

**Exhibit N - Revised 7/17/08**

**SLICE IMPLEMENTATION PROCEDURES**

In the event Exhibit O, Interim Slice Implementation Procedures, is implemented pursuant to section 5.12 of this Agreement and provisions of this Exhibit N are in conflict with provisions of Exhibit O, provisions of Exhibit O shall prevail.

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**1. SLICE IMPLEMENTATION PROCEDURES – GENERAL DESCRIPTION**

The procedures established in this Exhibit N shall be used by BPA and «Customer Name» in conjunction with Exhibit M, Slice Computer Application, to implement deliveries of energy under the Slice Product.

**2. DATA PROVIDED BY BPA**

In addition to information exchanged and provided through provisions of Exhibit M and in order to assist «Customer Name» in managing and planning the use of its Slice Output, BPA shall provide «Customer Name» the following information.

2.1 Slice System operational information as described in sections 6, 7 and 8 below.

2.2 «Customer Name»'s daily BOSS deviation account balance as described in section 3.4 below.

**3. STORAGE AND DEVIATION ACCOUNTING**

As described below, BPA shall determine and make available to «Customer Name» separate storage deviation account balances (Storage Offset Accounts) for each Simulator Project. The Storage Offset Accounts shall use measured Project discharges, H/Ks, and forebay elevations as benchmarks. BPA shall also determine and make available to «Customer Name» an energy deviation account balance for the BOSS Complex. The BOSS Deviation Accounting benchmark shall be the BOSS ASSG.

3.1 «Customer Name»'s Storage Offset Account balances shall be established for each Simulator Project each hour in terms of the cumulative difference, expressed in ksf, between «Customer Name»'s simulated Project Storage Contents and actual Project Storage Contents, based on the sum of the following components:

3.1.1 For each Simulator Project except Grand Coulee and McNary, «Customer Name»'s Calibrated Simulator Discharge, as described in section 3.6 of Exhibit M, from the next-upstream Simulator Project minus such next-upstream Simulator Project's measured discharge;

3.1.2 The measured discharge from each Simulator Project minus «Customer Name»'s Calibrated Simulator Discharge from such Simulator Project;

3.1.3 For McNary only, «Customer Name»'s Hydraulic Link Adjustment, as described in section 3.7 of Exhibit M, and;

3.1.4 «Customer Name»'s prior-hour SOA balance for each Simulator Project.

- 3.2 BPA shall initialize «Customer Name»'s September 30, 2011, SOA balance for each Simulator Project at zero.
- 3.3 For purposes of initializing «Customer Name»'s official hourly simulated forebay elevations in the Simulator, «Customer Name»'s SOA balance for each Simulator Project shall be added to the associated Project's actual Storage Content and the result shall be converted to an equivalent forebay elevation using content-to-elevation tables established by Project owners.
- 3.4 «Customer Name»'s BOSS Deviation Account shall be equal to the cumulative difference, expressed in MWd, between «Customer Name»'s BOSS Base amount for each delivery hour and the product of the BOSS ASSG and «Customer Name»'s Slice Percentage for each such hour. «Customer Name»'s BOSS Deviation Account balance shall be adjusted based on the following procedures:
- 3.4.1 Anytime the absolute value of «Customer Name»'s midnight BOSS Deviation Account balance is greater than 2 MWd per «Customer Name»'s Slice Percentage (Slice Percentage \* 2 \* 100), «Customer Name» shall schedule BOSS Deviation Return energy each hour the following preschedule day in an amount equal to 1 MW per «Customer Name»'s Slice Percentage, rounded to the nearest whole number. Such BOSS Deviation Return energy shall be scheduled as positive or negative values, as appropriate to reduce «Customer Name»'s BOSS Deviation Account balance toward zero.
- 3.4.2 On or before the 15<sup>th</sup> day of each month BPA shall determine and provide to «Customer Name» the results of a BOSS ASSG calculation for the previous month that incorporates updated actual Project generation and System Obligation values for each hour of such month. Based on the monthly BOSS ASSG calculation, BPA shall determine a monthly BOSS deviation, expressed in MWd, relative to the hourly BOSS Base amounts. On the 20<sup>th</sup> day of each month BPA shall adjust «Customer Name»'s BOSS Deviation Account balance by an amount equal to «Customer Name»'s Slice Percentage multiplied by the monthly BOSS deviation associated with such previous month.
- 3.5 «Customer Name» shall make reasonable efforts to adjust its requests for deliveries of Slice Output to reduce its SOA balances to zero by 2400 hours PPT on September 30, 2028, or the date of termination of this Agreement, whichever occurs earlier. Any balances in «Customer Name»'s SOAs as of the earlier of 2400 hours on September 30, 2028, or the date of termination of this Agreement shall be converted to energy amounts by multiplying such SOA balances by the associated federal downstream water-to-energy conversion factors. These resulting energy amounts shall be summed with «Customer Name»'s BOSS Deviation Account balance as of the earlier of 2400 hours on September 30, 2008, or the date of termination of this

