PACIFIC POWER
A DIVISION OF PACIFICORP

825 NE Multnomah, Suite 2000
Portland, Oregon 97232

November 4, 2014

VIA ELECTRONIC FILING
AND OVERNIGHT DELIVERY

Public Utility Commission of Oregon
3930 Fairview Industrial Drive SE
Salem, Oregon 97302-1166

Attn: Filing Center

RE: UM 1610 Phase II—Investigation into Qualifying Facility Contracting and Pricing
Opening Testimony of PacifiCorp regarding Solar Capacity Contribution

PacifiCorp d/b/a Pacific Power (Company) encloses for filing in this docket its opening testimony of Gregory N. Duvall regarding the solar capacity contribution.

Inquiries may be directed to Natasha Siores, Director, Regulatory Affairs & Revenue Requirement, at (503) 813-6583.

Sincerely,

R. Bryce Dalley

R. Bryce Dalley
Vice President, Regulation

Enclosure

cc: Service List—UM 1610

CERTIFICATE OF SERVICE

I certify that I served a true and correct copy of PacifiCorp's Testimony on the parties listed below via electronic mail and/or US mail in compliance with OAR 860-001-0180.

Service List
Docket UM 1610

Renee M. France (W) (C)
Oregon Department of Justice
Natural Resources Section
1162 Court St NE
Salem, OR 97301-4096
renee.m.france@doj.state.or.us

Matt Krumenauer (W) (C)
Senior Policy Analyst
Oregon Department of Energy
625 Marion St NE
Salem, OR 97301
matt.krumenauer@state.or.us

Kacia Brockman (W) (C)
Energy Policy Analyst
Oregon Department of Energy
625 Marion St NE
Salem, OR 97301
kacia.brockman@state.or.us

Donovan E. Walker (W) (C)
Idaho Power Company
PO Box 70
Boise, ID 83707-0070
dwalker@idahopower.com

Julia Hilton (W) (C)
Idaho Power Company
PO Box 70
Boise, ID 83707-0070
jhilton@idahopower.com

J. Richard George (W) (C)
Portland General Electric Company
121 SW Salmon St. – 1WTC1301
Portland, OR 97204
richard.george@pgn.com

Lisa F. Rackner (W) (C)
McDowell Rackner & Gibson PC
419 SW 11th Ave., Suite 400
Portland, OR 97205
dockets@mcd-law.com

Jay Tinker (W) (C)
Portland General Electric Company
121 SW Salmon St. – 1WTC0702
Portland, OR 97204
Pge.opuc.filings@pgn.com

V. Denise Saunders (W)
Portland General Electric Company
121 SW Salmon St. – 1WTC1301
Portland, OR 97204
denise.saunders@pgn.com

Renewable NW Dockets (W)
Renewable Northwest
421 SW 6th Ave., Ste. 1125
Portland, OR 97204
dockets@renewablenw.org

Brittany Andrus (W) (C)
Public Utility Commission of Oregon
PO Box 1088
Salem, OR 97308-1088
brittany.andrus@state.or.us

Will K. Carey (W)
Annala, Carey, Baker, Et Al., PC
PO Box 325
Hood River, OR 97031
wcarey@gorge.net

Stephanie S. Andrus (W) (C)
PUC Staff – Department of Justice

Richard Lorenz (W) (C)
Cable Houston Benedict Haagensen &

Business Activities Section
1162 Court St. NE
Salem, OR 97301-4096
stephanie.andrus@state.or.us

Megan Decker (W) (C)
Renewable Northwest
421 SW 6th Ave., Ste. 1125
Portland, OR 97204
megan@renewablenw.org

Mike McArthur (W)
Executive Director
Association of OR Counties
PO Box 12729
Salem, OR 97309
mmcarthur@aocweb.org

Chad M. Stokes (W)
Cable Houston Benedict Haagensen & Lloyd LLP
1001 SW Fifth Ave, Suite 2000
Portland, OR 97204-1136
cstokes@cablehuston.com

