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TESTIMONY OF  
WILLIAM DOUBLEDAY, BYRON KEEP, PAUL KAPTUR, AND RON HOMENICK  
Witnesses for Bonneville Power Administration

**SUBJECT: Cost of Service Analysis and Rate Design Changes and Adjustments**

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1 TESTIMONY OF

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3 Witnesses for Bonneville Power Administration

4  
5 **SUBJECT: COST OF SERVICE ANALYSIS AND RATE DESIGN CHANGES AND**  
6 **ADJUSTMENTS**

7 **Section 1: Introduction and Purpose of Testimony**

8 *Q. Please state your names and qualifications.*

9 A. My name is William Doubleday and my qualifications are contained in WP-02-Q-BPA-17.

10 A. My name is Byron Keep and my qualifications are contained in WP-02-Q-BPA-34.

11 A. My name is Paul Kaptur and my qualifications are contained in WP-02-Q-BPA-33.

12 A. My name is Ron Homenick and my qualifications are contained in WP-02-Q-BPA-30.

13 *Q. Please describe the purpose of your testimony.*

14 A. The purpose of our testimony is to sponsor BPA's Wholesale Power Rate Development  
15 Study (WPRDS), WP-02-E-BPA-05. This testimony addresses BPA's Cost of Service  
16 Analysis (COSA), rate design adjustments, and the modeling of BPA's rate development.

17 *Q. How is your testimony organized?*

18 A. Our testimony is organized in four sections. Section 1 outlines the purpose of our  
19 testimony. Section 2 describes BPA's COSA, including subsections on the Program Case  
20 and the 7(b)(2) Case, and changes to BPA's Rate Analysis Model (RAM) COSA logic.  
21 Section 3 describes changes to BPA's rate design and ratemaking adjustments, with  
22 subsections on: (a) changes in Residential Exchange resource cost treatment; (b) changes  
23 in energy charge design; (c) changes in demand charge design; (d) modeling the load  
24 variance charge; (e) modeling the unauthorized increase charges and the excess factoring  
25 charge; (f) modeling the Low Density Discount (LDD); (g) modeling the Conservation  
26 and Renewables Discount; and (h) modeling rate mitigation for customers with seasonal

1 loads. Section 4 describes the modeling of BPA's rate development, with subsections on:  
2 (a) modeling the Rate Design Step (to determine the New Resources (NR-02) rate and  
3 PF Exchange Program (PF-02) rate); (b) modeling the Subscription Step to determine the  
4 PF Preference (PF-02) rate, the PF Exchange Subscription (PF-02) rate, the Residential  
5 Load (RL-02) rate, and the Industrial Firm Power (IP-02) rate); (c) modeling stepped  
6 rates; and (d) modeling the Slice product cost.

7 **Section 2: Cost of Service Analysis (COSA)**

8 **a. Program Case and 7(b)(2) Case**

9 *Q. What are the Program Case and the 7(b)(2) Case?*

10 A. The section 7(b)(2) rate test involves the projection and comparison of two sets of  
11 wholesale power rates for the general requirements loads of BPA's public body,  
12 cooperative, and Federal agency customers. *See* Section 7(b)(2) Rate Test Study,  
13 WP-02-E-BPA-06. The two sets of rates are: (1) a set for the rate filing test period  
14 (FY 2002-2006) and the ensuing four years (FY 2007-2010) assuming that  
15 section 7(b)(2) of the Northwest Power Act is not in effect (Program Case rates); and  
16 (2) a set for the same period taking into account the five assumptions listed in  
17 section 7(b)(2) (7(b)(2) Case rates. The 7(b)(2) Case Rate are modeled exactly the same  
18 as the Program Case rates except for the five assumptions listed in section 7(b)(2).

19 *Q. How were generation revenue requirements assigned to the resource pools in the Cost of  
20 Service Analysis (COSA)?*

21 A. Consistent with past practice, costs were assigned to the resource pools primarily by  
22 direct identification and consistent with the rate development requirements of the  
23 Northwest Power Act. Exceptions are net interest expenses and planned net revenues,  
24 which were first split between conservation and the remainder of generation by the use of  
25 equivalent annual costs (annual mortgage-type payments). The generation portions were  
26

1 then divided between Federal Base System (FBS) Hydro, Fish and Wildlife, and BPA  
2 generation programs based on average net investment.

3 *Q. Is the assignment of generation revenue requirements to the resource pools reflected in*  
4 *the Program Case and 7(b)(2) Case?*

5 A. Yes. The assignment of generation revenue requirements to the resource pools is  
6 reflected in the Program Case revenue requirements for all years of the 7(b)(2) rate test  
7 (FY 2002–2010) and in the 7(b)(2) Case revenue requirements for all years of the  
8 7(b)(2) rate test (FY 2002–2010).