Agreement . The resulting amount of energy, expressed in MWh, if positive, shall be delivered by BPA to «Customer Name», or if negative, delivered by «Customer Name» to BPA, within the next 30 days after the termination of this Agreement.

#### **4. OPERATING CONSTRAINT VALIDATIONS, VIOLATIONS, AND PENALTY ASSESSMENT**

«Customer Name»'s Simulated Output Energy Schedules, simulated discharges and simulated forebay elevations shall be validated against Operating Constraints in effect at each Simulator Project to determine any violations. Penalties shall be applied to «Customer Name»'s violations of Hard Operating Constraints and Absolute Operating Constraints. BPA and «Customer Name» anticipate that conditions may occur at times under which «Customer Name» is unable to simulate the operation of the Simulator Projects within all Operating Constraints. In an effort to minimize the likelihood of this condition occurring BPA shall establish prudent operational guidance criteria that, if utilized by «Customer Name», will result in non-assessment of certain penalties. BPA, with input from «Customer Name» and other members of the SIG, shall develop such prudent operational guidance criteria.

- 4.1 «Customer Name» shall be responsible for monitoring and anticipating potential Operating Constraint violations on a prospective basis and adjusting Customer Inputs as needed to avoid such violations.
- 4.2 Hourly Operating Constraint validations and violations associated with the Simulator Projects shall be based on Customer Inputs established by «Customer Name» and submitted to BPA within the PS real-time scheduling deadline pursuant to section 4.1 of Exhibit F, Scheduling.
- 4.3 Hourly Delivery Limit validations and violations associated with BOSS Flex schedules shall be based on «Customer Name»'s BOSS Flex schedules established as of the PS e-tag scheduling deadline pursuant to section 4.2 of Exhibit F, Scheduling.
- 4.4 For all Simulator Projects except Grand Coulee, Project Storage Bound validations shall be applied each hour.
- 4.5 For Grand Coulee, Project Storage Bound validations shall be applied once per day, based upon HE 0500 values for the upper PSB and HE 2200 values for the lower PSB, except when the upper ORC is 1290.0 feet. When Grand Coulee's upper ORC is 1290.0 feet, Grand Coulee upper PSB validations shall be applied each hour. BPA may establish other conditions under which Grand Coulee's PSB are validated each hour.
- 4.6 The amount by which Simulated Output Energy Schedules exceed hourly maximum generating capability shall be subject to penalty charge at the UAI rate.

- 4.7 Additional Operating Constraint violations shall be subject to penalty charges based on either the UAI rate or a market proxy rate such as the ICE Day Ahead Power Mid-C Firm Index.
- 4.8 Operating Constraint violations resulting from within-hour Balancing Authority reliability required actions shall not be subject to penalties.
- 4.9 BPA reserves the right to determine whether additional Operating Constraint violations and associated penalties are warranted as the Simulator and its specification manual are developed.

## 5. Grand Coulee Project Storage Bounds (PSB) and Exceedences

### 5.1 Determination of Grand Coulee PSB

BPA shall estimate the upper and lower Grand Coulee PSB associated with each day of the following 3 months as part of each 90-day submittal pursuant to section 7.2 below, and shall update such Grand Coulee PSB as conditions change and as needed to reflect updated Operating Constraints. To determine Grand Coulee's PSBs, BPA shall calculate the Storage Content associated with the Grand Coulee upper and lower ORCs as established by Operating Constraints in effect. BPA shall apply a Storage Content difference between the upper and lower Grand Coulee PSB equivalent to at least ½-foot at all times except when Grand Coulee is required to fill to 1290.0 feet for verification of refill. BPA may specify other conditions under which this ½-foot difference does not apply.