OPUC Dockets (W)
Citizens' Utility Board of Oregon
610 SW Broadway, Suite 400
Portland, OR 97205
dockets@oregoncub.org

G. Catriona McCracken (W) (C)
Citizens' Utility Board of Oregon
610 SW Broadway, Suite 400
Portland, OR 97205
catriona@oregoncub.org

Diane Henkels (W) (C)
Cleantech Law Partners PC
6228 SW Hood
Portland, OR 97239
dhenkels@cleantechlawpartners.com

Tyler C. Pepple (W) (C)
Davison Van Cleve
333 SW Taylor, Suite 400
Portland, OR 97204

Lloyd LLP
1001 SW Fifth Ave, Suite 2000
Portland, OR 97204-1136
rlorenz@cablehuston.com

Robert Jenks (W) (C)
Citizens' Utility Board of Oregon
610 SW Broadway, Suite 400
Portland, OR 97205
bob@oregoncub.org

David Tooze (W)
City of Portland – Planning & Sustainability
1900 SW 4th Suite 7100
Portland, OR 97201
David.tooze@portlandoregon.gov

Thad Roth (W)
Energy Trust of Oregon
421 SW Oak Street, #300
Portland, OR 97204-1817
thad.roth@energytrust.org

Kenneth Kaufmann (W) (C)
Lovinger Kaufmann LLP
825 NE Multnomah, Suite 925
Portland, OR 97232-2150
Kaufmann@lklaw.com

Daren Anderson (W)
Northwest Energy Systems Company LLC
1800 NE 8th Street, Suite 320
Bellevue, WA 98004-1600
da@thenescogroup.com

OSEIA Dockets (W)
Oregon Solar Energy Industries Association
PO Box 14927
Portland, OR 97293
dockets@oseia.org

Mark Pete Pengilly (W)
Oregonians for Renewable Energy Policy
PO Box 10221
Portland, OR 97296

tcp@dvclaw.com

S. Bradley Van Cleve (W) (C)
Davison Van Cleve PC
333 SW Taylor, Suite 400
Portland, OR 97204
bvc@dvclaw.com

John M. Volkman (W)
Energy Trust of Oregon
421 SW Oak Street, #300
Portland, OR 97204-1817
john.volkman@energytrust.org

John Harvey (W) (C)
Exelon Wind LLC
4601 Westown Parkway, Suite 300
Wet Des Moines, IA 50266
John.harvey@exeloncorp.com

Jeffrey S. Lovinger (W) (C)
Lovinger Kaufmann LLP
825 NE Multnomah, Suite 925
Portland, OR 97232-2150
lovinger@lklaw.com

Bill Eddie (W) (C)
One Energy Renewables
206 NE 28th Avenue
Portland, OR 97232
Bill@oneenergyrenewables.com

Kathleen Newman (W)
Oregonians for Renewable Energy Policy
1553 NE Greensword Drive
Hillsboro, OR 97214
k.a.newman@frontier.com

R. Bryce Dalley (W) (C)
Pacific Power
825 NE Multnomah Street, Suite 2000
Portland, OR 97232
Bryce.dalley@pacificorp.com

Oregon Dockets (W)
PacifiCorp dba Pacific Power
825 NE Multnomah Street, Suite 2000
Portland, OR 97232

mpengilly@gmail.com

Dustin Till (W) (C)
Pacific Power
825 NE Multnomah Street, Suite 1800
Portland, OR 97232
dustin.till@pacificorp.com

Gregory M. Adams (W) (C)
Richardson & O'Leary
PO Box 7218
Boise, ID 83702
greg@richardsonadams.com

Toni Roush (W)
Roush Hydro Inc
366 E Water
Stayton, OR 97383
tmroush@wvi.com

David A Lokting (W)
Stoll Berne
209 SW Oak Street, Suite 500
Portland, OR 97204
dlokting@stolberne.com

Thomas H. Nelson (W) (C)
Attorney at Law
PO Box 1211
Welches, OR 97067-1211
nelson@thenelson.com

