BEFORE THE IDAHO PUBLIC UTILITIES COMMISSION

IN THE MATTER OF IDAHO POWER COMPANY'S PETITION TO TEMPORARILY SUSPEND ITS PURPA OBLIGATION TO PURCHASE ENERGY GENERATED BY SOLAR-POWERED QUALIFYING FACILITIES ("QF").	)	CASE NO. IPC-E-14-09

IDAHO POWER COMPANY

DIRECT TESTIMONY

OF

PHILIP B. DeVOL

Q. Please state your name and business address.

A. My name is Philip B. DeVol and my business address is 1221 West Idaho Street, Boise, Idaho 83702.

Q. By whom are you employed and in what capacity?

A. I am employed by Idaho Power Company ("Idaho Power" or "Company") as the Resource Planning Leader.

Q. Please describe your educational background and work experience with Idaho Power.

A. In May of 1989, I received a Bachelor of Science Degree in Mathematics from Miami University in Oxford, Ohio. I then received a Master of Science Degree in Biostatistics from the University of Michigan in May of 1991.

Q. Please describe your work history at Idaho Power.

A. I began my employment with Idaho Power in 2001 as an Engineering Specialist in the Water Management Department. In this position, I was responsible for modeling of the Idaho Power hydroelectric system for the Integrated Resource Plan ("IRP") and relicensing studies. In 2004, I became a Water Management Operations Analyst where I continued to be responsible for hydroelectric system modeling.

In 2005, I became a Planning Analyst in the Power Supply Planning Department. In this position, I was

responsible for the compilation of Idaho Power's long-term operating plan prepared on a monthly basis as part of the Company's plan for managing risk. My duties in this position also expanded to include the study of wind integration.

I became the Power Supply Planning Leader in 2010 and Resource Planning Leader in 2013. My duties in these positions have included project management for the most recent Idaho Power wind integration study.

I have been involved in regional and national proceedings related to the study of wind integration. I participated in methodology discussions for the 2007 Wind Integration Action Plan produced by the Northwest Wind Integration Forum. I have attended numerous Utility Wind Integration Group ("UWIG") workshops, and presented at UWIG workshops in Oklahoma City in 2006 and Portland, Oregon, in 2007. I also presented to the Idaho Wind Working Group at its September 2011 meeting. In November of 2013, I presented at a Centre for Energy Advancement through Technological Innovation ("CEATI") workshop focused on forecasting uncertainties for renewable energy supply.

I am leading the solar integration study on behalf of Idaho Power.

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

A. The purpose of my testimony is to describe the current solar integration study ("Study") that Idaho Power is conducting, including the current status of that Study.

Q. When did Idaho Power initiate the current solar integration study?

A. The official Study kick-off was on August 15, 2013, with the first meeting of the Technical Review Committee ("TRC").

Q. What is the TRC?

A. The TRC was formed during the summer of 2013 with the purpose of providing input, review, and guidance for the Study. It is made up of participants from outside of Idaho Power that have an interest and/or expertise with the integration of intermittent resources onto utility systems. The TRC consists of: Brian Johnson from the University of Idaho; Jimmy Lindsay from the Renewable Northwest Project ("RNP") (now with Portland General Electric); Kurt Myers from the Idaho National Laboratory; and Paul Woods with the City of Boise (now self-employed as a consultant). In addition to the members of the TRC, Staff from both the Idaho and Oregon commissions are participants in the Study. Rick Sterling from the Idaho Public Utilities Commission Staff, and Brittany Andrus and John Crider from the Public Utility Commission of Oregon Staff have participated throughout the Study. Although Mr.

Lindsay has left RNP, he will continue to participate as a TRC member. Cameron Yourkowski has been designated by RNP as Mr. Lindsay's replacement for the TRC. Similarly, Mr. Woods, although he left employment with the City of Boise and is now a self-employed consultant, has continued to serve as a member of the TRC.

Q. How is the Study being conducted?

A. The conduct of the Study is guided by two documents that were shared with and discussed with the TRC. *Principles for Technical Review (TRC) Involvement in Studies of Variable Generation Integration into Electrical Power Systems* was produced by the National Renewable Energy Laboratory ("NREL") and Utility Variable-generation Integration Group ("UVIG"). The NREL/UVIG principles document provides guidance in defining the important role of the TRC in the Study. The second report, *The Evolution of Wind Power Integration Studies: Past, Present, and Future*, was authored by five NREL researchers considered to be at the forefront of the study of renewable integration and was published by the Institute of Electrical and Electronics Engineers ("IEEE"). Even though the report was written from the perspective of wind integration, the principles remain the same for solar integration. This report is used as the roadmap for Idaho Power's solar integration study. Solar, like wind, is variable and

uncertain and, consequently, the system of dispatchable resources has to be operated differently in order to successfully integrate the generation without compromising reliability.