### 5.2 Application of the Grand Coulee PSB

BPA shall designate each Grand Coulee PSB as either a Hard Operating Constraint or a Soft Operating Constraint. Typically, Grand Coulee PSB associated with date-specific required forebay elevations shall be designated as Hard Operating Constraints and Grand Coulee PSB associated with interpolated points in effect on days between such date-specific required forebay elevations shall be designated as Soft Operating Constraints. «Customer Name» shall maintain its Slice Storage Account balance within the upper and lower Grand Coulee PSB that are designated as Hard Operating Constraints, or be subject to penalties as established in section 5.4 below. «Customer Name»'s Slice Storage Account balance may exceed the upper or lower Grand Coulee PSB designated as Soft Operating Constraints without penalty. However, «Customer Name» recognizes that maintaining an SSA that is not within the upper and lower Grand Coulee PSB increases «Customer Name»'s risk of violating the Grand Coulee PSB designated as Hard Operating Constraints and incurring the associated penalties.

### 5.3 Determination of «Customer Name»'s Grand Coulee PSB Exceedence

«Customer Name»'s Grand Coulee PSB exceedence shall be equal to the Storage Content by which «Customer Name»'s Slice Storage Account balance

is (1) in excess of the value determined by multiplying «Customer Name»'s Slice Percentage by the upper Grand Coulee Project Storage Bound or (2) less than the value determined by multiplying «Customer Name»'s Slice Percentage by the lower Grand Coulee Project Storage Bound. An upper Grand Coulee PSB exceedence is denoted as a positive value, while a lower Grand Coulee PSB exceedence is denoted as negative value.

#### 5.4 **Grand Coulee PSB Exceedences, «Customer Name»'s Actions, and Penalties**

5.4.1 «Customer Name» shall be responsible for monitoring its Grand Coulee SSA balance and Grand Coulee PSB exceedence. If «Customer Name»'s Grand Coulee PSB exceedence is positive, denoting an exceedence of the upper Grand Coulee PSB, on a day in which the upper Grand Coulee PSB is designated as a Hard Operating Constraint, the following shall apply.

5.4.1.1 «Customer Name» shall immediately modify its simulated operation of Grand Coulee such that the most restrictive maximum discharge constraint in effect at the Simulator Projects is achieved. «Customer Name» shall maintain such simulated operation until such time as «Customer Name»'s SSA balance is within Grand Coulee's upper and lower PSB.

5.4.1.2 If «Customer Name» fails to take the action specified in section 5.4.1.1 above, a penalty shall be applied equal to Grand Coulee's at-site Storage Energy amount, expressed in MWh, associated with the Grand Coulee PSB exceedence described in section 5.4.1 above, multiplied by the UAI Rate.

5.4.2 If «Customer Name»'s Grand Coulee PSB exceedence is negative, denoting an exceedence of the lower Grand Coulee PSB, on a day in which the lower Grand Coulee PSB is designated as a Hard Operating Constraint, the following shall apply.

5.4.2.1 «Customer Name» shall immediately modify its simulated operation of Grand Coulee such that the most restrictive minimum discharge constraint in effect at the Simulator Projects is achieved. «Customer Name» shall maintain such simulated operation until such time as «Customer Name»'s SSA balance is within Grand Coulee's upper and lower PSB.

5.4.2.2 If «Customer Name» fails to take the action specified in section 5.4.2.1 above, a penalty shall be applied equal to Grand Coulee's at-site Storage Energy amount, expressed in MWh, associated with the absolute value of the Grand Coulee

PSB exceedance described in section 5.4.2 above, multiplied by the UAI Rate.