Loyd Fery (W)
11022 Rainwater Lane SE
Aumsville, OR 97325
dlchain@wvi.com

David Brown (W)
Obsidian Renewables, LLC
5 Centerpointe Dr. Ste 590
Lake Oswego, OR 97035
dbrown@obsidianrenewables.com

Todd Gregory (W)
Obsidian Renewables, LLC
5 Centerpointe Dr. Ste 590
Lake Oswego, OR 97035

Oregondockets@pacificorp.com

John Lowe (W)
Renewable Energy Coalition
12050 SW Tremont Street
Portland, OR 97225-5430
jravenesanmarcos@yahoo.com

Peter J. Richardson (W) (C)
Richardson & O'Leary PLLC
PO Box 7218
Boise, ID 83702
peter@richardsonadams.com

Irion Sanger (W)
Sanger Law PC
1117 SE 53rd Ave
Portland, OR 97215
irion@sanger-law.com

tgregory@obsidianrenewables.com

Paul Ackerman (W)
Exelon Business Services Company, LLC
100 Constellation Way Ste 500C
Baltimore, MD 21202
Paul.ackerman@constellation.com

James Birkelund (W) (C)
Small Business Utility Advocates
548 Market Street, Suite 11200
San Francisco, CA 94104
james@utilityadvocates.org

Dated this 4th day of November, 2014.

Carrie Meyer
Supervisor, Regulatory Operations

Docket No. UM-1610
Exhibit PAC/600
Witness: Gregory N. Duvall

BEFORE THE PUBLIC UTILITY COMMISSION

OF THE STATE OF OREGON

PACIFICORP

Opening Testimony of Gregory N. Duvall

November 2014

Q. Please state your name, business address, and present position with PacifiCorp d/b/a Pacific Power (PacifiCorp or the Company).

A. My name is Gregory N. Duvall. My business address is 825 NE Multnomah Street, Suite 600, Portland, Oregon 97232. My present position is Director, Net Power Costs.

Q. Briefly describe your education and professional experience.

A. I received a degree in Mathematics from University of Washington in 1976 and a Masters of Business Administration from University of Portland in 1979. I was first employed by PacifiCorp in 1976 and have held various positions in resource and transmission planning, regulation, resource acquisitions and trading. From 1997 through 2000, I lived in Australia where I managed the Energy Trading Department for Powercor, a PacifiCorp subsidiary at that time. After returning to Portland, I was involved in direct access issues in Oregon and was responsible for directing the analytical effort for the Multi-State Process (MSP). I currently direct the work of the load forecasting group, the net power cost group, and the renewable compliance area.

Q. What is the purpose of your testimony in this case?

A. My testimony addresses the calculation of the capacity adder portion of the renewable avoided cost rate as it is currently applied to solar qualifying facilities (QFs). This calculation is only applicable in the resource deficiency period when the QF is assumed to avoid a proxy resource or proxy resources under Oregon's proxy method.

Q. Please describe the proxy method as it has been used in Oregon.

A. The proxy method has been used for many years in Oregon to set avoided costs in the resource deficiency period. For standard avoided costs, the proxy resource is

assumed to be the next deferrable major thermal resource addition in the Company's acknowledged integrated resource plan (IRP). Over the past several years and currently, the next deferrable major thermal resource has been a combined cycle combustion turbine (CCCT). Avoided costs during the deficiency period are assumed to be the cost of the proxy resource.

For rate design, the proxy method incorporates a two-step volumetric approach for avoided capacity costs. First, the capacity related portion of the CCCT fixed costs are converted to a dollar-per-megawatt-hour rate using the capacity factor of the proxy CCCT identified in the IRP. Second, that rate is applied to all on-peak hours. On-peak hours are defined as 6 AM to 10 PM Monday through Saturday, excluding holidays, or 57 percent of the hours in a year. This two-step capacity contribution methodology has been in place for many years.

Q. Did Oregon solar QFs receive 100 percent of the capacity dollars of the proxy CCCT in the past, even when the capacity contribution was assumed to be 100 percent?