9 *Q. Were the 7(b)(2) Case revenue requirements developed on the same basis as in previous*  
10 *rate cases?*

11 A. Yes. The 7(b)(2) Case revenue requirements reflect the Program Case revenue  
12 requirements with the required exclusions of costs associated with the Residential  
13 Exchange Program (or any related settlements thereof), energy conservation, and the  
14 resources acquired under the authority of the Northwest Power Act. Repayment studies  
15 for the 7(b)(2) Case revenue requirements also exclude those costs.

16 *Q. How was risk mitigation addressed in Program Case revenue requirements?*

17 A. During the FY 2002-2006 rate period, Program Case revenue requirements include  
18 \$127 million per year of Planned Net Revenues for Risk (PNRR) in addition to the funds  
19 provided by the difference between noncash expenses included in revenue requirements  
20 and the cash requirements for amortization of bonds and appropriations and irrigation  
21 assistance. For the first time in the Program Case generation revenue requirements, there  
22 are years in which net revenues are necessary in addition to risk mitigation to satisfy cash  
23 requirements for planned amortization and irrigation assistance payments  
24 (FY 2005–2007). *See* WPRDS Documentation, WP-02-E-BPA-05A, Section 2.2,  
25 Table COSA06.

26

1 Q. How did BPA determine PNRR in the COSA tables of the Rate Analysis Model (RAM)?

2 A. The PNRR value found in the COSA06 tables is the result of an iterative process between  
3 the RAM, the RiskMod model, and the ToolKit model (including the NORM model  
4 results). The iteration is initiated with a seed value for PNRR in COSA06 of the RAM.  
5 The resultant rates and revenue requirement data are used in RiskMod to produce  
6 probability distributions. These distributions are then used in the ToolKit to produce a  
7 new PNRR value and annual ending cash reserve amounts for new COSA06 tables. The  
8 iterations are complete when the difference between the new PNRR value and the  
9 previously calculated value is less than \$1 million per year.

10 Q. During the iteration process mentioned above, which rates from the RAM are used in the  
11 RiskMod?

12 A. The RAM produces rates in its Rate Design Step and in its Subscription Strategy Step.  
13 These two major rate calculation steps are more fully discussed in section 4 of this  
14 testimony. A PNRR iterative process is done for both the Rate Design Step and the  
15 Subscription Strategy Step. In the Rate Design Step, PF Preference and IP rates  
16 calculated in that step are sent to the RiskMod model along with adjusted Rate Design  
17 Step revenue requirement amounts for each of the five rate period years. The iterations  
18 proceed until a Rate Design Step PNRR converges to a solution. At this point, the  
19 Subscription Strategy Step rates (PF Preference, IP + IPTAC, and RL) and an adjusted  
20 Subscription Strategy Step revenue requirement with amounts for each of the five rate  
21 period years are sent to the RiskMod model. The iterations proceed until the  
22 Subscription Strategy Step PNRR converges to a solution. For the initial proposal, the  
23 Rate Design Step PNRR converged at \$125 million per year and the Subscription  
24 Strategy Step added \$2 million to yield a total PNRR of \$127 million per year. For  
25 additional RiskMod, NORM, and ToolKit information, *see* Conger, *et al.*,  
26 WP-02-E-BPA-15, and Lovell, *et al.*, WP-02-E-BPA-14.

1 Q. *How are the revenue requirement amounts used in the RAM adjusted for use in the*  
2 *RiskMod?*

3 A. The annual revenue requirements used in the RAM are adjusted for use in the RiskMod  
4 for both the Rate Design Step and the Subscription Strategy Step. The two models treat  
5 some cost and revenue data differently and the adjustments to the RAM revenue  
6 requirement are necessary in order to get a close calibration between the models. In the  
7 adjusted Rate Design Step revenue requirement for the RiskMod, the net cost of the  
8 Residential Exchange Program is used rather than the gross cost that is used in the RAM.  
9 The RiskMod calculates its own balancing purchase power costs. Therefore, the RAM  
10 revenue requirement is reduced by the amount of balancing purchase power costs. In  
11 addition, a small transmission expense credit found in the RAM is treated as a reduction  
12 of revenues in the RiskMod and therefore is taken out of the RAM revenue requirement  
13 for the RiskMod.

14 The adjusted Subscription Strategy Step RAM revenue requirement for the  
15 RiskMod has those adjustments discussed above, plus other adjustments specific to the  
16 Subscription Strategy. The net cost of the Residential Exchange Program is replaced  
17 with the cost of the IOU Subscription settlement of the Residential Exchange Program.  
18 The cost of DSI-specific power purchases is an additional cost for the Subscription  
19 Strategy revenue requirement. Finally, the Rate Design Step PNRR is a reduction in the  
20 Subscription Strategy Step RAM revenue requirement in order for the RiskMod to model  
21 the probability distributions.

22 Q. *How was risk mitigation addressed in the 7(b)(2) Case revenue requirements?*

23 A. As in previous rate cases, the 7(b)(2) Case revenue requirements reflect the same  
24 treatment of risk mitigation as in the Program Case. During the FY 2002–2006 rate  
25 period, the 7(b)(2) Case revenue requirements produce annual cash flows that are  
26 identical to those of the Program Case revenue requirements. In the outyears, the

1 7(b)(2) Case revenue requirements are based on total expenses and any net revenues  
2 needed to satisfy cash requirements for amortization and irrigation assistance payments,  
3 just as in the Program Case revenue requirements.

