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RANDY B. RUSSELL, and ANDREW J. SPEER

Witnesses for Bonneville Power Administration

SUBJECT: FY 2014–2015 COST OF SERVICE ANALYSIS and RATE DESIGN CHANGES AND ADJUSTMENTS

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Section 1: Introduction and Purpose of Testimony

Q. Please state your names and qualifications.

A. My name is Peter B. Stiffler, and my qualifications are contained in BP-14-Q-BPA-59.

A. My name is Ehud B. Abadi, and my qualifications are contained in BP-14-Q-BPA-01.

A. My name is Raymond D. Bliven, and my qualifications are contained in BP-14-Q-BPA-06.

A. My name is Daniel H. Fisher, and my qualifications are contained in BP-14-Q-BPA-19.

A. My name is Randy B. Russell, and my qualifications are contained in BP-14-Q-BPA-55.

A. My name is Andrew J. Speer, and my qualifications are contained in BP-14-Q-BPA-57.

Q. Please describe the purpose of your testimony.

A. The purpose of our testimony is to sponsor section 2 of the Power Rates Study (Study), BP-14-E-BPA-01, and section 2 of the Power Rates Study Documentation (Documentation), BP-14-E-BPA-01A. We also sponsor the Rate Analysis Model (RAM) used to perform many of the calculations necessary to derive rates. This testimony addresses BPA's Cost of Service Analysis (COSA), rate directive and rate design adjustments, the computation of rates, and the modeling of BPA's rate development.

Q. Are you proposing any rate design changes in the Initial Proposal?

A. No. While we have recomputed the rates, we are not proposing changes to the basic design of rates; that is, how we collect revenues from customers remains virtually unchanged from BP-12 rates. There are some modifications to how rates are applied to customers under special circumstances detailed in the Rate Schedules testimony, Chalier *et al.*, BP-14-E-BPA-19, and Tier 2 and RSS testimony, Chalier *et al.*, BP-14-E-BPA-17.

Section 2: Demand Rate

Q. Did you use the same methodology to calculate the demand rate as was used in the BP-12 rate proceeding?

A. Yes. We used the same methodology as was used in the BP-12 Final Proposal studies.

Q. What demand rate inputs did you update for BP-14?

A. As noted in Power Rates Study section 3.1.6.3, the PF Tier 1 Demand rates are based upon the annual fixed costs (capital and O&M) of the marginal capacity resource, an LMS100 combustion turbine, as determined by the Northwest Power and Conservation Council's Microfin model 15.0.1. We updated the nominal years from FY 2012 and 2013 to FY 2014 and 2015, the Load Shaping rates, chained GDP Implicit Price Deflators, the cost of debt percentage, the start year of operation, the vintage heat rate, and the all-in nominal capital cost of the LMS100 combustion turbine.

Q. Did you update any assumptions used in the Council's Microfin model to calculate the all-in nominal capital cost of the LMS100?

A. Yes. We updated the Vintage Capital Cost escalation factor found in Microfin to reflect an updated Power Capital Costs Index forecast by Cambridge Energy Research Associates (CERA). (http://www.ihs.com/images/PCCI-lg-dec11.jpg)

Q. Why did you decide to update the Vintage Capital Cost escalation factors in Microfin?

A. We updated the Vintage Capital Cost because the updated CERA forecast is a significant shift away from the assumption that was previously used in Microfin. We agree with the updated CERA forecast, which reflects the assumption that instead of continuing on a recession-induced declining trend, power plant capital costs stopped declining in 2010 and are expected to stay constant, in real terms, going forward.

Q. Will you be applying a dampening methodology to the shape of the demand rate?

A. No. We believe that the monthly shape of the demand rate is not volatile enough to warrant the implementation of any dampening methodology.

Q. Why are the Load Shaping Rates used in shaping the demand rate and in the Resource Support Services (RSS)/Resource Shaping Charge (RSC) computations different from those input into RAM and published in the GRSPs for the Initial Proposal?

A. Load Shaping rates computed for the Initial Proposal were from two separate AURORA runs. One run, used in RAM2014 and reported in the GRSPs, computed market prices for the FY 2014–2015 period, while another run, used in computing Demand rates and RSS/RSC charges, encompassed the full FY 2013–2015 period. As with any complex model, small changes in run parameters may produce small changes in prices. For the Final Proposal, all systems will use one aligned price forecast extending for a full time horizon required by all upstream and downstream systems used in rates computations.

Section 3: Rate Development Modeling

Q. What is the Rate Analysis Model?

A. The Rate Analysis Model, known more simply as RAM, is a set of spreadsheet models that perform a series of computations necessary to compute the rates contained in the

Wholesale Power Rate Schedules and General Rate Schedule Provisions (GRSPs), BP-14-E-BPA-09. The RAM used in the BP-14 Initial Proposal consists of four distinct modules, each module being a separate spreadsheet: (1) the TRM Billing Determinants module; (2) the RSS module; (3) the Tier 2 rate module; and (4) RAM2014, the core module that performs most of the rate calculations. The modules are designed so that each can be used on a stand-alone basis without the need to have any other module open.

