This document represents a side-by-side comparison of the February 28, 2008 Framework language and the corresponding April 14, 2008 Draft Slice/Block contract language.

Yellow highlighted struck-through language indicates language that was included in Framework but excluded from the April 14 draft Slice/Block contract.

Green highlighted language indicates language that was not included in the Framework, but added to the April 14 draft Slice/Block contract.

	Framework Language		Draft Contract Language	Comments
Intro	**Determination of Available Slice Output and Delivery Limits** «Customer Name» shall have a right to energy and scheduling flexibility equal to their Selected Slice Percentage of Slice System capability, including energy production, capacity and flexibility available after System Obligations and Operating Constraints are met. This is accomplished by indexing «Customer Name»'s Delivery Limits to the capability of the Slice System utilizing a water-routing model, which is intended to reasonably replicate the capabilities of the Federal Base System available to PS within applicable Operating Constraints. Notwithstanding «Customer Name»'s rights under this contract, BPA shall retain operational control of all Slice System generating resources and reservoir storage. The water routing model is intended to implement this Agreement without either expanding or reducing the rights of BPA or «Customer Name».	Body 3(b)(3)	**Determination of Available Slice Output and Hourly Scheduling Flexibility** «Customer Name» shall have a right to purchase an amount of Slice Output equal to its Slice Percentage of Slice System energy production capability, after all System Obligations and Operating Constraints are met. «Customer Name» shall purchase and have a right to additional services, including hourly scheduling flexibility equal to its Slice Percentage of Slice System peaking, Storage, and ramping capability, after all System Obligations and Operating Constraints are met. The amounts of energy and hourly scheduling flexibility available to «Customer Name» shall be determined by indexing «Customer Name»'s hourly scheduling flexibility to the results of the Slice Water Routing Simulator (Simulator) and BOSS Module. The Simulator and BOSS Module are intended to reasonably represent the energy, peaking, Storage, and ramping capability and limits of the Slice System resources available to PS. Notwithstanding any provision of this Agreement to the contrary, or «Customer Name»'s rights under this Agreement, BPA and federal operating agencies at all times shall retain operational control of all federal generating resources and reservoir storage.	Rights to energy and scheduling flexibility were separated for clarity. Energy rights are tied to energy capability and scheduling flex is tied to peaking, storage and ramping capability The Simulator and BOSS Module concepts are introduced as parts of the Slice Computer Application (which becomes clear in paragraph 3).
3rd Para-graph	«Customer Name»'s realization of an equivalent access to system capability will be conveyed using a water routing model which will be based on an equivalent access to the system inflows, system water-to-power conversion capability and flexibility. «Customer Name» may receive an amount of energy over the term of this Agreement that is not equal to the product of their Selected Slice Percentage and the Slice System ASSG.		PS shall ensure «Customer Name» has access to appropriate amounts of Slice Output and hourly scheduling flexibility by incorporating into the Simulator, processes and calculations that account and correct for changes and deviations between forecasted and measured stream flows and project water-to-power conversion factors. Because such deviation accounting will be in terms of water and not energy, «Customer Name» shall receive an amount of Slice Output during the term of this Agreement that is not precisely equal to the product of its Slice Percentage and the actual Slice System generation netted with System Obligations.	Clarified that customers have access to hourly scheduling flexibility, as opposed to direct access to system capability.
2nd Para-graph	«Customer Name»'s Delivery Limits will be established for three subsets of the Slice System: the Coulee-Chief Complex, the Lower Columbia (LCOL) Complex, and the Balance of Slice System (BOSS) using the water routing model.		«Customer Name»'s hourly scheduling flexibility shall be established based on a reasonable representation of the operational flexibility of three subsystems of the Slice System, as described in Exhibit M, Slice Computer Application and Implementation Procedures. This reasonable representation shall be implemented through: (1) the Slice Water Routing Simulator, and (2) the BOSS Module, and (3) the implementation procedures, all as established in Exhibit M, Slice Computer Application and Implementation Procedures.	
Section 1		Ex M Section	**2. SLICE COMPUTER APPLICATION** The Slice Computer Application shall be a proprietary BPA application	BPA introduced the Slice Computer Application

		2		developed and maintained by BPA in consultation with «Customer Name» and other Slice purchasers. The Slice Computer Application will consist of the Slice Water Routing Simulator and the Balance of Slice System Module, as well as the interface and related processes used for scheduling, tagging, accounting and communication of Slice energy and information, all as described below.	concept which includes the Simulator, the BOSS Module, and scheduling interface. It's still developed with input from customers.
	1. Slice Water Routing Model (SWRM) Description a. The SWRM model will be developed and maintained by BPA in collaboration with «Customer Name» and other Slice purchasers. SWRM will represent the routing of available stream flow through the 6 projects in the Coulee-Chief Complex and LCOL Complex within established Operating Constraints.		(a)	**Slice Water Routing Simulator** The Slice Water Routing Simulator (Simulator) shall represent the routing of available stream flow through the Coulee-Chief Complex and LCOL Complex within established Operating Constraints. The purpose of the Simulator is to determine and provide «Customer Name»'s with its available Slice Output and Delivery Limits for the Simulator Projects. The official version of the Simulator will be kept, maintained, and housed within PS. «Customer Name» shall have access to copies of the Simulator for the purpose of running hypothetical operating scenarios.	
			(1)	An official PS version of the Simulator shall be initialized and run by PS at a specified time each hour for «Customer Name» and each Slice purchaser. These studies will establish each Slice purchaser's official Simulated Output Energy Schedules, simulated project operations, and Delivery Limits for the following delivery hour.	BPA will maintain an official version of the Simulator for each customer, and the customer will have a "sandbox" version.
	i. SWRM will run on an hourly time step for a 48-hour period, and a longer time step for an additional 5 to 7 days. ii. SWRM initialization may be established for any hour of the day. Initialized data will include project forebay elevations and forecasted stream flows. As an example, SWRM may be initialized as of HE1400 and will run in an hourly time step for HE1500 of that day through and including HE1400 of the second day following the current day, and in a longer time step for an additional 5 to 7 days.		(2)	The Simulator shall produce simulated project operations in hourly time increments for a 48-hour period, and multiple-hour increments for an additional 5 to 7 days. As an example, the Simulator may be initialized as of HE1400 and shall produce results in hourly time increments for HE1500 of that day through and including HE1400 of the second day following the current day, and in multiple-hour increments, such as 8-hour average increments, for an additional 5 to 7 days.	
	iii. Based on the input parameters established in sections 2 and 3 below, SWRM will compute «Customer Name»'s hypothetical discharge, forebay elevation, and Schedule Request for each project. iv. SWRM will reflect appropriate hydraulic time lags between projects. v. To the maximum extent practicable, SWRM will reflect all applicable Operating Constraints in effect at each project, including requirements necessary to achieve Operating Constraints in effect at downstream projects. vi. The SWRM inflow to Grand Coulee will be based on actual discharges from upstream projects plus		(3) (4) (5) (6)	Based on the Input Parameters and Input Variables established per sections 3 and 4 below, the Simulator shall compute «Customer Name»'s hypothetical discharge, forebay elevation, and generation values for each Simulator Project. The Simulator shall include calculations that reflect approximate hydraulic time lags between Simulator Projects. The Simulator shall include calculations that reflect all applicable Operating Constraints in effect and established as Input Parameters by PS for each Simulator Project, including requirements necessary to achieve Operating Constraints in effect at downstream projects. The Simulator will include calculations that establish inflow to Grand Coulee that shall be based upon measured discharges	

