

Application No. 18-04-____
Exhibit PAC/800
Witness: David M. Lucas

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

PACIFICORP

Direct Testimony of David M. Lucas

Advanced Metering Infrastructure

April 2018

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1 **Q. Please state your name, business address, and present position with PacifiCorp**
2 **d/b/a Pacific Power (PacifiCorp).**

3 A. My name is David M. Lucas. My business address is 825 NE Multnomah Street,
4 Suite 1700, Portland, Oregon 97232. My present position is Vice President of
5 Transmission and Distribution Operations for the company's Pacific Power division.
6 I am responsible for the operations, maintenance, construction, safety, and support
7 organizations for PacifiCorp's transmission and distribution systems in California,
8 Oregon, and Washington.

9 **I. QUALIFICATIONS**

10 **Q. Briefly describe your educational and professional experience.**

11 A. I joined PacifiCorp in 2010 in the role of Managing Director of Gas and Geothermal
12 Generation with responsibility for the operations, maintenance, and construction of
13 PacifiCorp's natural gas and geothermal generation facilities. I held that position
14 until I was appointed to my present position as Vice President of Transmission and
15 Distribution Operations in November 2017. Before starting my career at PacifiCorp,
16 I held a number of positions of increasing responsibility over a period of 20 years
17 within the generation organization of CalEnergy Generation U.S., including the
18 position of General Manager, U.S. Gas Operations.

19 **II. PURPOSE OF TESTIMONY**

20 **Q. What is the purpose of your testimony?**

21 A. My testimony presents an overview of PacifiCorp's plan to implement and invest in
22 advanced metering infrastructure (AMI) in the state of California (CA AMI Project).
23 My testimony demonstrates that PacifiCorp prudently incurred costs associated with

1 the CA AMI Project that are included in rate base and that this investment provides a
2 benefit to the company's California customers.

3 **III. BACKGROUND**

4 **Q. Please briefly describe PacifiCorp's service territory in California.**

5 A. PacifiCorp serves approximately 45,000 retail residential and non-residential electric
6 customers in portions of Del Norte, Modoc, Shasta, and Siskiyou counties in northern
7 California. Electricity provided to these customers' facilities are metered by
8 approximately 47,000 PacifiCorp-owned digital metering devices.

9 **Q. Has the California Public Utilities Commission (Commission) authorized other
10 investor owned utilities to install smart meters?**

11 A. Yes. The SB also required the Commission, in consultation with the Independent
12 System Operator and other key stakeholders, to determine the requirements for smart
13 grid deployment plans for the large investor owned utilities (IOUs). The Commission
14 has authorized the state's IOUs to install smart meters "in order to give consumers
15 greater control over their energy use. Smart meters enable a utility to provide
16 customers with detailed information about their energy usage at different times of the
17 day, which in turn enables customers to manager their energy use more proactively."¹

18 Morevoer, the California legislature and Governor demonstrated the
19 importance of modernizing the state's electric grid through the enactment of Senate
20 Bill (SB) 17, which was signed into law on October 11, 2009. SB 17 called for the
21 state to "modernize the electrical transmission and distribution system to maintain

¹ <http://www.cpuc.ca.gov/General.aspx?id=4853>

1 safe, reliable, efficient, and secure electrical service, with infrastructure that can meet
2 future growth in demand.”²

3 **Q. Has PacifiCorp transitioned from its current metering operations to AMI in any**
4 **of the five other states in which PacifiCorp does business?**

5 A. Yes, PacifiCorp currently is in the process of transitioning to AMI in Oregon, with
6 the first smart meters having successfully gone into service in December 2017. In
7 order to implement the Oregon AMI project, PacifiCorp entered into an Oregon AMI
8 engineer, procure and construct (EPC) contract with Itron Networked Solutions, Inc.
9 (INSI)³ in May 2016, following a competitive bidding event. INSI was chosen on the
10 basis of its experience delivering AMI projects,⁴ its proven networking technology,
11 and the final negotiated pricing, terms, and scope. PacifiCorp’s implementation of
12 smart meters in Oregon began in 2017 and is expected to be completed by the end of
13 2019.⁵ Deployment of smart meters in Southern Oregon is expected to occur in late
14 2018, to dovetail with deployment of smart meters in northern California, as part of
15 PacifiCorp’s CA AMI Project.