4 *Q. What is the purpose of the COSA section in the RAM?*

5 A. The COSA allocates the test period generation revenue requirements that are determined  
6 in the Revenue Requirement Study, WP-02-E-BPA-02, to BPA's customer classes. The  
7 COSA apportions or "allocates" the test period generation revenue requirements among  
8 classes of service based on the principle of cost causation. The relative use of resources,  
9 services, or facilities among customer classes is identified, and costs generally are  
10 allocated to customer classes in proportion to each class's use. Cost allocation also is  
11 based on the priorities of service from resource pools to rate pools provided in section 7  
12 of the Northwest Power Act.

13 **b. Changes to RAM COSA Logic**

14 *Q. Have changes been made to the Cost of Service Analysis (COSA) section of the RAM for*  
15 *this rate case?*

16 A. Yes. The changes are as follows: (1) in the current rate case, nine years of cost  
17 information is included in the COSA tables; (2) a line item for System Augmentation is  
18 added to the FBS resource costs; (3) a table showing the functionalization and  
19 classification of gross Residential Exchange Program costs is added (COSA 07); (4) a  
20 table showing functionalized and classified revenue credits is added (COSA 09); and  
21 (5) a table showing Power Business Line (PBL) transmission services costs, revenues,  
22 and credits is added (COSA 10).

23 *Q. Why are nine years of cost data included in the current COSA?*

24 A. The RAM that is used to model the five-year rate period and calculate the posted  
25 five-year average rates is also used to calculate Program Case rates in the 7(b)(2) rate  
26 test. The 7(b)(2) rate test period is the five-year rate period plus the ensuing four years.

1 The RAM can calculate rates for each individual year for the 7(b)(2) rate test and can also  
2 calculate average rates for the five-year rate period.

3 *Q. Why has BPA added System Augmentation as a line item under FBS resources?*

4 A. BPA has assumed that it will need to increase its power inventory to meet its customers'  
5 Subscription purchases. The power added to the inventory is defined as FBS  
6 replacements and enables BPA to achieve load/resource balance on an annual basis. The  
7 cost of the purchased power is treated as part of the total cost of FBS resources for  
8 ratemaking purposes.

9 *Q. Why is the cost of the Residential Exchange Program functionalized and classified at this  
10 point in the COSA?*

11 A. In the COSA, the gross Residential Exchange Program cost is based on exchanging  
12 utilities' average system costs (ASC) and the amount of their exchangeable loads. An  
13 ASC includes the cost of power, transmission, and unbundled services associated with  
14 serving an exchanging utility's exchangeable load. The rate design adjustments that  
15 follow the COSA in the RAM, and that use the results of the COSA, are performed on  
16 that portion of the revenue requirement classified to energy. Consequently, the  
17 Residential Exchange Program cost, which comes into the COSA with energy costs,  
18 capacity costs, transmission costs, and load variance costs included, must be  
19 functionalized to generation and then classified to energy. The transmission costs, as  
20 well as the load variance costs included in the gross Residential Exchange Program cost,  
21 that come into the COSA are removed. In this way, Residential Exchange Program costs  
22 are made to comport with all other PBL costs as they go through the rate design  
23 adjustment process. *See* WPRDS Documentation, WP-02-E-BPA-05A, Section 2.2,  
24 Table COSA 07.

1 *Q. Why has BPA added a table showing functionalized revenue credits?*

2 A. The table showing functionalized revenue requirements (COSA 09) lists revenue credits  
3 that were included in BPA's 1996 rate case as unlabeled adjustments in the COSA 06  
4 tables. The COSA 09 table identifies the revenue credits clearly and individually by year.  
5 These revenue credits are functionalized to generation and classified to energy. They  
6 have the effect of reducing the FBS resource costs to be recovered by BPA's power rates.  
7 *See WPRDS Documentation, WP-02-E-BPA-05A, Section 2.2, Table COSA 09.*

8 *Q. Why has BPA added a table showing Power Business Line (PBL) transmission services*  
9 *costs, revenues and credits?*

10 A. With the separation of BPA's PBL and Transmission Business Line (TBL) came the need  
11 to recognize the inter-business line transactions and their effect on PBL's posted rates.  
12 The COSA10 table shows the costs, revenues and credits associated with these inter-  
13 business line transactions and calculates the net costs. In this rate case the net cost is  
14 negative. The resulting net revenue is credited to FBS energy costs. *See WPRDS*  
15 *Documentation, WP-02-E-BPA-05A, Section 2.2, Table COSA 10.*

16 **Section 3: Rate Design Changes and Adjustments**

17 **a. Changes to Exchange Resource Cost Treatment**

18 *Q. Please describe the changes made to the 1996 RAM rate design methodology due to*  
19 *changes in the treatment of Residential Exchange Program resource costs.*

20 A. The Federal Transmission Reallocation Adjustment Table (COSA 16) and the Federal  
21 Unbundled Reallocation Adjustment Table (COSA 16a), are no longer necessary and are  
22 not used in the calculation of posted rates.