A. No. Assume for example that a typical Oregon solar QF has a capacity factor of about 22.5 percent. As previously noted, the capacity costs of the proxy CCCT are spread over on-peak hours, or 57 percent of the hours in a year. As a result, a solar QF would only receive that rate during the hours in which it generated, so a typical Oregon solar QF historically received about 39.5 percent of the proxy capacity dollars under standard avoided cost rates.[1]

[1] The 39.5 percent is the amount of time a solar QF is generating during the on-peak hours (22.5 percent divided by 57 percent).

Q. Please describe the standard renewable avoided cost calculation.

A. The standard renewable avoided cost rate that went into effect on August 20, 2014, is calculated using the same two-step approach as the standard rate. The only difference is the proxy resource—where the standard avoided cost rate uses the capacity costs and capacity factor of the CCCT proxy, the standard renewable avoided cost rate uses the capacity costs and capacity factor of a wind proxy (i.e., the next significant renewable resource identified in the IRP). For rate design, the wind proxy capital costs are first converted to a dollar-per-megawatt-hour rate using the capacity factor of the wind proxy identified in the IRP which is currently 40 percent. That rate is then applied to on-peak hours (i.e., 57 percent of hours).

Q. What is the capacity adder?

A. If additional capacity is deemed to be deferred beyond the wind proxy capacity as is the case for solar QFs, then the capacity related costs of a proxy CCCT are added to the on-peak rate in compliance with Order No. 14-058 in Phase 1 of UM 1610. This second capacity deferral is referred to as the capacity adder. The rate for the capacity adder is calculated in the same manner as the capacity costs are calculated under the standard rate, i.e. the proxy CCCT capacity costs are converted to a dollar-per-megawatt-hour rate using the proxy resource capacity factor then applied to all on-peak hours.

Q. Why is there a capacity adder?

A. The capacity adder was deemed necessary by the Commission to account for differences in capacity contribution of various renewable resources.

Q. What issue has been raised regarding the application of the capacity adder for solar QFs?

A. On April 24, 2014, Obsidian Renewables LLC (Obsidian) filed a motion for clarification in which it claimed that applying the capacity adder on a dollars-per-megawatt-hour basis results in an inadvertent "double discount" of the capacity payment to a solar QF because the solar QF has a relatively low capacity factor and does not generate the same amount of energy as the capacity resource. Obsidian argued that the capacity adder should be paid as a fixed dollar amount to the QF rather than depend on the QFs actual energy output. OneEnergy Inc. and the Community Renewable Energy Association (CREA) also filed a motion for clarification that supported the claims made by Obsidian. OneEnergy and CREA propose that the proxy capacity costs could be spread using the QF's capacity factor rather than capacity factor of the proxy resource. The result is the same under either proposal, and both proposals result in higher payments to a solar QF for the standard renewable avoided costs.

Q. What differentiates capacity contribution from capacity factor?

A. The capacity factor of a generating resource is a measure of how much energy that resource is expected to produce over a given period of time. The capacity contribution of a generating resource takes into account the timing of the generation and how it contributes to system reliability. Like capacity contribution, the capacity factor is represented as a percentage of plant capacity; however, the two metrics have entirely different meanings. For example, consider two hypothetical power plants operating at a 50 percent capacity factor. Both plants produce energy at half of their

full capability over the course of a year. However, assume one plant achieves a 50 percent capacity factor by producing energy in hours when the probability of reliability events are lowest and the other plant achieves its 50 percent capacity factor by producing energy in hours when the probability of reliability events are highest. The former would have a low capacity contribution value and the latter would have a high capacity contribution value.

For standard avoided cost rates, the QF's capacity contribution is applied to the capacity costs of the proxy CCCT, reducing the amount paid to an intermittent QF for capacity. For the standard renewable avoided cost rates, payments to a QF for capacity are increased by the capacity adder if the QF's capacity contribution is greater than the capacity contribution of the renewable proxy.