	incremental side flows between those projects and Grand Coulee. «Customer Name»'s Grand Coulee inflow will also incorporate impacts from their use of Discretionary Storage.			from upstream projects plus incremental side flows between those projects and Grand Coulee.	
	vii. The Grand Coulee discharge computed by SWRM for «Customer Name» will be used to determine «Customer Name»'s inflow into Chief Joseph when combined with Chief Joseph's incremental side flows.			(7) The Simulator will compute the Grand Coulee discharge for «Customer Name» and use it to establish «Customer Name»'s inflow simulation into Chief Joseph when combined with Chief Joseph's incremental side flows.	
	viii. The SWRM inflow to McNary will be based on actual discharges from Priest Rapids and Ice Harbor after considering established hydraulic time lags between those projects and McNary, plus McNary's incremental side flows. «Customer Name»'s McNary inflow will also incorporate their Hydraulic Link Adjustment pursuant to section 4(a)(vi).			(8) The Simulator will include calculations that establish inflow to McNary that shall be based upon measured discharges from Priest Rapids and Ice Harbor after considering approximate hydraulic time lags between those projects and the McNary project, plus McNary's incremental side flows. The Simulator shall also include calculations that incorporate «Customer Name»'s Hydraulic Link Adjustment pursuant to section 10 below into «Customer Name»'s McNary inflow.	
	ix. The McNary discharge computed by SWRM will be used to establish the inflow into John Day when combined with John Day's incremental sideflows, and likewise through Bonneville Dam.			(9) The Simulator will compute the McNary discharge for «Customer Name» and use it to establish «Customer Name»'s inflow simulation into John Day when combined with John Day's incremental side flows. The Simulator will compute the discharge from John Day, The Dalles and Bonneville for «Customer Name», as well as inflows into The Dalles and Bonneville for «Customer Name», in a like manner.	
	x. The interface for «Customer Name»'s access and use of SWRM will include basic processes allowing simplified input variables for the LCOL Complex. The simplified inputs will allow a customer to schedule in an appropriate manner the LCOL projects without scheduling the four individual projects. The underlying model logic will enable validation and application of individual project Operating Constraints to the simplified input process.			(10) PS shall develop a computer usable interface for «Customer Name»'s access and use of the Simulator but which will not recognize aggregated Input Variables for the LCOL Complex or the Coulee-Chief Complex. «Customer Name» may develop its own aggregated Input Variables but must translate such aggregated Input Variables into individual Simulator Project Input Variables in order to enable the application of individual project Operating Constraints and validation of individual project Delivery Limits.	The line delineating what BPA will develop and what the customer will develop in terms of simplified inputs has shifted several times. Here, it is the customer's responsibility.
	b. PS will determine Delivery Limits for the BOSS, which will include a BOSS Base Amount and specified BOSS Flex Amounts for reshaping the BOSS Base Amounts.			**(b) Balance of Slice System Module** The BOSS Module will compile energy amounts associated with the BOSS Complex for purposes of determining «Customer Name»'s Delivery Limits associated with the BOSS Complex, which shall include the BOSS Base Amount and specified BOSS Flex Amounts for reshaping the BOSS Base Amounts.	
	i. The BOSS Base Amount will be a summation of the most recent planned or scheduled amounts associated with all the components of the BOSS for a given hour, including the amount of generation that could have been produced with Elective Spill expected on the BOSS projects. «Customer Name»'s BOSS Base			(1) The BOSS Base Amount, for each hour, shall be a summation of (1) BPA's latest planned or scheduled generation amounts associated with the BOSS Complex, (2) the amount of Elective Spill PS implements on the BOSS projects, (3) the energy associated with Existing Public Augmentation and Other Augmentation, as described in Exhibit L, Slice System	BPA clarified the BOSS components, especially with regard to Augmentation and System Obligations.

	schedule shall be equal to the product of the BOSS Base Amount and their Selected Slice Percentage. ii. The BOSS Flex Amounts established will allow «Customer Name» to reshape delivery requests of the BOSS Base Amounts from hour to hour, but not day to day. 1. The BOSS Flex Amounts will be established separately for hourly increases and decreases, and will reasonably reflect the extent to which the Lower Snake projects could be re-shaped relative to their expected operation, considering their Operating Constraints. 2. «Customer Name» shall determine their hourly use of the BOSS Flex Amounts and submit a schedule request to PS as appropriate. A positive schedule shall reflect an increase relative to the BOSS Base Amount and a negative schedule shall reflect a decrease. 3. The sum of «Customer Name»'s scheduled hourly BOSS Flex Amounts will be zero for each day. 4. «Customer Name»'s BOSS schedule will be the sum of the BOSS Base Amount and their requested BOSS Flex Amount multiplied by their Selected Slice Percentage. ~~iii. Discretionary Generation and Discretionary Storage available to PS from BOSS projects shall be made available to «Customer Name» in the same time periods and under the same conditions that apply to PS. PS shall develop procedures for scheduling and accounting of Discretionary Generation and Discretionary Storage.~~ ~~1. «Customer Name»'s use of Discretionary Generation will be scheduled and accounted separately from Slice scheduling and~~		Resources, and (4) the opposite of the amount of energy associated with System Obligations. Energy associated with Existing Public Augmentation and Other Augmentation included in the BOSS Base Amount shall be an equal amount each hour of each FY. (2) «Customer Name»'s BOSS Base schedule shall be determined by multiplying the BOSS Base Amount and «Customer Name»'s Slice Percentage, rounded to an integer. (3) Consistent with the following provisions, the BOSS Flex Amount is shall be made available on an as needed basis after «Customer Name» utilizes the scheduling flexibility available from the Coulee-Chief and LCOL Complex projects. «Customer Name» may utilize the BOSS Flex Amount to reshape «Customer Name»'s BOSS Base schedules from hour to hour, but not day to day. (A) The hourly BOSS Flex Amount shall be determined in real-time by the PS Slice Scheduler upon request from «Customer Name». (B) The PS Slice Scheduler shall establish available BOSS Flex Amounts separately for hourly increases and decreases through hour ending 2200 for the current day. Such amounts shall reflect, in the judgment of the PS Slice Scheduler, the extent to which the Lower Snake Complex projects could reasonably be re-shaped relative to the expected operation, considering the Operating Constraints and stream flow conditions in effect. (C) «Customer Name» shall determine its planned hourly use of the BOSS Flex Amounts and submit to PS positive and negative hourly schedules that net to zero through hour ending 2200 the current day. A positive hourly schedule shall reflect an increase relative to the BOSS Base Amount and a negative hourly schedule shall reflect a decrease. (D) The BOSS Flex Amount available to «Customer Name» shall be equal to the BOSS Flex Amount determined pursuant to section 2(b)(ii)(2) above multiplied by «Customer Name»'s Slice Percentage, rounded to an integer.	The overall concept of BOSS flex, based on Snake flexibility did not change. BPA attempted to define how the amount might be determined, but other methods may be developed. BPA removed Discretionary Storage and Generation provisions because (1) it aligns with the Alt 2 concept of simplifying the product by eliminating

	accounting. 2. «Customer Name»'s use of Discretionary Storage will be used in SWRM as an adjustment to «Customer Name»'s Grand Coulee's inflow. 3. Discretionary Generation and Discretionary Storage are a means of shaping a defined amount of energy or storage within a defined time period, such that over the defined period of time, account balances will net to zero. iv. If «Customer Name» determines they have a significant risk of not meeting their firm load service at any time, they may notify the PS Slice Scheduler of such potential insufficiency so that the PS Slice Scheduler may assess the ability to alter the BOSS operation or BOSS Flex Amount to supplement the available Slice generation.		(4) If «Customer Name» determines it has a significant risk of not meeting its firm load service at any time, «Customer Name» may notify the PS Slice Scheduler of such potential insufficiency so that the PS Slice Scheduler may assess the ability to alter the BOSS Complex operation or BOSS Flex Amount to supplement the available Slice generation and advise «Customer Name» of such ability as soon as practicable.	provisions that had seen little use in implementation of the current product (2) BPA does not have "unilateral discretion" to call upon this flex, and (3) the flex available is fairly insignificant relative to the overall Slice System.
Section 2	2. PS's Inputs Parameters to SWRM a. PS shall establish and maintain the input parameters to the SWRM specified in this section for the duration of the SWRM modeling period based on forecasted stream flow conditions and project Operating Constraints, including standard and special operating limitations and requirements that are in effect at any given time. The PS Slice Scheduler shall continuously monitor the Slice System and update the input parameters as necessary. These input parameters are: i. Hourly regulated inflows for Grand Coulee and McNary ii. Hourly incremental stream flows for each project iii. Initial project forebay elevations iv. Generator outages v. Project water to energy conversion factors vi. Project content to elevation conversion tables vii. Project turbine capacities viii. Spill limitations and requirements, including bypass spill quantities ix. Generation limitations and requirements x. Discharge limitations and requirements xi. Tailwater limitations and requirements (may be converted to eqivalent discharge values)	Ex M Section 3	3. **PS INPUT PARAMETERS ESTABLISHED FOR THE SIMULATOR** (a) PS shall establish and maintain the Input Parameters to the Simulator specified in this section for the duration of the Simulator modeling period including forecasted stream flows and project Operating Constraints that are in effect at any given time. PS shall designate each Operating Constraint established as an Input Parameter as either an Absolute Operating Constraint, a Hard Operating Constraint, or a Soft Operating Constraint. To the maximum extent practicable, each value for the above Input Parameters shall be the same as those applicable to PS. To the maximum extent practicable, the PS Slice Scheduler shall monitor the Slice System and shall make modifications to the Input Parameters as necessary to reflect changes. These Input Parameters include, but are not limited to: (1) Hourly regulated inflows for Grand Coulee and McNary (2) Hourly incremental stream flows for each project (3) Initial project forebay elevations (4) Generator outages (5) Project water to energy conversion factors (6) Project content to elevation conversion tables (7) Project turbine capacities (8) Spill limitations and requirements, including bypass Spill quantities (9) Generation limitations and requirements (10) Discharge limitations and requirements (11) Tailwater limitations and requirements (may be converted to equivalent discharge values) (12) Forebay limitations and requirements	The concept of defining each constraint as Absolute, Hard, or Soft will help establish violations. "Maximum extent practicable" recognizes that BPA cannot maintain continuous and perfect alignment between actual conditions and study inputs.