23 *Q. Why is the Federal Transmission Reallocation Adjustment no longer needed?*

24 A. Prior to BPA's 1996 rate case, a portion of the gross cost of the Residential Exchange  
25 Program was functionalized to transmission. In the 1996 rate case, Residential Exchange  
26 Program costs were not functionalized between generation and transmission, but instead

1 were allocated as generation costs. However, the allocated gross exchange costs actually  
2 contained a component that was related to transmission. Classes of service that were  
3 allocated both Residential Exchange Program resource costs and Federal resource costs  
4 may have received multiple allocations of transmission costs. The Federal Transmission  
5 Reallocation Adjustment Table (COSA 16) was used to avoid this multiple allocation of  
6 transmission costs. In the current rate case, exchange transmission costs are subtracted  
7 from the gross exchange costs in the COSA section of RAM before generation resource  
8 costs are allocated to customer classes. The exchange transmission costs are added back  
9 in after the Rate Design section of RAM to calculate the average PF Exchange Program  
10 rate at the very end of the ratemaking process. *See WPRDS Documentation,*  
11 *WP-02-E-BPA-05A, Section 2.3, Table RDS36.* This “functionalization” of gross  
12 exchange costs in COSA renders the Federal Transmission Reallocation Adjustment  
13 Table superfluous.

14 *Q. Why is the Federal Unbundled Reallocation Adjustment no longer needed?*

15 *A.* This adjustment, used in BPA’s 1996 rate case, is analogous to the Federal Transmission  
16 Reallocation Adjustment discussed above. The cost of load variance is assumed to be  
17 included in the ASCs of the exchanging utilities. In 1996, classes of service that were  
18 allocated both Residential Exchange Program resource costs and Federal resource costs  
19 may have received multiple allocations of load variance costs. The Federal Unbundled  
20 Reallocation Adjustment Table (COSA 16A) was used to avoid this multiple allocation of  
21 load variance costs. In the current rate case, after the functionalization of the gross  
22 Residential Exchange Program costs to generation costs, those costs are further classified  
23 to power by subtracting the cost of unbundled services before continuing through the  
24 model’s calculations. The unbundled services costs are added back in after the Rate  
25 Design section of RAM to calculate the average PF Exchange Program rate at the very  
26 end of the ratemaking process. *See WPRDS Documentation, WP-02-E-BPA-05A,*

1 Section 2.3, Table RDS 36. This “classification” in COSA renders the Federal  
2 Unbundled Reallocation Adjustment Table superfluous.

3 **b. Changes in Energy Charge Design**

4 *Q. Please describe the changes made to the RAM to reflect the proposed changes in energy*  
5 *charge design.*

6 A. In 1996, the RAM seasonally differentiated energy charges to 6 seasons. The current  
7 RAM model seasonally differentiates energy charges to the 12 months in the year.  
8 *See Keep, et al., WP-02-E-BPA-17.*

9 **c. Changes in Demand Charge Design**

10 *Q. Please describe the changes made to the RAM to reflect the proposed changes in demand*  
11 *charge design.*

12 A. In BPA’s 1996 rate case, the demand charge was a set amount for all months. In the  
13 current rate case, the demand charge is seasonally differentiated for each month in a  
14 manner similar to the energy charges. *See Keep, et al., WP-02-E-BPA-17.*

15 **d. Modeling the Load Variance Charge**

16 *Q. How is the Load Variance Charge modeled in the RAM?*

17 A. The Load Variance Charge is modeled in the same way that the Load Shaping Charge  
18 was modeled in BPA’s 1996 rate case. The forecasted revenues expected from the Load  
19 Variance Charge are credited to the generation revenue requirement as part of the  
20 classification of costs to energy.

21 **e. Modeling the Unauthorized Increase Charges and the Excess Factoring**  
22 **Charges**

23 *Q. How are the Unauthorized Increase Charges and the Excess Factoring Charges modeled*  
24 *in the RAM?*

25 A. These charges are not modeled in the RAM because BPA does not anticipate any  
26 revenues from these charges.

1           **f.       Modeling the Low Density Discount (LDD)**

2    *Q.       How is the LDD modeled in the RAM?*

3    A.       In order to avoid adverse impacts on retail rates of BPA's purchasers with low system  
4            densities, BPA applies the LDD, to the extent appropriate, to BPA's rates for such  
5            purchasers. These rates include the PF Preference rate, the PF Exchange Program rate,  
6            the PF Exchange Subscription rate, the Residential Load (RL-02) rate and the New  
7            Resources (NR-02) rate. While the LDD may apply to sales under these rate schedules,  
8            BPA does not forecast any purchasers eligible for the LDD except within the PF  
9            Preference rate class. Therefore, the costs and the benefits associated with the LDD are  
10           limited to the PF Preference rate class. In the RAM, the costs associated with the LDD  
11           are added to the revenues to be collected by energy in the Rate Schedule Charge  
12           Calculation Table for the PF Preference rate at the very end of the ratemaking process.  
13           *See* WPRDS Documentation, WP-02-E-BPA-05A, Section 2.3, Table RDS 35. In this  
14           way, the costs and benefits of the LDD stay within the PF Preference rate class. This  
15           methodology is a departure from the way BPA had previously modeled the LDD.