Q. What process is the Study following?

A. The Study is generally following the process outlined in the IEEE report, which includes: (1) Data gathering and scenario development; (2) Study analysis—a. statistical-based analysis of solar characteristics, b. production cost simulation analysis, and c. reliability assessment; and (3) Study conclusions and results.

Q. Has the TRC agreed with and been involved with this process?

A. Yes. Idaho Power has comprehensively walked through both guiding documents, as well as the steps outlined above, with the TRC. Additionally, the importance of the guiding documents was emphasized to participants of a May 1, 2014, public workshop. The TRC has thus far been extensively involved in the first step: data gathering and scenario development. The TRC has been integrally involved with the identification of suitable sources of solar production data, as well as discussions leading to the development of scenarios to be studied. The TRC has a leading role in advising as to the use of a technique to transform point-source solar data to meaningful production

data for a solar farm. The technique is called wavelet variability modeling. The TRC's counsel with respect to Idaho Power's use of the wavelet technique has been important and needed.

Q. How has the Study progressed to date?

A. The Study has progressed to the point where it is about to commence what is identified above as step 2.b, the production cost simulation analysis.

One of the larger tasks of step 1, data gathering and scenario development, as noted in the IEEE report, is the undertaking involved with coming up with solar resource data that is needed to model future power output. In fact, the Study's biggest hurdle thus far has been obtaining the solar resource data needed to model solar power output. The solar build-out scenarios are considering solar farms at six locations in southern Idaho: Parma, Boise, Grand View, Twin Falls, Picabo, and Aberdeen. The Study was able to obtain solar data from the U.S. Bureau of Reclamation AgriMet network at the desired five-minute time step for all locations except Grand View. NREL maps indicate the area surrounding Grand View and Glenns Ferry has the highest annual solar intensity in the state. For this reason, Idaho Power and the TRC have felt it is important to model a solar farm at Grand View. Obtaining five-minute solar data for Grand View has required the acquisition of

data from SolarAnywhere, which is a web-based service from Clean Power Research providing satellite-derived solar irradiance data. The Study did not receive data for Grand View from SolarAnywhere until April, causing delay in the Study schedule.

With the acquisition of data for the Grand View area, the Study is nearing completion of step 2.a above, statistical-based analysis of solar characteristics. Idaho Power has had correspondence with the TRC regarding the strategy for statistical-based analysis of the solar data, and the Study is nearing completion of this analysis. The results of this analysis have not yet been presented to the TRC. It is anticipated that this analysis will be presented to the TRC for its review in May. The intent of this analysis is to translate the variability and uncertainty present in the solar data to an incremental reserve requirement. The NREL authors of the IEEE report describe this as an analysis to determine the increase in ancillary services required by a given solar scenario, where NREL defines ancillary services as services that help grid operators maintain balance on electric power systems. Idaho Power has discussed with the TRC and workshop participants that the next step is to take the increase in reserve requirement, or ancillary services, from step 2.a for any given solar scenario and to input it into the

Study's production cost simulations to determine the cost of carrying increased ancillary services, step 2.b.

Q. What is your estimate for when the Study will be completed?

A. At the August 2013 kickoff of the Study, a tentative completion of quarter 1 2014 was discussed with the TRC. The most recent communications with the TRC over the last couple of weeks have been centered around narrowing the focus of the Study in order to determine integration costs for photovoltaic solar ("solar PV") resources sufficient to allow Idaho Power to have integration costs necessary for IRP and Public Utility Regulatory Policies Act of 1978 cost assumptions for solar PV resources. Commission Staff has expressed agreement with this scope. Because of the use of the two guiding documents and, in particular, the IEEE report as a road map, the required steps remaining are well understood by the TRC and workshop participants. It is anticipated that results could be obtained as early as mid-June. However, because of the collaborative process with the TRC and Study participants, Idaho Power is not in sole control of completion and final results. Furthermore, it is important to note that while the NREL-authored IEEE report provides a roadmap, there still is no one-size-fits-all methodology for studying variable generation integration. It has been

my experience that unexpected complexities frequently arise, making it challenging to designate a firm study completion date.

Q. Did Idaho Power keep any record of attendance or participation in the public workshop process for the Study?

A. Yes. Attached as Exhibit No. 2 to my testimony is the sign-in sheet for the May 1, 2014, public workshop that was held for the Study at Idaho Power.

Q. What was the nature of the May 1, 2014, public workshop?

A. A summary and status update of the Study was given and discussed, including a methodology overview and the fact that Idaho Power anticipated Study results could be available as soon as early summer 2014.

Q. Do you have any information at this point regarding what cost is associated with solar integration on Idaho Power's system?