	xii. Forebay limitations and requirements xiii. System wide requirements (e.g. Vernita Bar, Chum, Reserves, Regulating room above minimum generation). b. PS input parameters affecting HE(X) will be locked by the beginning of HE(X-1). For example, Operating Constraints affecting HE 1300 will be set by PS no later than 1100.		(13) System wide requirements (e.g. Vernita Bar, Chum, Reserves, Regulating room above minimum generation). (14) Algorithm tuning parameters (15) Logic control parameters (b) PS Input Parameters affecting HE(X) shall be locked by the beginning of HE(X-1). For example, Operating Constraints affecting HE 1300 shall be set by PS no later than 1100.	Two additional Input Parameters that help BPA maintain the Simulator output reasonably close to real capability.
Section 3	3. «Customer Name»'s Input Variables and Use of SWRM a. «Customer Name» shall submit one or more of the following input variables for each of the Coulee-Chief Complex and LCOL Complex projects for the duration of the SWRM modeling period: i. Schedule Requests ii. Elevation requests iii. Discharge requests b. Schedule Requests will represent «Customer Name»'s Selected Slice Percentage of available project generation. ~~SWRM will convert «Customer Name»'s Schedule Requests to project discharges by first dividing the Schedule Request by «Customer Name»'s Selected Slice Percentage and dividing the resulting value by the appropriate project H/K.~~ «Customer Name»'s elevation and discharge requests will represent 100% of the available project elevation and discharge, rather than «Customer Name»'s Selected Slice Percentage of available elevation and discharge amounts. c. Based on set prioritization rules, «Customer Name»'s input variables will establish a hypothetical operational scenario. An operational scenario is a single hypothetical operation of the Coulee-Chief Complex and LCOL projects based the input parameters at any given time. The operational scenario includes the expected hypothetical discharges and elevations of the projects, as well as the associated Schedule Request for each project. d. SWRM will allow «Customer Name» to test various operational scenarios for the purpose of determining if Delivery Limits are exceeded, prior to submittal of Schedule Requests to PS. e. «Customer Name»'s operational scenarios may be revised by «Customer Name» at anytime up until the scheduling timeframe for a particular schedule hour closes. The input variables established by «Customer Name» and communicated to PS pursuant to section [7, and or 10] below will become the official		**4. «CUSTOMER NAME»'S INPUT VARIABLES AND USE OF THE SIMULATOR** (a) «Customer Name» shall use its interface with the Simulator to establish one or more of the following Input Variables for each of the Coulee-Chief Complex and LCOL Complex projects for the duration of the Simulator modeling period: (1) Generation requests (2) Elevation requests (3) Discharge requests (b) Generation requests shall be stated in terms of «Customer Name»'s Slice Percentage of the hypothetically available project generation. Elevation and discharge requests shall be in terms of a normalized project elevation and discharge values, rather than «Customer Name»'s Slice Percentage of available elevation and discharge values. (c) Based on prioritization rules, once established, «Customer Name»'s Input Variables set in the Simulator shall produce a hypothetical operational scenario. An operational scenario is a single hypothetical operation of the Coulee-Chief Complex and LCOL Complex based the Simulator Input Parameters and Input Variables established at any given time. A Simulator operational scenario produces hypothetical discharges, elevations, and generation values for each Simulator Project. (d) The resulting Simulator generation values shall provide to «Customer Name» its potential Simulated Output Energy Schedules for each Simulator Project. (e) The Simulator shall include input fields that allow «Customer Name» to test various operational scenarios for the purpose of determining if its Delivery Limits are exceeded, prior to «Customer Name»'s submittal of its Input Variables to PS. (f) «Customer Name»'s Input Variables and associated Simulated Output Energy Schedules shall be revised and submitted to PS by «Customer Name» pursuant to section 4(a) of Exhibit F, Power Scheduling.	Established that the customer will have an interface in order to access the Simulator. The calculation being deleted is described in the Calibrated Simulator Discharge provision (section 6 below) and will be further described in the specification manual. The latter half of the

	data for determining Schedule Requests, Delivery Request and schedule validation purposes. f. SWRM will compute the hypothetical hourly operation of the Coulee-Chief Complex and the LCOL Complex based on «Customer Name»'s established input variables, and will provide feedback to «Customer Name» pursuant to section 4 below. If a Delivery Limit is exceeded, the following will apply based on protocols yet to be developed: i. The schedule change may be rejected – prior schedule remains in PS scheduling system. ii. «Customer Name»'s schedule may be conditionally accepted with a warning for «Customer Name» produced by the model. g. SWRM will incorporate a process enabling «Customer Name» to request BOSS amounts on an hourly basis, per section 1(b) above. h. «Customer Name»'s Delivery Request will be the sum of the latest approved Coulee-Chief Complex Schedule Requests, LCOL Complex Schedule Requests, and BOSS schedule amount.		(g) The Simulator shall compute the hypothetical hourly operation of the Coulee-Chief Complex and the LCOL Complex based on «Customer Name»'s established Input Variables, and shall provide information to «Customer Name» pursuant to section 6 below. If a Delivery Limit is exceeded the following shall apply based on protocols yet to be developed: (1) «Customer Name»'s schedule change shall be rejected and the prior PS approved or adopted schedule shall remain in the PS scheduling system. (2) «Customer Name»'s schedule shall be accepted with a warning submitted to «Customer Name» stating potential consequences for failing to adjust the Simulator Input Variables to comply with the Delivery Limit. (h) The Simulator shall incorporate a computational process enabling «Customer Name» to request BOSS amounts on an hourly basis, per section 2(b) above. (i) The Simulated Output Energy Schedules resulting from «Customer Name»'s latest submitted Input Variables, and «Customer Name»'s BOSS schedule amounts shall be incorporated into «Customer Name»'s Delivery Request.	Framework section 3(e) is in section 4 of Exhibit F
		Ex M Section 5	**5. REPORTS** (b) PS shall develop an automated report available to «Customer Name» upon remote request, which shall present all changes to Input Parameters that have been made by PS since the time of «Customer Name»'s previous remote request.	This tool will allow customers to access changes to Input Parameters as often or infrequently as they chose.
Section 4	4. Model Output and Feedback a. Based on the input parameters set by PS and «Customer Name» SWRM will produce the following output: i. «Customer Name»'s available Slice Output, Delivery Request, and Delivery Limits ii. «Customer Name»'s resulting Schedule Requests, hypothetical discharge, and hypothetical forebay elevation for each project for each hour. iii. A list of input variables, set by «Customer Name», that were not achieved for each project for each hour. iv. A list of Operating Constraints that were violated for each project for each hour. v. A detailed explanation for each occurrence from	Ex M Section 6	**3. SIMULATOR OUTPUT AND FEEDBACK** (b) Based on the Input Parameters set by PS and Input Variables set by «Customer Name» the Simulator shall produce the following results: (1) «Customer Name»'s resulting Simulated Output Energy Schedules, hypothetical discharge, and hypothetical forebay elevation for each period at each Simulator Project. The Simulated Output Energy Schedules shall be in terms of «Customer Name»'s Slice Percentage of the available project generation, whereas the hypothetical Simulator discharge and forebay values shall be normalized. (2) A list of Input Variables, set by «Customer Name», that were not achieved for each period at each Simulator Project. (3) A list of Operating Constraints that were violated for each period at each Simulator Project. (4) An explanation for each occurrence from section 6(a)(2) and	