16 IV. CA AMI PROJECT DESCRIPTION

17 **Q. Please briefly describe the CA AMI Project.**

18 A. The CA AMI Project consists of the on-site replacement of PacifiCorp’s
19 approximately 47,000 existing customer meters with smart meters and installation of

² Senate Bill No. 17, Chapter 327, Section 1. Chapter 4. Smart Grid Systems, 8360.

³ INSI was acquired by Itron, Inc. in January 2018. Prior to the acquisition, INSI was know as Silver Spring Networks, Inc.

⁴ INSI has delivered more than 26 million AMI devices for customers including customers of Pacific Gas & Electric, Consolidated Edison, and Florida Power & Light.

⁵ As part of the Oregon AMI project, PacifiCorp plans to replace approximately 590,000 meters with smart meters.

1 AMI-related technology and telecommunications infrastructure, including
2 construction of a field area network across the 11,292 square miles of PacifiCorp's
3 California service territory.

4 The CA AMI Project will leverage existing information technology
5 infrastructure which has been developed in connection with PacifiCorp's Oregon
6 AMI project. This infrastructure will be modified and expanded to support
7 California-specific functionality. Following the implementation of the CA AMI
8 Project, customer usage data will be sent wirelessly to PacifiCorp's meter data
9 management system and will be available to customers via the company's website. In
10 addition, PacifiCorp will be able to remotely connect and disconnect electric service.⁶

11 **Q. Please describe the specific components of the AMI system that PacifiCorp will**
12 **be investing in as part of the CA AMI Project.**

13 A. The CA AMI Project consists of the following four primary components and work
14 streams:

15 1. Installation of Smart Meters

16 Smart meters contain a network interface card that enables two-way
17 communication to and from the utility. They are also capable of capturing analytic
18 data such as temperature, voltage, and power quality. Smart meters capture meter
19 readings at pre-set intervals and transmit read data wirelessly to the utility.

⁶ In a separate application, A.17-08-016, PacifiCorp filed for approval of proposed tariff Rule 27, Privacy and Security of Customer Data and Release of Customer Data, tariff Rule 28, Data Request and Release Process, and changes to tariff Schedule 300 to implement a charge and monthly meter reading fee for customers that opt-out of a smart meter (AMI Tariff Application). A decision on the application is pending.

1 Residential and small commercial meters contain a disconnect switch that enables
2 remote connect and disconnect functionality.

3 2. Installation of Field Area Network

4 A field area network consists of communication devices referred to as access
5 points and relays which communicate wirelessly to and from a number of meters in a
6 given geographic area. Data is transmitted from the access points to the utility's
7 information technology infrastructure, often referred to as the "head-end," via cellular
8 service. To create a field area network in PacifiCorp's California service territory,
9 the company will install access points and relays on PacifiCorp's utility poles
10 throughout the service territory.

11 3. Development, Installation, and Configuration of Head-End; Software
12 Integration

13 The "head-end" is the utility's information technology infrastructure to which
14 data is transmitted via the field area network. The head-end enables the utility to use
15 the data captured by the smart meter, which includes interval meter reads and
16 temperature, voltage, outage, and power quality data. Such data is used by the
17 company via third party AMI software that is integrated with utility legacy computer
18 systems and the "head-end" and enables the utility to send commands such as connect
19 or disconnect to the meter.