Section 3.1: RAM2014

Q. Please briefly describe RAM2014.

A. RAM2014 is a large Excel spreadsheet model with more than 130 worksheets that are automated with Visual Basic macros. RAM2014 is operated through a pop-up menu and explicitly shows rate results after each major ratemaking step.

Q. How does RAM2014 work?

A. A description of the methods employed by RAM2014 is included in Power Rates Study section 2. Specifically, RAM2014 is divided into three major steps: (1) the COSA Step (PRS section 2.1.1); (2) the Rate Directives Step (PRS section 2.2.1); and (3) the Rate Design Step (PRS section 2.3.1).

Q. Is RAM2014 significantly different from the RAM2012 used for the BP-12 rate case?

A. No. For the most part, the basic functionality remains the same as BP-12, although scenario modeling specific to the Residential Exchange Program (REP-12) proceeding has been removed, as well as the previous "scenario builder." The look and feel of the model is slightly altered, and some validation checks/referential mapping have been added or enhanced.

Q. What improvements have been made to RAM2014?

A. The removal of scenario builder, which never worked properly in previous releases, has increased the simplicity and tractability of the model for technical users. Additionally, lookup functions and referential functions used to aggregate costs, credits, loads, and resources have been used uniformly throughout the model to reduce the likelihood of user error. All hard-coded numbers (particularly with reference to annual and monthly/diurnal number of hours) have been removed from the model. Named table ranges have been added for all input sheets. Front-end data management, though not fully functional for use in the Initial Proposal, has been added to the model and is expected to be functional for the Final Proposal. Additionally, summary/validation sheets are added to the end of the model, which perform aggregations of costs and revenues in a similar format to those reported in the Integrated Program Review (IPR). This is primarily for internal BPA review during the ratesetting process, but also may be of use to external parties in comparing costs and revenues inputs in the Initial Proposal to those from the IPR process.

Q. What is the front-end data management, and why is not used for the Initial Proposal?

A. The front-end data management is an enhancement that integrates data from the many sources into one database that directly feeds the RAM modules. The database is not yet properly performing data retrievals from source systems. We discovered this when we computed customer net requirements using the TRM Billing Determinant module of RAM for the RHWM Process. In those calculations, it became apparent that the new database systems were delivering data at different, higher, customer net requirements than were being computed with proper implementation of the provisions of the TRM using the RAM module. Moreover, database systems developed to implement the TRM and Regional Dialogue were lagging in producing a sequenced and coordinated set of

loads and resources. Therefore, we coordinated with load and resource forecasters to develop an alternative process to deliver the correct load-resource balance that could be used for the Initial Proposal. We expect that these technical difficulties will be fully resolved for the Final Proposal. This "workaround" for the Initial Proposal is used to provide rates to parties using the best data available.

Section 3.2: The COSA and Rate Directives Steps

Q. Are there any significant changes to RAM2014 in the COSA or Rate Directives Steps?

A. No. The COSA ratemaking is entirely consistent with BP-12. The BP-14 Rate Directives Step implements the 2012 REP Settlement consistent with the BP-12 Final Proposal.

Q. Does the implantation of the REP Settlement mean that RAM2014 is no longer capable of performing the section 7(b)(2) rate test?

A. No. Although section 7(b)(2) of the Northwest Power Act is implemented pursuant to the Settlement, RAM2014 is fully functional to calculate rates and REP benefits using either a Settlement assumption or a no-Settlement assumption. RAM2014 has a pull-down toggle on the INIT worksheet that enables the user to toggle between the two REP Settlement assumptions. However, as no section 7(b)(2) study was completed for the BP-14 proceeding, data necessary to support a no-Settlement calculation of rates are not included in RAM2014.

Section 3.3: Rate Design Step Changes and Adjustments

Q. Has the modeling of the Low Density Discount (LDD) and the Irrigation Rate Discount (IRD) in RAM2014 changed from the BP-12 rate proceeding?

A. No. For the most part, modeling of LDD and IRD program costs is consistent with BP-12. However, one input to the calculation – the re-computation of "Slice as Load Following customer" billing determinants – was not completed for the Initial Proposal. BP-12 Final Proposal numbers for FY 2012–2013 are assumed for the FY 2014–2015 period. However, the forecast for "Slice as Load Following" billing determinants, used only for LDD computations, will be completed and included in the BP-14 Final Proposal. We do not expect this to noticeably change rates.