	section 4(a)(iii) and 4(a)(iv) above. vi. Determination of «Customer Name»'s Hydraulic Link Adjustment, which will be established as the difference between «Customer Name»'s hypothetical Chief Joseph discharge and the actual Chief Joseph discharge.		6(a)(3) above. (5) «Customer Name»'s Hydraulic Link Adjustment, which shall be established as the difference between «Customer Name»'s hypothetical Chief Joseph discharge and the measured Chief Joseph discharge, pursuant to section 10 below.	
Section 5	5. SWRM Documentation, Accuracy and Improvements a. Documentation – PS and «Customer Name», along with the other Slice customers shall jointly develop a detailed specification manual describing the SWRM. The SWRM specification manual shall include the following: i. Specific sources of any data imported by SWRM from BPA databases or other sources (e.g. a data point imported from a PS internal database, produced by some other model, such as Columbia Vista). ii. Specific and complete documentation of the process by which SWRM computes and produces output values. iii. Complete documentation of the functioning of the SWRM, including the access and control of the model available to PS users and «Customer Name»'s users. iv. Complete documentation of the data output/display process and communication protocols with «Customer Name»'s computer systems. b. SWRM Updates – Updates, upgrades, or replacements to SWRM will be subject to the SAG review process established in section XX below. Prior to PS adopting or implementing changes to SWRM, the specification manual will be updated by PS, distributed to «Customer Name», and reviewed by the SAG, with sufficient advance notice to allow a smooth transition to the updated model and related scheduling process. c. SWRM Accuracy – In any model process, there are two predominant sources of error. These are input accuracy errors and model process errors. i. Input Accuracy Errors – PS will ensure data inputs to SWRM accurately reflect the inflows and Operating Constraints of the Coulee-Chief Complex and LCOL Complex projects. PS will develop a process to	Ex M Section 7	4. **SIMULATOR DOCUMENTATION, IMPROVEMENTS, AND ACCURACY** (b) PS shall develop a manual with specifications describing the Simulator use, with «Customer Name»'s input, and in sufficient detail to permit «Customer Name» to understand the interface and verify the operation and accuracy of the Simulator outputs. The Simulator manual shall include the following: (1) A list of specific data sources imported by the Simulator from BPA databases or other sources. (2) Full documentation of the processes by which the Simulator computes and produces output values, but not including computer code. (3) Full documentation of the Simulator functions, including the interface access and controls of the Simulator available to «Customer Name»'s users, but not including computer code. (4) Full documentation of the data output/display process and communication protocols with «Customer Name»'s computer systems. (c) If requested, PS may also provide «Customer Name» assistance in developing an operational manual to explain how the Simulator is to be operated by «Customer Name» and other Slice customers. (d) Updates, upgrades, or replacements to the Simulator shall be proposed, developed, and tested by PS, with input from «Customer Name» and other Slice customers. Any such updates, upgrades, or replacements to the Simulator shall be reviewed by the Slice Implementation Group in a process set out in section 3(b)(12), Slice Implementation Group, prior to their implementation. Prior to PS implementing any updates, upgrades, or replacements to the Simulator, the Simulator manual described in section 7(a) above shall be revised by PS and distributed to «Customer Name»'s SIG representative 30 days in advance of the implementation of the update, upgrade, or replacement to the Simulator and related scheduling and any changes in the accounting processes being affected. (e) In any model process, there are two predominant sources of error. These are input accuracy errors and model process errors. (1) To minimize such errors PS shall ensure Input Parameters established for the Simulator reflect the correct values for forecasted inflows and Operating Constraints and that the Simulator reasonably represents the operational attributes of the	Clarified that BPA is responsible for the specifications manual but will seek input from the customers. Distinguishes BPA's spec manual from the Customer's operating manual. Clarified that BPA is responsible for Simulator upgrades, and that a SIG review process will take place, but not a SIG vote. Section 3(b)(12) of the body gives BPA the right to upgrade or replace the Simulator as needed to maintain reasonable output, or to maintain functionality as BPA business systems change.

	reconcile differences between forecasted inflows and h/k's reflected in SWRM and actual inflows and h/k's in an effort to minimize cumulative deviations. «Customer Name» will ensure data inputs to SWRM reasonably reflect their intended Schedule Requests. ~~ii. Model Process Errors – These errors occur when model processes do not accurately represent the attributes of the system being modeled. Generally, the provisions in section 5(c)(i) will address these errors.~~ iii. «Customer Name» and PS acknowledge that model errors are to some extent inevitable, and the consequences stemming from such errors can be either beneficial or detrimental. The Parties expect beneficial and detrimental impacts of the errors will likely be inconsequential as the errors should not be systematic in nature, but subject to random variation. ~~All input parameters, however, established by PS will be logged and tracked so that the degree of error can be reviewed and a determination made whether the degree of various errors is truly acceptable or in need of correction.~~ Although cumulative accounting of model error impacts will not be established, the Parties may consider such impacts on a case-by-case basis. d. As an ongoing check of SWRM's accuracy, PS will periodically run after-the-fact studies, using actual conditions as input parameters, and comparing results to actual system data. Such comparative results will be made available to «Customer Name».		Simulator Projects. PS shall develop a process to highlight and correct differences between forecasted inflows and h/k values reflected in the Simulator and measured inflows and h/k's in an effort to minimize cumulative deviations. «Customer Name» will accept such inputs and corrections, and shall ensure Input Variables established for the Simulator reasonably reflect «Customer Name»'s intended use of hourly scheduling flexibility within established Delivery Limits. (2) «Customer Name» and PS acknowledge that model errors are inevitable, and the consequences from such errors can be either beneficial or detrimental and will likely be inconsequential. No cumulative accounting of model error impacts shall be required or established. The Parties may consider such impacts on a case-by-case basis. (3) As an ongoing check of the Simulator's accuracy, PS shall run an after-the-fact study each quarter using actual FBS conditions as Input Parameters and Input Variables. PS will compare study results to actual system data. Such comparative results shall be made available to «Customer Name» within 30 days after PS completes each study.	Deleted because both types of errors are addressed in section (e)(1). Customers will have access to the Input Parameters, and can import and store them if they so choose. Specified "periodically" as "quarterly" reporting.
Section 6	6. Storage and Deviation Accounting «Customer Name» will have a separate storage deviation account for each project of the Coulee-Chief Complex and LCOL Complex. The benchmarks for such storage and deviation accounting will be actual system discharges, h/k's, and forebay elevations. «Customer Name» will also have an energy deviation account for the BOSS. The benchmark for the BOSS deviation accounting will be actual BOSS energy amounts. a. The Storage Offset Account (SOA) for «Customer Name» for each of the projects included in the Coulee-Chief Complex and LCOL Complex will be maintained in cumulative Storage Content (ksfd), based on the sum of the following components: i. Except for Grand Coulee and McNary, «Customer Name»'s requested discharge, as represented by SWRM, from the next-upstream project minus that project's actual discharge,	Ex M Section 8	**5. STORAGE AND DEVIATION ACCOUNTING** (b) PS shall develop for «Customer Name» separate storage deviation accounts for each Simulator Project. The storage deviation accounts shall use measured system discharges, h/k's, and forebay elevations as benchmarks. PS shall develop for «Customer Name» an energy deviation account for the BOSS. The BOSS Deviation Accounting benchmark shall be the actual BOSS energy amount. (c) PS shall develop a Storage Offset Account for «Customer Name» representing each of the Simulator Projects which shall be established in cumulative Storage Content (ksfd), based on the sum of the following components: (1) For all Simulator Projects except for Grand Coulee and McNary, «Customer Name»'s Calibrated Simulator Discharge, as described in section 9 below, from the next-upstream project minus that project's measured discharge,	