20 4. Development of Energy Usage Website

21 PacifiCorp is enhancing its existing energy usage website to include customer
22 access to historic, hourly consumption based on data captured by the company's
23 AMI. This access will provide customers with hourly energy consumption data from

1 the prior calendar day. Another enhancement to the energy usage website will be a
2 bill projection for the current billing cycle. After seven days of usage in a billing
3 month a customer will be able to log into their secure on-line account and see a
4 projected bill amount for that particular billing month. PacifiCorp also plans to
5 incorporate existing customer communication preferences with the bill projection
6 data. Customers with AMI will be able to set up a preference to receive an alert from
7 PacifiCorp when the customer's projected bill will exceed a pre-determined dollar
8 threshold designated by the customer. The customer may choose to receive the alert
9 via text or email.

10 **Q. When will the CA AMI Project be deployed?**

11 A. PacifiCorp plans to commence installation of smart meters in 2018 and to complete
12 installation and cut-over to automated meter readings by the end of 2018.
13 Telecommunications infrastructure is scheduled to be installed in advance of the
14 deployment of smart meters. This timing for smart meter deployment allows the
15 company to leverage efficiencies in connection with the Oregon AMI project
16 schedule, including aligning the deployment of installation resources in northern
17 California and southern Oregon.

18 **Q. What AMI vendor is PacifiCorp using for the CA AMI Project?**

19 A. To leverage the proprietary information technology infrastructure (i.e., the "head-
20 end") that is being developed in connection with the Oregon AMI project and other
21 efficiencies related to use of the same vendor, PacifiCorp entered into negotiations
22 with INSI (which, as indicated above, was selected for the Oregon AMI project as a
23 result of a competitive bidding process) in early 2017 for the extension of AMI into

1 PacifiCorp's California service territory. After extensive negotiations and review and
2 refinements to the scope of work, PacifiCorp awarded INSI a contract for the CA
3 AMI Project. The contract, which was entered into on July 28, 2017, is in the form of
4 an EPC contract.

5 **Q. Why did PacifiCorp use the EPC approach?**

6 A. Although this form of contract is more typical in a solicitation for large construction
7 contracts, the company used this approach for the CA AMI Project for the purpose of
8 controlling costs and managing design, procurement, and construction risks. This
9 approach provides certainty relative to schedule and cost outcomes for the benefit of
10 customers, caps potential cost escalations where possible based on the occurrence of
11 defined risks, and ensures more timely delivery of project completion.

12 **Q. Please describe PacifiCorp's plan to address safety related to deployment of**
13 **AMI.**

14 A. Safety is PacifiCorp's highest priority. Smart meters are being tested in multiple
15 ways to ensure they function properly and are safe. The meters are certified by
16 American National Standards Institute and Underwriter's Laboratory and tested by an
17 independent third-party. Contractual requirements have been established with INSI's
18 installation subcontractors for the purpose of ensuring safe meter installation
19 procedures are followed. For example, smart meter installers will receive specialized
20 installation training and will be required to test meter base jaw tension, apply jaw
21 lubricant, and perform follow-up inspections. In addition, PacifiCorp will have
22 electricians on-call at all times to provide support to meter installers during meter

1 deployment to address any safety concerns and provide assistance in connection with
2 meter base repairs.

3 **V. BENEFITS OF AMI DEPLOYMENT**

4 **Q. Why is PacifiCorp deploying AMI in California?**

5 A. PacifiCorp is deploying AMI to provide customer benefits ranging from lowering
6 operating costs (*i.e.*, by reducing manual metering reading operations) and improving
7 reliability, to providing customers with information and tools to better understand and
8 derive greater value from their energy service. PacifiCorp sees AMI as a key
9 technology which will enable the company to achieve long-term customer service
10 objectives. Specifically, AMI functionality allows the company to:

- 11 • Provide customers access to data regarding their hourly energy consumption
12 which will enable them to make more informed energy decisions;
- 13 • Reduce the number of estimated bills by providing the company with actual meter
14 data regardless of physical access barriers, bad weather delays, or other factors
15 that can impede physical meter reading and give rise to estimated billing;
- 16 • Perform remote connect and disconnects which will enable service to be turned on
17 and off on a near real-time basis without deploying employees to customers'
18 premises;
- 19 • Detect and trouble-shoot power outage situations and react to customer outages in
20 a more timely manner, without waiting for an outage notification from the
21 customer;