Q. Are there any other changes to modeling of rates for BP-14?

A. Yes. Although not applicable in the BP-12 proceeding, an adjustment for the impact on anticipated augmentation costs due to changes in the forecast size of the Tier 1 system between the RHWM Process (upon which the Slice right to power is based) and the 7(i) process (during which rates are set) was incorporated in RAM2014. RAM2014 independently computes the rate case equivalent of Tier 1 System Firm Critical Output (T1SFCO), using disaggregated loads and resources inputs from the Loads and Resources Study, BP-14-E-BPA-03. The T1SFCO from the RHWM Process is then compared to the rate case T1SFCO. The delta is valued at the system augmentation price. Pursuant to section 3.3 of the TRM, if the Tier 1 system is larger, the Non-Slice cost pool receives a credit for the additional energy not anticipated in the RHWM Process; conversely, if the Tier 1 system gets smaller, the Non-Slice cost pool will be charged for the additional augmentation purchases necessary to achieve load-resource balance. We have designated this cost as "balancing augmentation" to distinguish it from balancing power purchases

that are also included in the Non-Slice cost pool and from system augmentation that is included in the Composite cost pool.

Section 3.4: Known Modeling Changes

Q. Given current knowledge, will changes to the RAM2014 used in the Initial Proposal be necessary before it is used for the Final Proposal?

A. Yes. We anticipate that for the Final Proposal all systems designed to support front-end data management and back-end rates data storage will be fully operational. This may require some table-naming convention changes, Visual Basic adjustments, and/or unknown modifications necessary to comport with upstream and downstream technical requirements. However, basic modeling approaches, layout, and design are expected to remain the same between the Initial and Final Proposals. None of the data management features affect the calculation of rates.

Q. Are there any other changes expected?

A. Yes. Before publishing the Initial Proposal, it was discovered that some Bureau of Reclamation load was inadvertently included in Consolidated Irrigation District total retail load forecast. Unfortunately, this error occurred in the RHWM Process, but because it was not noticed prior to the close of comment, Consolidated's TRL forecast and associated Above RHWM Load are too high. BPA cannot now change Consolidated's Above RHWM Load for FY 2014–2015. However, because Consolidated's Above RHWM Load, which includes some Bureau load, is less than 1 aMW, it is modeled to be served at the Load Shaping Rate. This results in slightly more forecast revenue from Load Shaping rates than is warranted by Consolidated's own load. However, when Consolidated's power bills are prepared, metered load actuals will

be adjusted to remove the Bureau loads, and Consolidated will be charged for only its own load. Although BPA cannot change Consolidated's Above-RHWM Load established in the RHWM Process, we are attempting to remove the Bureau load from the TRL forecast by the Final Proposal.

Q. Does inclusion of the load forecasting error in the Initial Proposal bias rates?

A. Combined, the Bureau and Consolidated's total load is less than 1 aMW. This very small load, relative to the total requirements loads on Bonneville, does not materially affect the rate computations for the Initial Proposal. However, while the magnitude of the error on overall ratemaking is tiny, the effects on Consolidated could have been significant if the Bureau load had exposed Consolidated to the Tier 2 rate.

Section 4: Average System Costs (ASCs) and Exchange Loads

Q. Compared to the BP-12 proceeding, are there any changes to the method or manner in which BPA is forecasting ASCs or Exchange Loads in this proceeding?

A. No. As described in the policy testimony, Bliven *et al.*, BP-14-E-BPA-11, and as further described in Power Rates Study chapters 2 and 8, the calculations required to determine ASCs, Exchange Load, and ultimately REP benefits have been implemented in accordance with the terms of the 2012 REP Settlement.

Q. Could the rate period ASCs for FY 2014–2015 used in RAM2014 be revised for the Final Proposal?

A. Yes. We anticipate that the FY 2014–2015 ASC Review Processes will be concluded prior to the Final Proposal. Concurrent with the Final Proposal, the Administrator or his designee will issue a Final ASC Report for each utility that participated in the FY 2014–2015 ASC Review Process. Each Final ASC Report will contain a final Base Period

ASC (calendar year 2011) and one or more final rate period ASCs for FY 2014–2015. For ratesetting purposes, we will include in the Final Proposal the ASCs from the Final ASC Reports that are applicable on October 1, 2013. Final reports for each utility will be published on BPA's REP Web site: http://www.bpa.gov/.

Q. Are you aware of any changes to the ASCs used in the Initial Proposal?

A. Yes, there is one. Puget Sound Energy (PSE) has two new resources scheduled to come online prior to the start of the rate period. For the Initial Proposal, we assumed the resources would come online separately, March 2012 and July 2012, resulting in two separate changes to PSE's rate period ASC. This resulted in a rate period ASC of $76.80/MWh for PSE for the Initial Proposal. In the ASC Review Process, however, PSE requested that the two resources be grouped together as a single resource, which will result in a single change to PSE's ASC on July 2012. This change results in a rate period ASC of $76.84/MWh, or 4 cents higher. For PSE's Final ASC Report, BPA will group the two resources together as a single resource. The Final Proposal will be consistent with PSE's Final ASC Report.

Q. Does this conclude your testimony?

A. Yes.