	ii. The actual discharge from each project minus «Customer Name»'s requested discharge for that project, as represented by SWRM, iii. Each project's actual h/k minus the h/k reflected by SWRM for that project, divided into «Customer Name»'s Schedule Requests, as represented by SWRM. This computation will result in a Storage Content value (h/k correction). The actual h/k for Coulee will be adjusted for head differences based on «Customer Name»'s Grand Coulee SOA. iv. For McNary only, «Customer Name»'s Hydraulic Link Adjustment, ~~v. For Grand Coulee only, «Customer Name»'s Discretionary Storage inflow adjustment.~~ vi. The prior hour SOA for the Project. b. «Customer Name»'s September 30, 2011 SOA balance for each of the projects will be initialized to zero. c. The SOA for each project will be added to the project's PSC and the result converted to an elevation using content to elevation tables established by project owners. The resulting project forebay elevations will establish «Customer Name»'s initial SWRM project elevations each hour. d. The BOSS deviation account will be established as the cumulative difference, measured in MWd, between «Customer Name»'s Base BOSS schedule for each scheduling hour and the BOSS ASSG for each hour. The cumulative BOSS deviation will be reduced from time to time based on the following procedures: i. If as of hour ending 2200 on any given day the absolute value of the normalized average of all Slice purchasers' BOSS deviation accounts exceeds 5% of the next day's Base BOSS Amount, PS will adjust the next day's Base BOSS Amount in a compensating manner by an energy amount equal to 20% of such normalized average of the BOSS deviation accounts. Such adjustment shall be made equally to each hour of the day. ii. On or before the 15th day of each month PS shall provide to «Customer Name» the results of a BOSS ASSG recalculation for the previous month that incorporates updated generation and System Obligation values for each day of that month to determine a monthly BOSS ASSG deviation, in MW-days. On the 20th day of each month BPA shall make effective an adjustment to «Customer Name»'s BOSS Deviation		(2) The measured discharge from each project minus «Customer Name»'s Calibrated Simulator Discharge for that project, (3) For McNary only, «Customer Name»'s Hydraulic Link Adjustment, as described in section 10 below, (4) «Customer Name»'s SOA balance from the prior hour. (d) PS shall establish «Customer Name»'s September 30, 2011 SOA balance for each Simulator Project at zero. (e) For purposes of initializing «Customer Name»'s simulated forebay elevations, «Customer Name»'s SOA balance for each Simulator Project shall be added to the associated Project Storage Content and the result shall be converted to an equivalent forebay elevation using content-to-elevation tables established by project owners. (f) «Customer Name»'s BOSS Deviation Account shall be established as the cumulative difference, measured in MWd, between «Customer Name»'s BOSS Base schedule for each scheduling hour and the BOSS Actual Slice System Generation for each hour. «Customer Name»'s BOSS Deviation Account balance shall be reduced from time to time based on the following procedures: (1) If the absolute value of the normalized average of all Slice purchasers' BOSS Deviation Account balances as of 1200 hours PPT on any given day exceeds 5% of the following day's estimated BOSS Base Amount, expressed in MWd, PS shall adjust the following day's estimated BOSS Base Amount in a compensating manner by 20% of such normalized average of the BOSS Deviation Account balances. Such adjustment to the estimated BOSS Base Amount shall be applied equally to each hour of the day. (2) On or before the 15th day of each month PS shall provide to «Customer Name» the results of a BOSS ASSG recalculation for the previous month that incorporates updated generation and System Obligation values for each day of that month to determine a monthly BOSS deviation relative to the BOSS Base Amount, expressed in MWd. On the 20th day of each month BPA shall make effective an adjustment to «Customer Name»'s BOSS Deviation Account equal to the product of	The Calibrated Simulator Discharge concept (section 6) mentioned in 5(c)(1) and (2) replaces the Framework section 6(a)(iii), while the overall SOA concept is unchanged. This deletion coincides with the removal of the Discretionary Storage provision (section 2 above).

	Account equal to the product of their SSP and the monthly BOSS ASSG deviation associated with the previous month. e. «Customer Name» shall make reasonable efforts to adjust its request of Slice Output to bring its SOA and BOSS Deviation Accounts to zero by 2400 hours PPT on the last day of the term of this Agreement. Any balances in the SOA and BOSS Deviation Accounts as of 2400 hours PPT on the last day of the term of this agreement will be converted to MWh using full downstream h/ks. The resulting amount of energy, if positive, will be delivered from «Customer Name» to BPA, or if negative, delivered from BPA to «Customer Name» within 30 days of the termination of this Agreement.		«Customer Name»'s Slice Percentage and the monthly BOSS deviation associated with the previous month. (g) «Customer Name» shall make all reasonable efforts to adjust its request of Slice Output deliveries to bring its SOA balances to zero by 2400 hours PPT on September 30, 2028 or the date of termination of this Agreement, whichever occurs earliest. Any balances in «Customer Name»'s SOAs as of 2400 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 energy values shall be summed with «Customer Name»'s BOSS Deviation Account balance as 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 from BPA to «Customer Name», or if negative, delivered from «Customer Name» to BPA, within the next 30 days after the termination of this Agreement.	This revision recognizes the customer has no ability to adjust the BOSS deviation.
		Ex M Section 9	**6. CALCULATION AND APPLICATION OF THE CALIBRATED SIMULATOR DISCHARGE** (b) «Customer Name»'s Calibrated Simulator Discharge shall be calculated by PS for each Simulator Project for each hour by summing the following components. (1) The value produced by dividing «Customer Name»'s Simulated Output Energy Schedule by «Customer Name»'s Slice Percentage, then dividing the result by the project's Actual H/K, (2) The project's Actual Bypass Spill, and (3) The project's Required Fish Spill. (c) «Customer Name»'s Calibrated Simulator Discharge shall be applied each hour to «Customer Name»'s Simulator as the established hypothetical hourly discharge for the associated project.	This concept was developed by BPA to simplify the SOA accounting. No change was made to the deviation accounting concept outlined in the Framework.
		Ex M Section 10	**7. CALCULATION AND APPLICATION OF THE HYDRAULIC LINK ADJUSTMENT** (b) «Customer Name»'s Hydraulic Link Adjustment shall be determined for the following periods each day of this Agreement. (1) The period including hours ending 2300 through 0600 (2) The period including hours ending 0700 through 1400 (3) The period including hours ending 1500 through 2200 (c) «Customer Name»'s Hydraulic Link Adjustment shall be calculated as «Customer Name»'s average Chief Joseph Calibrated Simulator Discharge for each period above, minus the average Chief Joseph measured discharge for the same period. (d) «Customer Name»'s Hydraulic Link Adjustment shall be applied as an adjustment to «Customer Name»'s simulated inflow to McNary in an equivalent amount for each hour of the same period the following day.	The application of the Hydraulic Link Adjustment in 8-hour blocks had been discussed with customers but never put into the Framework language. BPA developed this language based on those discussions.