A. I do not have any final cost numbers or estimates for solar integration costs on Idaho Power's system, as the Study simply has not advanced to that point at this time. I have continually emphasized, and expressly communicated to the TRC and the Study participants that Idaho Power has no preconception of solar integration

costs; i.e., the Company does not have an integration cost in mind. This was specifically emphasized at the August 15, 2013, kick-off meeting, and again at the most recent public workshop on May 1, 2014.

While the study of solar integration is relatively young, especially when compared to the study of wind integration, I am aware of solar integration studies that have been conducted for other utility systems. Notable among these studies are a 2011 solar integration study for the NV Energy system, a 2012 solar integration study for Arizona Public Service ("APS"), and a 2014 solar integration study for Tucson Electric Power ("TEP"). The NV Energy study reports integration costs ranging from $3.00 to $8.00 per megawatt-hours ("MWh") of integrated solar generation. The APS study reports integration costs ranging from about $1.50 to $3.00 per MWh of integrated solar generation. The TEP study reports an integration cost of $5.20 per MWh.

Q. Does this conclude your testimony?

A. Yes.

ATTESTATION OF TESTIMONY

STATE OF IDAHO)
) ss.
County of Ada)

I, Philip B. DeVol, having been duly sworn to testify truthfully, and based upon my personal knowledge, state the following:

I am employed by Idaho Power Company as the Resource Planning Leader in the Water and Resource Planning Department and am competent to be a witness in this proceeding.

I declare under penalty of perjury of the laws of the state of Idaho that the foregoing pre-filed testimony and exhibit are true and correct to the best of my information and belief.

DATED this 13th day of May 2014.

Philip B. DeVol

SUBSCRIBED AND SWORN to before me this 13th day of May 2014.

CHRISTA S. BEARRY NOTARY PUBLIC STATE OF IDAHO

Notary Public for Idaho
Residing at: Boise, Idaho
My commission expires: 02/04/2015

BEFORE THE

IDAHO PUBLIC UTILITIES COMMISSION

CASE NO. IPC-E-14-09

IDAHO POWER COMPANY

DeVOL, DI
TESTIMONY

EXHIBIT NO. 2

Visitors

IDAHO POWER
An IDACORP Company

Date	Time In	Time Out	Name of Visitor	Person Being Visited (Please Print)	Escort–if different from person being visited (Please Print)
5/1/2014	100pm	4:43	Brian Johnson	Phil DeVol	
5/1/2014	1:09 pm	4:10	ZACK WATERMAN		
5/1/2014	1:20pm	4:24	LYNNE HAY	Phil DeVol	
5/1/2014	1:20 PM	4:24	JIM HAY	" "	
5/1/2014	1:24	4:08	Jennifer Pope	" "	
5/1/2014	1:25		DONN ENGLISH	" "	
5/1/2014	1:25		Paul Woods	" "	
5/1/2014	1:25	4:30	RICK STERLING	" "	
5/1/2014	1:25		Yao Yin	" "	
5/1/2014	1:25		Reed Burkholder	" "	
5/1/2014	1:26		ALAN HAUSRATH	" "	
5/1/2014	1:26	4:10	Dina Dubson	"	
5/1/2014	1:29	4:10	Brenda Tominaga	"	
5/1/2014	1:25	4:10	Lynn Tominaga	" "	
5/1/2014	1:28		Courtney White	" "	
5/1/2014	1:28	4:10	Jim Vogshaug	" "	
5/1/2014	1:28	4:10	John Schuyler	" "	
5/1/2014	1:29	4:10	Kelly Barker	" "	
5/1/2014	1:25	4:15	[illegible]	" "	
5/1/2014	1:29	3:50	PETE KLEINKOPF	" "	
5/1/2014	"		~~ARNOLD WEBER~~	"	
5/1/2014	1:30	4:10	BRYAN LANSPERY	"	
5/1/2014	1:30	4:10	Matt Elam	" "	
5/1/2014	1:30	4:10	Henry Ptasynski	" "	
5/1/2014	1:30		Josh VanHoff	" "	

Exhibit No. 2
Case No. IPC-E-14-09
P. DeVol, IPC
Page 1 of 2

Visitors

IDAHO POWER
An IDACORP Company

Date	Time In	Time Out	Name of Visitor	Person Being Visited (Please Print)	Escort–if different from person being visited (Please Print)
5/1/2014	1:42	4:10	John Gaston	Solar wks 2	
5/1/2014	1:55	4:37	Kurt Myers	solar mtg.	
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CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on the 13th day of May 2014 I served a true and correct copy of the DIRECT TESTIMONY OF PHILIP B. DEVOL upon the following named parties by the method indicated below, and addressed to the following:

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Christa Bearry

Christa Bearry, Legal Assistant