Q. What capacity contribution has been included in the proxy method in the past?

A. All resources have been deemed to have a 100 percent capacity contribution in the past.

Q. Did the Commission modify the application of capacity contribution in Order No. 14-058?

A. Yes. In Order No. 14-058 the Commission modified the standard and standard renewable avoided costs to account for the capacity contribution of intermittent QF resources relative to the proxy resource. Under the Commission-approved methodology, the proxy resource capacity costs are reduced by the QF's capacity contribution before conducting the previously described two-step process.

Q. Please explain.

A. Prior to the adoption of the 13.6 percent capacity contribution for solar QFs for

PacifiCorp, the capacity payment was determined by dividing 100 percent of the CCCT capacity costs by the capacity factor of the CCCT to get a dollar-per-megawatt-hour rate that was then applied to all on-peak hours. With the capacity contribution at 13.6 percent for solar QFs, the capacity payment is now determined by dividing 13.6 percent of the CCCT capacity costs by the capacity factor of the CCCT to get a dollar-per-megawatt-hour rate that is applied to all on-peak hours. In other words, the only change was to substitute the 100 percent capacity contribution with the 13.6 percent capacity contribution leaving the remainder of the pricing formula intact.

Q. What is Obsidian's complaint?

A. In its motion, Obsidian referred to the recognition of a solar QF's capacity contribution as the "first discount," and it does not challenge the appropriateness of recognizing a lower capacity contribution for solar QFs relative to a proxy CCCT. Obsidian refers to the two-step process of spreading of capacity costs to the on-peak hours as the "second discount" because solar QFs that generate less energy compared to the proxy CCCT receive less in total dollars. In reality, this is not a discount from avoided costs at all; rather, it is simply the result of the proxy method's two-step process that has been in place for Oregon QFs for many years. Furthermore, it is consistent with the position taken by the Commission staff in its UM 1610 Phase 1 testimony and is consistent with the Commission's order in Phase 1.

Q. Since the Commission replaced the 100 percent capacity contribution for solar QFs with 13.6 percent, how much of the proxy CCCT capacity costs would be paid to a solar QF under the new capacity adder rates?

A. Using the example cited above, a solar QF would be paid 13.6 percent of 39.5 percent, or 5.4 percent of the proxy CCCT capacity costs, as opposed to 13.6 percent as proposed by Obsidian, CREA and OneEnergy.

Q. Can you provide an example that illustrates the fallacy of the proposal made by Obsidian, CREA and OneEnergy?

A. Yes. Assume the capacity contribution for a solar QF was 39.5 percent instead of 13.6 percent and the capacity factor in this example remains at 22.5 percent. In this case, Obsidian, CREA and OneEnergy would assert that a solar QF should receive 39.5 percent of the CCCT capacity costs, which is the same amount of CCCT capacity costs the solar QF in this example would have been paid before the Commission reduced their capacity contribution. This outcome is senseless. In essence, Obsidian, CREA and OneEnergy are attempting to mitigate the impact of the reduction in capacity contribution ordered by the Commission by suggesting the long-standing two-step rate design process for the proxy method be abandoned.

Q. Has the avoided cost calculation used by the Company in the past, and re-affirmed by the Commission in Order 14-058, been thoroughly reviewed?

A. Yes. The Company's calculation of avoided cost rates was thoroughly reviewed by the Commission staff in UM 1442 in 2009. In Order No. 09-506, the Commission quoted staff's conclusion that:

> PacifiCorp filed its avoided cost rates using the methodologies required by Order No. 05-584. I further conclude that the prices

PacifiCorp used to determine the rates were consistent with the projected market prices available to the company at the time they filed the rates. PacifiCorp calculated their rates without making any arithmetical errors, and the rates that were put into effect are reasonable. In addition, the current rates appear to have been calculated using the same methodologies that were used to determine the previous avoided cost rates that had been in place for two years after being approved in Advice No. 07-021."[2]

Q. Did any party contest the long-standing rate design of the proxy method in Phase 1 of UM 1610?

A. No. The standard avoided cost methodology was an issue identified for review in Phase 1 of UM 1610; parties had an opportunity to challenge the rate design, but did not do so. The rate design was clearly laid out by Staff in Phase 1 and has been part of the proxy method for many years. Parties should have challenged it in Phase 1 if they did not think it was appropriate.