Section 7	7. Grand Coulee PSB, Exceedences, and Storage Content Transfers a. **Determination of Grand Coulee PSB** To determine Grand Coulee's PSB pursuant to section 8(g), PS shall calculate the PSC associated with Grand Coulee's upper and lower ORC. The Grand Coulee upper and lower PSB will be no less than ½-foot different from one another at all times, except when Grand Coulee is required to fill to 1290.0 for verification of refill. b. **Grand Coulee PSB Exceedence** «Customer Name»'s exceedence of their individual Grand Coulee PSB will be determined according to the formula below. The quantity determined using the formula below may be transferred out of «Customer Name»'s SSA, if positive, or «Customer Name» may incur Unauthorized Increase Charge, if negative, pursuant to section 7(c) below. ~~**SC = (Greater of 0 or (SSA – uPSB)) + (Lesser of 0 or (SSA – lPSB))**~~ ~~Where:~~ ~~**SC** is the Storage Content by which «Customer Name»'s SSA exceeds the PSC for Grand Coulee in ksfd.~~ ~~**SSA** is «Customer Name»'s Slice Storage Account balance as measured in ksfd.~~ ~~**uPSB** is «Customer Name»'s upper Project Storage Bound for Grand Coulee as measured in ksfd.~~ ~~**lPSB** is «Customer Name»'s lower Project Storage Bound for Grand Coulee as measured in ksfd.~~ c. **Application of The Grand Coulee PSB** Any time «Customer Name»'s Grand Coulee PSB exceedence as calculated pursuant to section 7(b) above is greater than zero, such amount must be eliminated by «Customer Name». Beginning on or before the day following the day «Customer Name» is notified by PS of such exceedence, «Customer Name» shall take the action(s) described in sections 7(c)(i) through 7(c)(iii) below to return their Slice Storage Account balance to a condition that is within their Grand Coulee PSB to avoid penalties. ~~i. «Customer Name» may utilize transfers of Storage Content from or to its SSA, pursuant to section 7(e) below, to offset the Grand Coulee PSB exceedence.~~ ii. «Customer Name» shall adjust its requests for Slice	Ex M Section 12	12. **GRAND COULEE PROJECT STORAGE BOUNDS AND EXCEEDENCES** **(a) Determination of Grand Coulee Project Storage Bounds** To determine Grand Coulee's Project Storage Bounds (PSB) pursuant to section 14(b) below, PS shall calculate and the Simulator shall include the Project Storage Content associated with Grand Coulee's upper and lower Operating Rule Curve (ORC). PS shall establish a difference of at least ½-foot between Grand Coulee's upper and lower PSB at all times except when Grand Coulee is required to fill to 1290.0 for verification of refill. **(b) Grand Coulee Project Storage Bound Exceedence** «Customer Name»'s exceedence of it's individual Grand Coulee PSB shall be the Storage Content by which «Customer Name»'s Slice Storage Account is in excess of the Grand Coulee upper Project Storage Bound (upper PSB) or is less than the Grand Coulee lower Project Storage Bound (lower PSB). An upper PSB exceedence is denoted as a positive value, while a lower PSB exceedence is denoted as negative value. Such exceedence may result in a penalty pursuant to section 12(c)(4) below. **(c) Application of The Grand Coulee PSB** (1) Any time «Customer Name»'s Grand Coulee PSB exceedence as established pursuant to section 12(b) above is not equal to zero, such amount shall be eliminated by «Customer Name». Beginning on or before the day following the day «Customer Name» is notified by PS of such exceedence, «Customer Name» shall take the action(s) described in section 12(c)(2) below to return «Customer Name»'s Slice Storage Account balance to a condition that is within «Customer Name»'s Grand Coulee PSB to avoid penalties. (2) «Customer Name» shall adjust its requests for Slice Output	The formula was replaced with verbiage within section 12(b), as suggested by Slice customer comments. This deletion coincides with the removal of Storage Transfers (see below).

	Output in compliance with one of the following two requirements: 1. «Customer Name»'s exceedence as calculated pursuant to section 7(b) shall be reduced to zero; or 2. «Customer Name» shall schedule its Slice Output such that their SWRM results are within 3 kcfs below the most limiting daily maximum system flow constraint, or 3 kcfs above daily most limiting minimum system flow constraint, for as many days as necessary to eliminate such exceedence. iii. «Customer Name» may alternately elect to schedule its Slice Output in a manner to reduce the exceedence pursuant to section 7(b) above to zero prior to the day following the day of notification. If «Customer Name» does so, «Customer Name» shall not be required to adjust its Slice Output as specified in sections 7(c)(i) or 7(c)(ii) above. If «Customer Name» complies with the requirements of section 7(c)(i) through 7(c)(iii), no penalty will be applied. If «Customer Name» fails to take actions as specified in 7(c)(i) through 7(c)(iii), such exceedence pursuant section 7(b), penalties, yet to be established, may apply. ~~d.~~ **~~Storage Content Transfers~~** ~~«Customer Name» may transfer Storage Content between its Slice Storage Account and other Slice purchasers' (herein referred to as the host party) Slice Storage Accounts to the extent adequate storage space is available in the host party's Slice Storage Account. «Customer Name» may subsequently transfer such Storage Content to other Slice Purchasers' Slice Storage Accounts if the Storage Content transferred to the original host party needs to be vacated for any reason. Storage Content transferred between Slice Storage Accounts may remain in the host party's Slice Storage Account until it is forced out of storage to avoid spill. The host party shall not increase deliveries of Slice Output using Storage Content associated with the Storage Content transfers. The host party shall not spill the Storage Content associated with Storage Content transfers. Such transfers of Storage Content between Slice Storage Accounts shall not relieve «Customer Name» of its obligation pursuant to section 4(b)(3)(A) of this Agreement.~~ ~~«Customer Name» shall notify PS of the amount of any transfer~~		deliveries in compliance with one of the following two requirements: (A) «Customer Name»'s exceedence as established pursuant to section 12(b) shall be eliminated; or (B) If the Grand Coulee PSB exceedence is positive, «Customer Name» shall schedule it's Slice Output such that its Simulator results are within 3 kcfs below the most limiting daily maximum system flow constraint, or if the Grand Coulee PSB exceedence is negative, «Customer Name» shall schedule it's Slice Output such that its Simulator results are within 3 kcfs above the most limiting daily minimum system flow constraint, for as many days as necessary to eliminate such exceedence. (3) «Customer Name» may alternately elect to schedule Slice Output in a manner to eliminate the exceedence established pursuant to section 12(b) above prior to the day following the day of notification. If «Customer Name» does so, «Customer Name» shall not be required to take actions specified in sections 12(c)(2) above. (4) If «Customer Name» complies with the requirements of section 12(c)(2) no penalty shall be applied. If «Customer Name» fails to take actions as specified in 12(c)(2) such exceedence pursuant section 12(b) shall be subject to penalties, yet to be established.	Storage Transfers were removed by BPA because (1) it aligns with the Alt 2 concept of eliminating provisions that had not be implemented in the current product (2) customers and BPA do not agreed on interpretation of this provision (3) BPA has no equivalent ability to deem storage into or removed from a reservoir.

	~~it wishes to make. Such notification shall include the amount of the transfer, the delivering party, the host party, whether the transfer is an initial transfer or return of prior transferred amounts and the effective date(s) of transfer. Any transfer of Storage Content between Slice Storage Accounts for which PS receives notification prior to 1600 hours PPT will be reflected in the appropriate account balances on the date such notification is received.~~ ~~There are no charges for the transfers of Storage Content between Slice Storage Accounts under this Agreement. This Agreement shall not dictate or limit the fees, if any, which the parties making such transfer may mutually agree to.~~			
Section 8	8. Communications a. «Customer Name» will have an ability to access changes in the input parameters PS establishes pursuant to section 2 through «Customer Name»'s automated access to SWRM. b. PS will also provide «Customer Name» a daily written summary of Operating Constraints PS establishes as SWRM input parameters. c. PS shall communicate Federal Operating Decisions to «Customer Name» in the following manner: i. An immediate notification via the electronic scheduling system in place between PS and «Customer Name»; and ii. An immediate email to «Customer Name»'s Operating Subcommittee representative and alternate and others designated by «Customer Name»'s Operating Subcommittee representative in writing submitted to PS's Operating Subcommittee representative and alternate; and iii. A report to the attendees during the next scheduled daily conference call. ~~d. Significant changes to model input parameters established by PS will be communicated to «Customer Name» as soon as practicable via phone/voice box communication and/or messaging systems.~~ e. Beginning September 28, 2011, and on each Business Day thereafter, PS shall initiate an informational conference call with	Ex M Section 13	**13. COMMUNICATIONS** (a) «Customer Name» shall be solely responsible for its internal dissemination of information provided by PS pursuant to this Exhibit M, Slice Computer Application and Implementation Procedures. (b) «Customer Name» shall be able, by use of the Simulator interface, to access the Input Parameters established by PS pursuant to section 3 above. (c) PS shall provide «Customer Name» a daily written summary of Operating Constraints PS establishes as the Simulator Input Parameters. (d) Changes made by PS to the Simulator Input Parameters shall be available to «Customer Name» upon request to PS by submission in the report described in section 5(b) above. (e) PS shall communicate Federal Operating Decisions to «Customer Name» in the following manner: (1) An initial listing and description of Federal Operating Decisions in effect as of September 30, 2011; (2) An immediate notification via confirmed delivery and receipt electronic messaging systems in place between PS and «Customer Name»; and (3) A verbal report to the attendees during the next scheduled daily conference call as described in section 13(f) below. (f) Beginning September 28, 2011, and on each Business Day after that, PS shall initiate an informational conference call with «Customer Name»	BPA clarified that customers are responsible for their internal dissemination of information provided by BPA. Ties to the remote report added to section 5 above. There is no Operations Subcommittee in the post-2011 contract. The remote reporting tool described in 5(b) will cover this need.