16   *Q.       Why did BPA change the way the LDD is modeled?*

17   A.       In previous rate cases, BPA made an adjustment to the billing determinants of customer  
18            rate pools that were expected to be eligible for the LDD. In this way, the lowered billing  
19            determinants would result in slightly higher calculated rates. Those rates would enable  
20            BPA to collect the extra cost of providing the LDD. In the current rate case, BPA is  
21            offering a Slice product. The cost of this product is charged on the basis of a dollar  
22            charge per percent of the Federal system per month, not a traditional rate of mills per  
23            killawatthour. Therefore the LDD costs must be part of the PBL's revenue requirement  
24            in order for the purchasers of the Slice product to pay their fair share of the costs of the  
25            LDD.

1 **g. Modeling the Conservation and Renewables Discount**

2 *Q. How was the Conservation and Renewables Discount (C&R Discount) modeled in the*  
3 *RAM?*

4 A. The C&R Discount is available to customers that purchase power under the  
5 PF Preference, PF Exchange Subscription, IP-02, NR-02, and RL-02 rate schedules.  
6 The costs associated with the C&R Discount are added to the revenues to be collected by  
7 energy for the applicable rates in the individual Rate Schedule Charge Calculation Tables  
8 at the very end of the ratemaking process. *See* WPRDS Documentation,  
9 WP-02-E-BPA-05A, Section 2.3, Tables RDS 35, RDS 51, RDS 52 and Section 2.4,  
10 Tables SUBSCR 02, SUBSCR 04, SUBSCR 06, SUBSCR 07.

11 *Q. Why were the C&R Discount costs added after the rate design adjustments and toward*  
12 *the end of the RAM, rather than being added to the generation revenue requirement in*  
13 *the COSA section at the beginning of the RAM?*

14 A Customers purchasing power under the PF Preference, PF Exchange Subscription, IP-02,  
15 RL-02, and NR-02 rate schedules will be eligible for a 0.5 mill/kWh C&R Discount. The  
16 energy charges for these rate schedules must reflect the cost of BPA's obligation to  
17 provide this discount to customers purchasing power under these rate schedules. If the  
18 generation revenue requirement used in COSA had been increased by an amount equal to  
19 the total sales forecasts for PF Preference, PF Exchange Subscription, IP-02, RL-02, and  
20 NR-02 times the 0.5 mill/kWh C&R Discount cost, the ensuing rates would have covered  
21 the cost of the C&R Discount in total. However, the ratemaking adjustments, including  
22 those provided in section 7(b)(2) and section 7(c) of the Northwest Power Act, would  
23 likely have resulted in an allocation of C&R Discount costs that did not equal the  
24 expected C&R Discount payout for each customer group. By adding the cost of the  
25 C&R Discount individually to each rate pool after the ratemaking adjustments in the  
26 RAM, the matching of costs with the discount obligation amount is assured.

1 *Q Does the C&R Discount apply to the PF Exchange Program rate?*

2 A. No. The C&R Discount does not apply to the PF Exchange Program rate. The  
3 PF Exchange Program rate is compared with exchanging utilities' ASCs in the  
4 calculation of Residential Exchange Program benefits paid by BPA to exchanging  
5 utilities. This calculation of benefits assumes similar cost components for both the  
6 PF Exchange Program rate and the exchanging utilities' ASCs. Both have most of the  
7 costs of providing a power product to residential and small farm customers, including the  
8 costs of conventional programmatic conservation. However, BPA's C&R Discount is not  
9 a resource acquisition conservation program and there are no analogous costs in the  
10 exchanging utilities' ASCs. *See Esvelt, et al., WP-02-E-BPA-33.* Therefore, costs  
11 associated with the C&R Discount are not added to the PF Exchange Program rate.

12 In any event, had BPA added C&R Discount costs to the PF Exchange Program  
13 rate and made the C&R Discount available under the PF Exchange Program rate, the  
14 Residential Exchange Program benefits paid by BPA to the exchanging utilities would  
15 not change. The PF Exchange Program rate would have been 0.5 mill higher and the  
16 C&R Discount would have removed 0.5 mill from that higher rate before calculation of  
17 the Residential Exchange Program benefits.

18 *Q How is the C&R Discount for the IP-02 rate affected by the DSI Floor rate?*

19 A. The rate charged to IP-02 customers cannot be lower than the DSI Floor rate. Therefore,  
20 the C&R Discount cannot be used to lower the price paid by IP-02 customers below the  
21 DSI Floor rate. In the RAM, if the Subscription Step IP-02 rate is calculated to be at the  
22 DSI Floor, the C&R Discount costs are not added to the calculation of the IP-02 rate. If,  
23 under those circumstances, the C&R Discount costs are not included in the rate, the C&R  
24 Discount will not be available to the IP-02 rate class.