## 6. COMMUNICATIONS

- 6.1 «Customer Name» shall be solely responsible for its internal dissemination of information provided by BPA pursuant to Exhibit M and this Exhibit N.
- 6.2 «Customer Name» shall be able to utilize the Default User Interface to access the Simulator Parameters established by PS pursuant to section 5 of Exhibit M.
- 6.3 BPA shall provide «Customer Name» a daily written summary of Operating Constraints PS establishes as the Simulator Parameters.
- 6.4 BPA shall make reasonable efforts to notify «Customer Name» of potential and significant system condition or operational changes via e-mail, XML messaging, and/or the daily conference call described in section 6.7 below.
- 6.5 BPA shall communicate Federal Operating Decisions to «Customer Name» in the following manner:
  - 6.5.1 An initial listing and description of Federal Operating Decisions in effect as of September 30, 2011;
  - 6.5.2 An immediate notification via confirmed delivery and receipt electronic messaging systems in place between BPA and «Customer Name»; and
  - 6.5.3 A verbal report to the attendees during the next scheduled daily conference call as described in section 6.7 below.
- 6.6 Beginning September 28, 2011, and on each Business Day after that, BPA shall initiate an informational conference call with «Customer Name» and the other Slice purchasers promptly at 12:40 PPT to discuss current and upcoming operating parameters and other related matters. The time and frequency of the call may be changed upon the mutual agreement of PS, «Customer Name», and the other SIG members. «Customer Name» shall receive notice from BPA via e-mail at least three Business Days prior to any such change.
- 6.7 PS, «Customer Name», and other Slice purchasers shall establish a forum, through the SIG or a subcommittee thereof, to discuss Operating Constraints and their application, but the SIG or SIG subcommittee shall not have the right to vote on the establishment of Operating Constraints or their application.

## **7. 90-DAY FORECAST OF SLICE OUTPUT**

- 7.1 Prior to midnight on the 23<sup>rd</sup> day of each month, BPA shall provide «Customer Name» with the results of a 90-day forecast, pursuant to section 7.2 below. BPA shall revise such forecast during the month in the event conditions change significantly and shall make such revised forecast available to «Customer Name» in a timely manner.
- 7.2 PS, consistent with its internal study processes, shall perform two single-trace hydroregulation studies that incorporate the expected stream flow condition for the upcoming 3 month period in weekly time increments. One study shall operate Grand Coulee as needed to satisfy the minimum Simulator Project flow constraint in order to attain the highest reservoir elevations possible at Grand Coulee, limited by its upper ORC, and one study shall operate to Grand Coulee as needed satisfy the Simulator Project maximum flow constraint in order to attain the lowest reservoir elevations possible at Grand Coulee, limited to its lower ORC. Both studies shall reflect a pass-inflow operation at all other Simulator Projects and the expected operation at all other Slice System Projects and non-federal projects. BPA shall initialize the starting reservoir Storage Contents for each study equal to the Storage Contents projected to occur at midnight on the study initialization date. Based on the results of these studies, BPA shall provide to «Customer Name» the weekly natural inflow, turbine discharge, generation, Spill discharge, and ending elevation for each of the Simulator Projects, the Snake Complex projects, Libby, Hungry Horse, Dworshak, and Keenleyside (Arrow); the weekly generation forecasts for the sum of the remaining BOSS projects, excluding CGS; the weekly CGS generation forecast; and the weekly forecast of the individual System Obligations. BPA shall also provide a summary of weekly aggregated planned generator maintenance outages for all Slice System Projects, expressed in total MW, as well as the estimated daily Grand Coulee upper and lower PSB for the study period.

## **8. 12-MONTH FORECAST OF SLICE OUTPUT**

- 8.1 Prior to July 15, 2011, and prior to each July 15 thereafter during the term of this Agreement, BPA, «Customer Name», and other Slice purchasers shall meet to discuss and review inputs, assumptions, and content of the Multiyear Hydroregulation Study used to develop the 12-month forecast described in section 7.4 below.
- 8.2 Prior to August 1, 2011, and prior to each August 1 thereafter during the term of this Agreement, BPA shall provide «Customer Name» with results from the 12-month forecast, pursuant to section 7.4 below.
- 8.3 Prior to August 15, 2011, and prior to each August 15 thereafter during the term of this Agreement, BPA, «Customer Name», and other Slice purchasers

shall meet to discuss the results of the 12-month forecast described in section 7.4 below.