	«Customer Name» and the other Slice purchasers promptly at the time specified in Exhibit X, section XX to discuss and ask clarifying questions about unit availability, Operational Constraints, 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 Slice Parties. «Customer Name» shall receive written notice from PS prior to any such change via e-mail.			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 Slice Parties. «Customer Name» shall receive notice from PS via e-mail at least 3 Business Days prior to any such change.	
	f. No later than X minutes following the close of each clock hour, PS shall provide «Customer Name» with a detailed summary of «Customer Name»'s deviation accounting as specified in Section 6, «Customer Name»'s effective forebay elevations for the SWRM projects, as well as actual hourly generation, discharge and forebay elevations for the projects in the Coulee-Chief Complex and LCOL Complex (note: so the customer can calculate their SOAs).	Ex M Section 5	(a)	No later than 5 minutes following the close of each delivery hour, PS shall provide «Customer Name» a detailed report of «Customer Name»'s deviation accounts as specified in Section 8 below, «Customer Name»'s adjusted forebay elevations for the Simulator Projects, as well as the actual project data «Customer Name» needs to verify its deviation account balances.	
	g. Prior to midnight on the 23rd day of each month, PS shall provide «Customer Name» the results of a 90-day forecast, pursuant to section 9(a). PS shall update such forecast during the month in the event of significantly changed conditions and shall make the results of such updated forecast available to «Customer Name».	Ex M Section 14	(a)	Prior to midnight on the 23rd day of each month, PS shall provide «Customer Name» the results of a 90-day forecast, pursuant to section 14(b) below. PS shall update such forecast during the month in the event of significantly changed conditions and shall make the results available to «Customer Name».	
	h. Prior to July 1, 2011, and prior to each July 1 thereafter during the term of this Agreement, PS, «Customer Name», and other Slice purchasers shall meet to discuss and review inputs, assumptions, and content of the Muli-year Hydroregulation Study described in Section 9(b).	Ex M Section 15	(a)	Prior to July 1, 2011, and prior to each July 1 thereafter during the term of this Agreement, PS, «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 15(d) below.	
	i. Prior to August 1, 2011, and prior to each August 1 thereafter during the term of this Agreement, PS shall provide «Customer Name» with results from the Multiyear Hydroregulation Study, pursuant to section 9(b).		(b)	Prior to August 1, 2011, and prior to each August 1 thereafter during the term of this Agreement, PS shall provide «Customer Name» with results from the 12-month forecast, pursuant to section 15(d) below.	
	j. PS, «Customer Name», and other Slice purchasers shall meet prior to August 31, 2011 and prior to each August 31 thereafter during the term of this Agreement to discuss the results of the Multiyear Hydroregulation Study described in section 9(b).		(c)	PS, «Customer Name», and other Slice purchasers shall meet prior to August 31, 2011 and prior to each August 31 thereafter during the term of this Agreement to discuss the results of the 12-month forecast described in section 15(d) below.	
	k. PS, «Customer Name», and other Slice purchasers will establish a process (SAG?) to review and discuss Operating Constraints and their reasonable application over time. The goal is to foster a cooperative approach leading to a continuous improvement of the SWRM model and the Delivery Limit determination process.	Ex M Section 13	(g)	PS, «Customer Name», and other Slice purchasers shall establish a process, through the SIG or a subcommittee thereof, to discuss Operating Constraints and their application, but the SIG or subcommittee shall not vote on Operating Constraints and their application.	
Section 9	9. Forecasted Slice Output a. 90-Day Forecast – PS, consistent with it's internal study processes, will perform two hydroregulation studies for the	Ex M Section 14	**14. 90-DAY FORECAST OF SLICE OUTPUT** (b)	PS, consistent with its internal study processes, shall perform two single-trace hydroregulation studies representing the expected stream flow	BPA created a new section for the 90-day forecast.

		period including the upcoming 3 months representing the expected stream flow condition; one study operating to the minimum flow constraint in order to attain the highest reservoir elevations possible, limited by the upper ORC, and one study operating to the maximum flow constraint in order to attain the lowest reservoir elevations possible, limited to the lower ORC. PS shall initialize the starting reservoir Storage Contents for each study at the Storage Contents projected to occur at midnight on the initialization date. Based on the results of these studies, PS shall provide to «Customer Name» the weekly natural inflow, turbine discharge, generation, spill discharge, and ending elevation for each of the hydroelectric projects of the Slice System listed in 1(a) and 1(b) of Exhibit H to this Agreement; the weekly generation forecasts for the sum of the miscellaneous projects listed in the BOSS; the weekly CGS generation forecast; and the weekly forecast of the individual System Obligations. PS shall also provide a current schedule of forecasted planned unit outages.			condition for the period including the upcoming 3 months. One study shall operate to the minimum 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 the maximum flow constraint in order to attain the lowest reservoir elevations possible at Grand Coulee, limited to its lower ORC. Both studies shall represent a pass-inflow operation at all other Coulee-Chief Complex and LCOL Complex projects and the expected operation at all other Slice System projects. PS shall initialize the starting reservoir Storage Contents for each study at the Storage Contents projected to occur at midnight on the initialization date. Based on the results of these studies, PS shall provide to «Customer Name» the weekly natural inflow, turbine discharge, generation, Spill discharge, and ending elevation for each of the Coulee-Chief Complex projects, the LCOL Complex projects, the Snake Complex projects, Libby, Hungry Horse, Dworshak, and 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. PS shall also provide a summary of weekly aggregated planned generator maintenance outages, in terms of total MW, for all Slice System projects, as well as the daily Grand Coulee upper and lower PSB for the study period.	In both the 90-day and 12-month forecast sections BPA clarified which project data would be included. The Framework reference was to an exhibit list that no longer exists.
	b. Multi-Year Forecast – PS, consistent with its internal study processes, will perform a single hydroregulation study for the upcoming August through July period representing a range of stream flow sequences. PS shall initialize the starting reservoir Storage Contents for this study at the Storage Contents projected to occur at midnight on the initialization date. Based on the results of this study, PS shall provide to «Customer Name» the monthly natural inflow, turbine discharge, generation, spill discharge, and ending elevation for each of the hydroelectric projects of the Slice System listed in 1(a) and 1(b) of Exhibit H to this Agreement; the monthly generation forecasts for the sum of the miscellaneous projects listed in the BOSS; the monthly CGS generation forecast; and the monthly forecast of the individual System Obligations. PS shall also provide a current schedule of forecasted planned unit outages.	Ex M Section 15	**15. 12-MONTH FORECAST OF SLICE OUTPUT** (d) PS, consistent with its internal study processes, shall perform a single Multiyear Hydroregulation Study for the upcoming August through July period representing a range of stream flow traces. The study shall reflect Grand Coulee achieving ORC at times when its upper and lower ORC are equal values. At times when Grand Coulee's upper and lower ORC are not equal values, the study shall indicate Coulee operating in a manner that achieves all system flow constraints when possible. The study shall represent a pass-inflow operation at all other Coulee-Chief Complex and LCOL Complex projects and the expected operation at all other Slice System projects. PS shall initialize the starting reservoir Storage Contents for this study at the Storage Contents projected to occur at midnight on the initialization date. Based on the results of this study, PS shall provide to «Customer Name» the monthly natural inflow, turbine discharge, generation, Spill discharge, and ending elevation for each of the Coulee-Chief Complex projects, the LCOL Complex projects, the Snake Complex projects, Libby, Hungry Horse, Dworshak, and 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. PS shall also provide a summary of monthly aggregated planned generator maintenance outages, in terms of total MW, for all Slice System projects.	BPA created a new section for the 12-month forecast.