- 1 • Obtain analytic information such as temperature, voltage, and power quality data
2 which can be used to assess system performance and improve service to
3 customers;
- 4 • Provide better customer service by giving PacifiCorp's customer service
5 representatives information necessary to provide accurate responses to customer
6 inquiries and facilitate customer complaint resolution;
- 7 • Introduce efficiencies related to automation that reduce the cost to obtain meter
8 reads and perform service connects and disconnects; and
- 9 • Minimize carbon dioxide emissions through reduced use of vehicles for meter
10 reading operations.

11 VI. FINANCIAL ANALYSIS OF CA AMI PROJECT INVESTMENT

12 Q. Please describe the costs associated with the CA AMI Project.

13 A. The total project cost of the CA AMI Project is \$11.5 million in capital costs and
14 \$162,000 in operation and maintenance (O&M) costs. Capital costs are allocated to
15 the following components in support of the CA AMI Project: meters (\$9.2 million),
16 information technology (\$1.3 million), and telecom (\$1.0 million). O&M costs are
17 allocated as follows: information technology and telecom (\$35,000), customer service
18 (\$48,000), and project management (\$79,000). Going forward, new O&M costs will
19 be incurred in order to run and support the AMI system, with annual operating costs
20 estimated at \$100,000 following the first full year of implementation (year 2019).
21 These costs include new call handling costs, field network hardware maintenance,
22 and information technology maintenance and support.

1 **Q. Please describe the potential O&M savings associated with the CA AMI Project.**

2 A. Depending on the level of opt-out participation, the installation of smart meters in
3 California may eliminate as many as 7.5 employees currently utilized to manually
4 read meters. Subject to continued costs relative to opt-out customers, use of smart
5 meters also eliminates the need for employees to drive to customer locations to
6 perform manual connect functions after normal business hours, reducing the amount
7 of existing overtime currently being spent. Further, except with respect to manual
8 meter reading services that will continue to be provided to opt-out customers,
9 PacifiCorp will eliminate use of handheld devices and the cost of maintenance fees
10 required to support these devices.

11 In total, an annual O&M savings of as much as \$500,000 may be realized
12 beginning in 2019 after subtracting the annual operating costs for the new AMI
13 system. Final staffing and O&M savings will depend on how many of PacifiCorp's
14 customers opt-out from smart meters, requiring PacifiCorp to dispatch employees for
15 manual meter reads, as well as the extent of any revenue from opt-out tariffs based on
16 the final fees determined in the AMI Tariff Application proceeding described above.

17 **VII. CONCLUSION**

18 **Q. Is PacifiCorp's investment in CA AMI Project prudent and cost effective?**

19 A. Yes. PacifiCorp's investment in CA AMI Project is prudent and cost effective
20 because of the advantages it affords PacifiCorp's customers while leveraging
21 efficiencies resulting from the company's introduction of AMI in its Oregon service
22 territory. It may also result in reductions to PacifiCorp's annual operating costs, as
23 discussed above.

1 **Q. Is the inclusion of the CA AMI Project in rates beneficial to customers and**
2 **otherwise in the public interest?**

3 A. Yes. As a result of the CA AMI Project, PacifiCorp will be able to improve customer
4 service levels and introduce a greater level of transparency into the costs associated
5 with energy usage decisions. In addition, the implementation of AMI creates a
6 platform for smart grid modernization allowing PacifiCorp increased visibility into
7 the electrical network and customer interface to assist in future programs and
8 investments. The CA AMI Project also results in incidental benefits to the public
9 generally, including the reduction of vehicle emissions due to the decrease in manual
10 meter readings.

11 **Q. Does this conclude your direct testimony?**

12 A. Yes.