1 *Q. How does the use of the IP Targeted Adjustment Charges (IP TACs) affect the*  
2 *application of the C&R Discount to the IP-02 rate?*

3 A. Under BPA's proposed service to the DSIs, the DSIs would purchase power under an  
4 IP-02 rate schedule that includes IP TACs for all power sales. These IP TACs are added  
5 to the base rate to yield rates of 23.0 mills/kWh and 24.5 mills/kWh, without the  
6 C&R Discount costs added. These rates are well above the DSI Floor rate. Therefore,  
7 DSI customers purchasing power under this rate schedule are eligible for the  
8 C&R Discount. The average IP rates, including the IP TACs, with the C&R Discount  
9 costs added, are 23.5 mills/kWh and 25.0 mills/kWh. *See* WPRDS Documentation,  
10 WP-02-E-BPA-05A, Section 2.4, Tables SUBSCR 06, SUBSCR 07. When the  
11 C&R Discount is implemented, the 23.5 mills/kWh and 25.0 mills/kWh rates become  
12 23.0 mills/kWh and 24.5 mills/kWh.

13 **h. Modeling Rate Mitigation for Customers with Seasonal Loads**

14 *Q. How is Seasonal and Irrigation Rate Mitigation modeled in the RAM?*

15 A. Rate Mitigation is targeted to PF Preference rate class customers with heavy summer  
16 seasonal loads that face adverse rate impacts from BPA's new rate design. The costs and  
17 the benefits associated with this rate mitigation are limited to the PF Preference class. In  
18 the RAM, the costs associated with the Rate Mitigation are added to the revenues to be  
19 collected by energy in the Rate Schedule Charge Calculation Table for the PF Preference  
20 rate at the end of the ratemaking process. In this way, the costs and benefits of this rate  
21 mitigation scheme stay within the PF Preference rate class. *See* WPRDS Documentation,  
22 WP-02-E-BPA-05A, Section 2.3, Table RDS 35.

23 **Section 4: Rate Development Modeling**

24 *Q. Have changes been made to BPA's rate development modeling for this rate case?*

25 A. Yes. In order to establish rates that reflect BPA's Subscription Strategy, changes and  
26 additions were made to the RAM. Care was taken to ensure that these changes and

1 additions comport with BPA's governing statutes. The RAM calculates posted rates for  
2 the five-year rate period in a two-step process. The first step, the Rate Design Step, uses  
3 the same ratemaking methodology used in BPA's 1996 rate case. The second step, the  
4 Subscription Step, takes the results of the Rate Design Step and applies Subscription  
5 Strategy-based logic to produce rates for Subscription sales.

6 **a. Rate Design Step**

7 *Q. Please briefly describe the Rate Design Step in the RAM.*

8 A. The Rate Design Step in the RAM follows BPA's rate directives by determining the costs  
9 associated with the three resource pools (FBS resources, Residential Exchange Program  
10 resources, and new resources) used to serve firm load, and then allocating those costs to  
11 the rate pools (PF, IP, and NR). This cost allocation to rate pools takes place in the  
12 COSA section of the RAM. After the initial allocation of costs, the Northwest Power Act  
13 requires that some rate adjustments be made, such as those described in section 7(b) and  
14 section 7(c) of the Act. The RAM performs these rate adjustments in its Rate Design  
15 Study (RDS) section. The RDS section of the RAM concludes with the calculation of  
16 Rate Design Step rates.

17 *Q. Has the calculation of gross Residential Exchange Program resource costs changed in  
18 this rate case?*

19 A. Yes. A new spreadsheet-based model (RESEXRAM) is now used to calculate the gross  
20 cost of Residential Exchange Program resources. This model iterates with the RAM  
21 model twice. In the first iteration, the gross cost of Residential Exchange Program  
22 resources is established and adjustments are made to the values already in the COSA  
23 tables. An unbifurcated PF rate with PF Preference and PF Exchange loads is then  
24 calculated and the 7(b)(2) rate test is conducted. A second iteration between the  
25 RAM-prog model and RESEXRAM is conducted using the 7(b)(2) trigger amount from  
26 the 7(b)(2) rate test. This iteration determines the level of the PF Exchange Program rate

1 and the amount of net Residential Exchange Program costs to be recovered by  
2 non-PF Exchange Program rate pools.

3 *Q. If BPA expects parties to purchase power as described in BPA's Subscription Strategy,*  
4 *why is a Rate Design Step included in the RAM?*

5 A. BPA's Subscription Strategy contains alternative ways in which BPA may sell power to  
6 its customers. For example, the Subscription Strategy proposes to offer a settlement of  
7 the Residential Exchange Program to the region's IOUs, comprised of power sales and  
8 monetary payments. BPA must establish rates for such sales. If, however, a settlement is  
9 not reached, the IOUs would continue participation in the Residential Exchange Program  
10 and BPA must have a rate to apply to that Program. That rate is the PF Exchange  
11 Program rate calculated in the Rate Design step of the RAM.

