		(320)	(\$55.77)	594	(\$20.89)	(\$76.65)	914	-8.39
November	1,173	\$191.51		947	\$152.13		(226)	(\$39.39)	356	(\$12.52)	(\$51.90)	582	-8.92
December	1,748	\$291.29		1,508	\$249.46		(240)	(\$41.82)	267	(89.39)	(\$51.21)	507	-10.10
January	2,336	\$393.76		1,893	\$316.56		(443)	(\$77.20)	139	(84.89)	(\$82.09)	582	-14.10
February	1,852	\$310.70		1,406	\$232.98		(446)	(\$77.72)	206	(\$7.24)	(\$84.97)	653	-13.01
March	1,777	\$296.34		1,177	\$191.78		(009)	(\$104.56)	340	(\$11.95)	(\$116.52)	940	-12.40
April	1,481	\$245.19		963	\$154.91		(518)	(\$90.27)	527	(\$18.53)	(\$108.80)	1,044	-10.42
May	1,227	\$203.92		758	\$122.18		(469)	(\$81.73)	756	(\$26.58)	(\$108.31)	1,226	-8.83
June	1,052	\$173.74 Av	vg Rate	670	\$107.17 A	vg Rate	(382)	(\$66.57)	858	(\$30.17)	(\$96.74)	1,239	-7.81
	17,150	\$2,852.02	16.63	12,225	\$1,993.74	16.31	(4,925)	(\$858.28)	6,565	(\$230.83)	(\$1,089.11)	11,491	-9.48

*Actual average energy delivered to residential net metering customers plus estimated average greneration consumed on site less exported energy. Generation estimated using a generic sample system located in PacifiCorpts California service territory using the online National Renewable Energy Labs PVWatts tool. **Excludes basic charge.

Application No. 19-04-____ Exhibit PAC/303 Witness: Robert M. Meredith

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

PACIFICORP

Exhibit Accompanying Direct Testimony of

Robert M. Meredith

Estimated Payback Period Under Proposed Net Billing Program

April 2019

Assumptions			
System Size (kW ^{DC})	7	Annual Energy Usage (kWh) ⁴	17,15
System Azimuth	180°	Average Rate (\$/kWh) ⁴	0.166
System Degradation Rate ¹	0.5%	System cost (\$/W ^{DC}) ⁵	2.7
Annual System Generation (kWh) ²	10,471	Application Fee (\$)	2
Off-peak Generation ³	93%	System Cost (\$)	19,32
On-peak Generation ³	7%	30% Federal Income Tax Credit (\$)	5,79
Off-Peak Credit (\$/kWh) ³	0.03320	Net Cost (\$)	13,52
On-Peak Credit (\$/kWh) ³	0.04418		

Year		1	7		ŝ	7	-	5	9		7	8		6
kWh Usage		17,150	17,150		17,150	17,150	17,15	0	17,150	17	,150	17,150		17,150
kWh Generation		10,471	10,418		10,366	10,314	10,26	б	10,211	10	,160	10,110		10,059
Delivered kWh		12,606	12,628		12,651	12,674	12,69	9	12,718	12	,740	12,762		12,784
Exported kWh (56.6%)		5,926	5,897		5,867	5,838	5,80	6	5,780	Ś	,751	5,722		5,693
Non-Customer Generator Bill	÷	2,852.05	\$ 852.05	S	2,852.05	\$ 2,852.05	\$ 2,852.0	5	2,852.05	\$ 2,85	2.05 \$	2,852.05	\$ 2	,852.05

Proposed NB-136 Bill	Ś	1,741.19	Ś	1,746.75	Ś	1,752.27	Ś	1,757.77	Ś	1,763.24	S	1,768.69	Ş	1,774.11	Ś	1,779.49	\$,784.86	ı I
Savings from NB-136	S	1,110.85	Ś	1,105.30	Ś	1,099.77	Ś	1,094.27	Ś	1,088.80	Ś	1,083.36	Ś	1,077.94	Ś	1,072.55	s 1	,067.19	
Proposed NB-136 Payback	↔	(12, 416.65)	s	(11,311.35)	Ś	(10, 211.58)	÷	(9,117.31)	s S	8,028.51)	s S	6,945.15)) s	5,867.21)	s	(4, 794.66)	\$ 3	,727.47	~
Years to Payback		12.5																	i i

Footnotes

Median degradation rate according to <u>Degradation Rates - An Analytical Review</u> published by the National Renewable Energy Labs Photovoltaic (https://www.nrel.gov/docs/fy12osti/51664.pdf)
Generation estimated from online National Renewable Energy Labs PVWatts Calculator (https://pvwatts.nrel.gov/)

3. Daniel J. MacNeil's testimony

4. Exhibit PAC 302

5. See Table 5 on Page 16 of Navigant's Private Generation Long-Term Resource Assessment (2019-2038) Prepared for PacifiCorp dated August 15, 2018

PACIFICORP	State of California	Estimated Simple Payback Period Under Proposed Net Biling Programs
------------	---------------------	--

Year	10	11	12	13	14		15	16		17		18		19	7	0
kWh Usage	17,150	17,150	17,150	17,150	17,150	17,1	50	17,150		17,150	1	7,150	17,	150	17,15(
kWh Generation	10,009	9,959	9,909	9,859	9,810	9,7	61	9,712		9,664		9,615	, 6	567	9,519	~
Delivered kWh	12,806	12,828	12,850	12,871	12,892	12,9	14	12,935		12,956	-	2,977	12,	998	13,019	~
Exported kWh (56.6%)	5,665	5,637	5,608	5,580	5,552	5,5	25	5,497		5,470		5,442	у,	415	5,388	~
Non-Customer Generator Bill	\$ 2,852.05	\$ 2,852.05	\$ 2,852.05	\$ 2,852.05	\$ 2,852.05	\$ 2,852.	05 \$	2,852.05	\$	852.05	\$ 2,8	\$52.05	\$ 2,852	05 \$	2,852.05	
Proposed NB-136 Bill	\$ 1,790.19	\$ 1,795.50	\$ 1,800.79	\$ 1,806.04	\$ 1,811.27	\$ 1,816.	48 \$	1,821.65	\$	826.81	\$ 1,8	31.93	\$ 1,837	.03 \$	1,842.11	
Savings from NB-136	\$ 1,061.85	\$ 1,056.54	\$ 1,051.26	\$ 1,046.00	\$ 1,040.77	\$ 1,035.	57 \$	1,030.39	\$	025.24	\$ 1,0	020.11	\$ 1,015	01 \$	1,009.94	
Proposed NB-136 Payback	\$ (2,665.62)	\$ (1,609.08)	\$ (557.82)	\$ 488.18	\$ 1,528.96	\$ 2,564.	53 \$	3,594.92	2 4	620.16	\$ 5,6	640.27	\$ 6,655	.28 \$	7,665.22	0)
Years to Payback																1

Exhibit PAC/303 Page 2 of 2 Witness: Robert M. Meredith

Application No. 19-04-___ Exhibit PAC/304 Witness: Robert M. Meredith

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

PACIFICORP

Exhibit Accompanying Direct Testimony of

Robert M. Meredith

Calculation of Application Fee

April 2019

PACIFICORP State of California Proposed Customer Generator Application Fee Calculation

	Total Company	Customer Generator	Cost per
	Cost for California	Applications in California	Application
Administration	\$4,258	88	\$48
Engineering Review	\$2,072	88	\$24
Customer Service	\$267	88	\$3
Total	\$6,597	88	\$75