- 8.4 BPA, consistent with its internal study processes, shall perform a single Multiyear Hydroregulation Study for the upcoming October through September period representing a range of at least 43 stream flow traces. The study shall reflect Grand Coulee operating to its ORC at times when its upper and lower ORC are equal. At times when Grand Coulee's upper and lower ORC are not equal, the study shall reflect Coulee operating in a manner that achieves all Simulator Project flow constraints when possible. The study shall represent a pass-inflow operation at all other Simulator Projects and the expected operation at all other Slice System Projects and non-federal projects. BPA shall initialize the starting reservoir Storage Contents for this study at the Storage Contents projected to occur at midnight on the study initialization date. Based on the results of this study, BPA shall provide to «Customer Name» the monthly natural inflow, turbine discharge, generation, Spill discharge, and ending elevation for each of the Simulator Projects, the Snake Complex projects, Libby, Hungry Horse, Dworshak, and Keenleyside (Arrow); the monthly generation forecasts for the sum of the remaining BOSS projects, excluding CGS; the monthly CGS generation forecast; and the monthly forecast of the individual System Obligations. BPA shall also provide a summary of monthly aggregated planned generator maintenance outages, expressed in total MW, for all Slice System Projects.

## **9. MONTHLY RSO SLICE TO LOAD TEST IMPLEMENTATION**

- 9.1 On or before the 10<sup>th</sup> Business Day of each calendar month, «Customer Name» shall submit to BPA its Total Retail Load for the preceding calendar month, expressed in MWh.
- 9.2 On or before the 20<sup>th</sup> Business Day of each calendar month, BPA shall compute and provide «Customer Name» the results of the monthly RSO Slice to load test (Test), as described in section 5.7 of the body of this Agreement.
- 9.3 «Customer Name» shall have 14 days from the day BPA provides «Customer Name» the results of Test to provide BPA supporting data BPA shall use to determine whether «Customer Name» shall be deemed to have satisfied the Test, as described in section 5.7.5 of the body of this Agreement.
- 9.4 BPA shall have 14 days from the day «Customer Name» provides BPA such supporting data to notify «Customer Name» of BPA's decision whether «Customer Name» shall be deemed to have satisfied the Test. If BPA decides not to deem «Customer Name» as having satisfied the Test, BPA shall provide «Customer Name» written explanation for its decision.

- 9.5 If recurring conditions exist in one or more particular months of each year that result in BPA repeatedly deeming, for such particular month or months, «Customer Name» to have satisfied the Test pursuant to section 5.7.5 of this Agreement, BPA and «Customer Name» agree to collaboratively develop documentation, such as a letter agreement, that establishes for a specified prospective time period that BPA shall deem «Customer Name» to pass the Test for such particular month or months if similar conditions exist.

## **10. DISPLACEMENT OF CGS IMPLEMENTATION**

- 10.1 BPA will notify «Customer Name» of any potential CGS Displacement, pursuant to section 5.10 of the body of this Agreement, as soon as BPA determines such CGS Displacement is likely to occur.
- 10.2 If a CGS Displacement occurs during a period when «Customer Name» has elected not to participate in such CGS Displacement, pursuant to section 5.10 of the body of this Agreement, BPA will develop and submit to «Customer Name» hourly schedules of Additional Energy as described in section 9.3 below.
- 10.3 «Customer Name»'s hourly Additional Energy amounts shall be equal to «Customer Name»'s Slice Percentage multiplied by the difference between the CGS Generation Benchmark and the expected CGS hourly generation, after rounding the result to the nearest whole number.
- 10.4 Such Additional Energy amounts shall be computed within the BOSS Module and shall be scheduled by «Customer Name» as a separate, stand alone schedule.

## **11. CONGESTION MANAGEMENT (PLACEHOLDER)**

If there are congestion management requirements placed on the BPA by the Balancing Authority, BPA shall adhere to the operational requirements of such congestion management requirements and shall apply the operational impacts of such requirements proportionally to «Customer Name».

## **12. CONFIDENTIALITY**

BPA considers all prospective operational information associated with the Slice System or any Slice System Project to be proprietary and business sensitive. Such information that is provided by BPA to «Customer Name» or its scheduling agent pursuant to Exhibit M or this Exhibit N shall be treated as confidential by «Customer Name» and its scheduling agent. BPA reserves the right to withhold such operational information from scheduling agents that BPA determines are significant, active participants in WECC wholesale power or transmission markets and are not purchasers of the Slice Product. If «Customer Name» enlists the services of a scheduling agent that is not a purchaser of the Slice Product «Customer Name» shall require its scheduling agent to develop systems or procedures that

create functional separation between Slice related operational information and such scheduling agent's marketing functions.

**13. REVISIONS**  
**[To be completed.]**