12 *Q. Which rates are established in the Rate Design Step in the RAM?*

13 A. The NR-02 rate and the PF Exchange Program rate are established in the Rate Design  
14 Step. The NR-02 rate and the PF Exchange Program rate are discussed in greater detail  
15 in the testimony of Leathley, *et al.*, WP-02-E-BPA-19.

16 **b. Subscription Step**

17 *Q. Please briefly describe the Subscription Step in the RAM.*

18 A. The RAM includes a Subscription Step section to calculate posted rates for the power  
19 sales envisioned in BPA's Subscription Strategy. The Subscription Step section takes the  
20 results of the Rate Design Step and adjusts them by the added credits and costs associated  
21 with BPA's Subscription Strategy policies.

22 *Q. Which rates are established in the Subscription Step in the RAM?*

23 A. The PF Preference rate, the PF Exchange Subscription rate, the RL-02 rate and the  
24 IP-02 rate are established in the Subscription Step. The PF Exchange Subscription rate  
25 and the RL-02 rate are discussed in greater detail in the testimony of Leathley, *et al.*,  
26

1 WP-02-E-BPA-19. The IP-02 rate is discussed in greater detail in the testimony of  
2 Ebberts, *et al.*, WP-02-E-BPA-22. and Berwager, *et al.*, WP-02-E-BPA-09.

3 *Q. What are the specific Subscription Strategy costs and credits that are allocated to*  
4 *develop the Subscription Step rates?*

5 A. The Subscription Strategy-related cost is the cost of the monetary benefits to the IOUs  
6 associated with the proposed settlement of the Residential Exchange Program. The  
7 Subscription Strategy-related credit is the cost savings associated with the settlement of  
8 the Residential Exchange Program.

9 *Q. What are the monetary benefits associated with the settlement of the Residential*  
10 *Exchange Program?*

11 A. The Subscription Strategy assumes that regional IOUs will choose to settle the  
12 Residential Exchange Program through the receipt of power and monetary benefits rather  
13 than continue their participation in the Program. Under Subscription, the IOUs would be  
14 offered the equivalent of 1,800 average megawatts (aMW) of benefits priced at the RL-02  
15 or PF Exchange Subscription rate. BPA would offer a minimum of 1,000 aMW in actual  
16 power sold at the RL-02 rate or the PF Exchange Subscription rate. The remainder,  
17 800 aMW, would be either a power sale or a cash payment depending on which is more  
18 cost-effective for BPA. The monetary component of the settlement would be based on  
19 the difference between BPA's rate case forecast of the cost of a five-year flat block  
20 product and the RL-02 rate or the PF Exchange Subscription rate. It is this cash payment  
21 that is allocated during the development of the Subscription Strategy rates. *See Oliver*  
22 *et al.*, WP-02-E-BPA-20.

23 *Q. In the RAM, how are the Residential Exchange Program settlement costs allocated in the*  
24 *development of the Subscription Strategy rates?*

25 A. The RAM equitably allocates the cost, a cost not otherwise allocated under section 7 of  
26 the Northwest Power Act, of the cash payment associated with the 800 aMW portion of

1 the proposed settlement between the PF Preference class and the RL-02 class. The effect  
2 of this adjustment is to equate the two rates. This initial allocation of costs is consistent  
3 with the Subscription Strategy's expectation that PF Preference class customers and  
4 RL-02 class customers would pay similar rates for similar products. *See* WPRDS  
5 Documentation, WP-02-E-BPA-05A, Section 2.4, Tables SUBSCR 01, SUBSCR 02,  
6 SUBSCR 03, SUBSCR 04.

7 *Q. Was an error made in the calculation of the Residential Exchange Program settlement*  
8 *costs in the RAM?*

9 A. Yes. The Residential Exchange Program settlement costs in the RAM were  
10 underestimated. The value used in the RAM is \$54 million per year. A more accurate  
11 estimate would be about 10 percent higher. BPA identified two errors in its calculation.  
12 In the RAM\_prog model, the number of iterations was insufficient to converge to a final  
13 value for the Residential Exchange Program settlement costs. In addition, the  
14 C&R Discount costs were included in the calculated rate, making that rate 0.5 mills  
15 higher than it should have been. Both of these errors had the effect of lowering the  
16 estimate of Residential Exchange Program settlement costs in the modeling. The  
17 Residential Exchange Program settlement costs are calculated in an iterative process  
18 along with the Subscription Strategy rates, including the RL-02 rate. Additional  
19 settlement costs would increase the RL-02 rate, which in turn would decrease the  
20 calculated settlement costs. BPA will correct these errors in BPA's final rate proposal.

21 *Q. What are the credits associated with the settlement of the Residential Exchange*  
22 *Program?*

23 A. The Subscription Strategy Step assumes that the IOUs will not choose to continue their  
24 participation in the Residential Exchange Program. The rates in the Rate Design Step are  
25 set at a level sufficient to recover the net cost of the Residential Exchange Program. The  
26 Rate Design Step rates are the starting point for the Subscription Strategy Step rates.