Q. Why is it appropriate to use the capacity factor of the proxy resource to determine capacity payments under the proxy method rather than paying QFs fixed capacity payments or using the QF's capacity factor to determine the capacity payments?

A. Avoided costs during the deficiency period are defined as the cost of a proxy resource and are intended to reflect the "actual deferral or avoidance of that resource."[3] Using a capacity factor from another resource to determine payments for avoided capacity is not representative of the costs of the proxy resource. Furthermore, the capacity costs of a proxy CCCT provide several benefits to the utility that are not provided by an intermittent solar QF, including the ability to dispatch the resource on an as-needed

[2] Docket UM 1442, Order No. 09-506 at 4.
[3] Docket UM 1129, Order No. 05-584 at 26.

basis and the ability to provide operating reserve capacity. Fixing the capacity adder dollars paid to a solar QF would inflate the standard renewable avoided cost rates and move the method further away from true avoided costs rather than closer.

Q. Are there also energy-related costs related to a solar QF that are not accounted for as a result of using the proxy method?

A. Yes. Under the approved standard renewable rate, a 10 megawatt solar QF would displace 10 MW of a proxy wind plant and about one megawatt of a proxy CCCT, which are the Company's next deferrable renewable and thermal resources, beginning in 2024. Even if an Oregon solar QF only operates at a 22.5 percent capacity factor it is assumed to replace a wind resource that operates at about a 40 percent capacity factor. In this example, the Company loses about 1.75 average megawatts of energy (10 megawatts * (40% – 22.5%)) or about 15,330 megawatt-hours of zero-cost energy (1.75 average megawatts * 8760 hours). Assuming the wholesale power market price in 2024 is $55 per megawatt-hour, this represents a cost to customers of about $0.8 million for 10 megawatts of a solar QF. Deferring an additional one megawatt of a CCCT through the capacity adder creates an additional energy cost and a loss of reserve capacity which have not been quantified but would increase the $0.8 million cost to customers.

Q. What do you conclude from this example?

A. With respect to energy, the proxy method overstates avoided costs during the deficiency period by at least $0.8 million for each 10 megawatts of solar QFs. The cost to customers grows as more and more QFs choose standard renewable rates. This equates to an overpayment of about $6 million annually for the approximately

75 megawatts of signed solar QF contracts and another $27 million annually for the approximately 325 megawatts in the queue.

Q. Are there other reasons the standard avoided costs are overstated?

A. Yes. The proxy method assumes the avoided energy costs in the off-peak period during the deficiency period are equal to the fuel cost of the proxy CCCT. In reality, the CCCT fuel cost is not always the lowest cost option in the off-peak periods, and therefore energy costs during the off-peak periods are overstated. In addition, during the sufficiency period avoided energy costs are overstated because adding QF power to the Company's resource portfolio does not always result in more market sales or avoided market purchases, which is the underlying assumption supporting the Commission-approved method. In some hours, incremental power from a QF may result in back down of thermal resources, which have a lower value than market, in addition to potentially avoiding market purchases or increasing market sales.

Q. Do you recommend any change to the calculation of the capacity adder portion of the standard renewable avoided cost rate?

A. No. The Commission should confirm the decision reached in Order No. 14-058 and should not adopt additional changes to the standard renewable avoided cost rates that will further exacerbate the difference between avoided cost rates and the costs that can actually be avoided by the utility.

Q. Do you have any other comments?

A. Yes. The Company continues to advocate replacing the proxy method with a differential revenue requirement method as the Company proposed in Phase 1 of this

proceeding. The differential revenue requirement method would fix the energy overpayments described above.

Q. Does this conclude your opening testimony?

A. Yes.