1 Therefore, a credit in the amount of the net cost of the Residential Exchange Program in  
2 the Rate Design Step must be allocated to the Subscription Strategy Step rates in order to  
3 avoid overcollecting the Subscription Step revenue requirement. It is this credit that is  
4 allocated during the development of Subscription Strategy Step rates.

5 *Q. In the RAM, how is the net cost of the Residential Exchange Program credit allocated in*  
6 *the development of the Subscription Strategy rates?*

7 A. The RAM equitably allocates the net cost of the Residential Exchange Program credit, a  
8 benefit not otherwise allocated under section 7 of the Northwest Power Act, to the  
9 PF Preference class, the IP-02 class, and the RL-02 class. This adjustment takes into  
10 account the IP-PF link as well as the DSI floor rate test. At this point in the model, when  
11 a portion of the Residential Exchange Program credit is allocated to the IP-02 rate so that  
12 it is set equal to the flat PF rate (minus the C&R Discount costs) plus the net industrial  
13 margin, the Subscription Step IP rate is less than the DSI Floor rate. Therefore, the  
14 IP rate is set at the DSI Floor and the remaining Residential Exchange Program credit is  
15 allocated to the PF Preference and RL-02 rates, lowering them to their final Subscription  
16 Strategy Step levels. This allocation of credits achieves the Subscription Strategy  
17 expectation that PF Preference class customers, IP-02 class customers and RL-02 class  
18 customers would pay similar rates for similar products, while maintaining the PF-IP  
19 relationship in section 7(c) of the Northwest Power Act. *See WPRDS Documentation,*  
20 *WP-02-E-BPA-05A, Section 2.4, Tables SUBSCR 01, SUBSCR 02, SUBSCR 03,*  
21 *SUBSCR 04.*

22 *Q. Is there a further adjustment for the rates that apply to DSI purchases?*

23 A. Yes. The IP rate class sales forecast in the Rate Design Step, and up to this point in the  
24 Subscription Strategy Step modeling, has been 990 aMW. After discussions with the  
25 DSIs, BPA decided to purchase 450 aMW specifically for the DSIs, with the  
26 understanding that the total of 1,440 aMW would be sold at rates high enough to cover

1 the allocated costs of the 990 aMW in the Subscription Strategy Step plus the costs of the  
2 additional 450 aMW purchases. *See Berwager et al.*, WP-02-E-BPA-09. BPA is  
3 forecasting sales of 1210 aMW at 23.5 mills/kWh and 230 aMW at 25.0 mills/kWh.  
4 Both rates include the costs of the C&R Discount. BPA has determined that the above  
5 mix of sales and rates (1210aMW @ 23.5 mills and 230 aMW @ 25.0 mills) will recover  
6 the costs of serving the new higher DSI sales.

7 In the RAM, the initial Subscription Step IP rate (at the DSI floor) is  
8 20.98 mills/kWh before application of the C&R Discount costs. All DSI sales will be at  
9 the IP rate plus a TAC. Two IP TACs, 2.02 mills for IP TAC(A) and 3.52 mills for  
10 IP TAC(B), have been calculated. The addition of 0.5 mill for the costs of the  
11 C&R Discount results in the two IP rates of 23.5 mills/kWh and 25.0 mills/kWh.  
12 *See WPRDS Documentation*, WP-02-E-BPA-05A, Section 2.4, Tables SUBSCR 05,  
13 SUBSCR 06, SUBSCR 07.

14 **c. Modeling Stepped Rates**

15 Q. *How are stepped rates modeled in the RAM?*

16 A. The ratemaking logic in the RAM calculates average rates for the five-year rate period.  
17 The stepped rates are calculated in a post-processor from these five-year average rates.  
18 The demand charge remains the same for the five-year average rates and for the stepped  
19 rates. The five-year energy charges are adjusted to produce the stepped rates. For the  
20 first three years of the rate period, the energy rates are set to the five-year average minus  
21 .6 mills/kWh. For the last two years of the rate period, the energy rates are set to the  
22 five-year average plus .9 mill/kWh. The stepped rates recover, in total, virtually the same  
23 costs as the five-year average rates.

1           **d.       Modeling the Slice Product**

2    *Q.       How is the Slice product modeled in the RAM?*

3    A.       The Slice product is not explicitly modeled in the RAM. Slice is a PF product and is  
4            assumed to have no effect on the level of the PF rate or any other posted rate. The RAM  
5            includes a worksheet that estimates the cost per month of a 1 percent Slice of the BPA  
6            system. This worksheet lists the components of the Slice revenue requirement, including  
7            the net cost of system augmentation, and excluding the cost of balancing power purchases  
8            and PNRR. The cost per month of the Slice product is an estimate and will be trued up to  
9            actuals in real time. *See Mesa, et al., WP-02-E-BPA-32.*

10   *Q.       Does this conclude your testimony?*

11   A.       Yes.

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