Section 10	10. CGS Displacement – a. **Displacement Election** i. As soon as available during each CY, PS shall provide «Customer Name» with the Operating Plan for the next operating year and the Incremental Costs actually incurred by PS in the immediately preceding operating year. Beginning with the 2012 CY, «Customer Name» may submit to PS a written notice by January 31 of each CY stating that it does not wish to participate in Displacement as implemented by PS during the period commencing February 1 of such CY though January 31 of the next CY. Such election shall remain in place and shall be irrevocable for such period, and shall apply to all Displacement implemented by PS during such period. ii. ~~If «Customer Name» does not submit its written election in accordance with section 10(a) above, «Customer Name» will be deemed for all purposes to have elected to participate in all Displacement implemented by PS during the next period~~. iii. If «Customer Name» elects to not participate in Displacement pursuant to section 10(a)(1) above, «Customer Name» will be entitled to amounts of Additional Energy as set forth in section 10(c) below. ~~b. **Shutdown Election**~~ ~~i. Each time PS decides to implement a Shutdown, PS shall provide «Customer Name» (written) notification as early as practicable, but in any event not later then 3 days prior to commencing a Shutdown. Such notice shall include when the Shutdown will be implemented, the anticipated Generation Benchmark to be used for such Shutdown, and the expected duration of the Shutdown. Such notice of a Shutdown shall operate as a notice that any Displacement has been discontinued for the Shutdown period. Notice shall be given in accordance with this section 10(b)(1) each time PS decides to implement a Shutdown during a CY.~~ ~~ii. Not later than 1 day prior to the day the Shutdown is commenced, «Customer Name» may provide PS with (written) notice that it does not wish to participate in the proposed Shutdown. If «Customer Name» does not submit the written election in accordance with the preceding sentence, «Customer Name» will be deemed for all purposes to have elected to participate in the Shutdown.~~	Body Section 3(b)(10)	3(b)(10) **Displacement of Columbia Generating Station (CGS)** **(A) Definitions** (i) Intentionally omitted **(B) CGS Displacement Election** No later than January 31, 2011, and no later than January 31 of each calendar year thereafter, «Customer Name» shall provide PS written notice stating whether or not it elects to participate in CGS Displacements for the Election Year that begins on the following day. Such election shall be irrevocable for each such Election Year, and shall apply to all CGS Displacements implemented by PS during such Election Year. (C) **Election to Participate in CGS Displacement** If «Customer Name» elects to participate in CGS Displacements, then «Customer Name» shall not be entitled to Additional Energy.	BPA is requesting an annual letter from each customer stating whether they plan to participate or not participate in CGS Displacements. See comment above. For simplification, BPA eliminated the distinction of reductions vs shut-downs. Now a "Displacement" is anytime CGS is reduced for economics, even when taken off-line. The annual election covers all Displacement events.

	~~iii.~~ ~~If «Customer Name» elects not to participate in any Shutdown pursuant to section 10(b)(2) above, «Customer Name» will be entitled to amounts of Additional Energy as set forth in section 10(c) below.~~ c. **Rights to Additional Energy** i. For any period during which «Customer Name» has given notice that it elects not to participate in Displacement pursuant to section 10(a)(1) above, and for any Shutdown that «Customer Name» elects not to participate in pursuant to section 10(b)(2) above, «Customer Name» shall take delivery of Additional Energy associated with each such Displacement and each such Shutdown. PS shall provide «Customer Name» at the Points of Receipt ~~such Additional Energy in the same shape and amount as it would have been generated in the absence of such Shutdown or Displacement.~~ ii. PS will maintain for «Customer Name» an accumulated Additional Energy account that will indicate the amount of Additional Energy which was delivered to «Customer Name» during each CY. The accumulated Additional Energy account shall be set to zero at the start of each CY regardless of any amount remaining in the account. iii. «Customer Name» will pay an amount equal to the product of «Customer Name»'s balance in the accumulated Additional Energy account at the end of each CY and the Incremental Costs for such CY. Such amount payable by «Customer Name» during any year will be included in the Individual Charges.		(D) **Election Not to Participate in CGS Displacements** If «Customer Name» elects to not participate in CGS Displacements, then «Customer Name» shall be entitled to amounts of Additional Energy as described in this section 3(b)(10)(D). (i) «Customer Name» shall take delivery of Additional Energy associated with each CGS Displacement. PS shall make such Additional Energy available to «Customer Name» at the Points of Receipt. (ii) PS shall maintain for «Customer Name» an account that will indicate the accumulated amount of Additional Energy that was delivered to «Customer Name» during each CGS Displacement. (iii) Following the end of each Election Year, «Customer Name» shall pay an amount equal to «Customer Name»'s balance in the accumulated Additional Energy account multiplied by the Incremental Rate and such account balance shall be set to zero for the beginning of the subsequent Election Year. Such amount shall be included in the Individual Charges. *Reviewer's note: The CGS Operating Plan may be submitted on a Fiscal Year basis to align with BPA's firm planning processes.* (E) **Operating Plan and Incremental Rate** Within 30 days following the date that the Operating Plan for the upcoming Operating Year is adopted, PS shall provide «Customer Name» such Operating Plan and the actual Incremental Rate associated with the immediately preceding Operating Year.	The amount of Additional Energy is described within the definition of the term. This is in section 10(a)(i) of the Framework document.
Section 11	11. Scheduling Mechanics and Obligations a. «Customer Name» will be responsible for arranging the delivery of their Slice Output on an hourly basis consistent with the Control Area Operator/Balancing Authority scheduling and	Ex F Section 3 and 4	**3. SLICE SCHEDULING REQUIREMENTS** *(4/4/08 Version – Slice)* (a) Definitions section intentionally omitted (b) «Customer Name» shall be responsible for arranging the delivery of its Slice Output to its ultimate destination on an hourly basis. Schedule submissions to Power Services will primarily be via Power Services	For Exhibit F - Scheduling, BPA attempted to add clarity and detail regarding

	tagging protocols. b. Schedules of Slice Output submitted by «Customer Name» for preschedule shall represent reasonably achievable Delivery Schedules and «Customer Name»'s intended Schedule Requests. c. The timeline by which «Customer Name» may submit real time adjustments to Delivery Requests to BPA will conform to the prevailing scheduling requirements of PS and the Control Area Operator (Balancing Authority, etc.). i. PS will accept «Customer Name»'s valid Delivery Requests for the upcoming scheduling hour up until the scheduling deadline specified in Exhibit X. ii. «Customer Name» may request that the PS Slice Scheduler consider adjustments to their Delivery Request outside of the prevailing PS scheduling window. PS will accept such request pursuant to section 11(g) below, otherwise the PS Slice Scheduler shall have the discretion to accept or deny such request, although such request shall not be unreasonably denied. iii. Changes to delivery schedules required by the Balancing Authority will be accommodated by PS and «Customer Name» at the time of such notification by the Balancing Authority. ~~d. Delivery schedules are firm for the hour.~~	Ex M	approved electronic methods, which may include Slice specific interfaces. However, other Power Services agreed upon submission methods (verbal, fax, etc.) are acceptable if electronic systems are temporarily not available. Transmission scheduling arrangements are handled under separate agreements/provisions with the designated transmission provider, and may not necessarily meet the same requirements as Power Services scheduling arrangements. *Reviewer's Note: The concept of period-average or period-ending Delivery Limits will be further developed in upcoming product discussions.* (c) Schedules of Slice Output submitted to Power Services by «Customer Name» for preschedule shall comply with period-average and period ending Delivery Limits and operating limits established in the Simulator, which may include period-ending storage bounds, and period-average discharge and generation values. (d) The timeline within which Power Services shall approve or deny «Customer Name»'s Delivery Requests, as represented by «Customer Name»'s E-tags, shall conform to Power Services then current preschedule and real-time scheduling guidelines as specified in Section 4 below. (1) For the purpose of approving requests for deliveries of Slice Output Power Services shall approve valid E-tags, as described in section 3(d)(2) below, «Customer Name» submits to Power Services prior to the Power Services scheduling deadline, as specified in Section 4 below. (2) Valid Power Service E-tags shall (1) identify BPA-Power Service as the generation providing entity, (2) identify «Customer Name» as first downstream PSE, (3) reflect total E-tag MW amounts that are less than or equal to «Customer Name»'s Delivery Requests. Valid Balancing Authority E-tags have different standards (such as valid OASIS numbers, etc.) than valid Power Service E-tags. (3) The Power Services Slice Scheduler shall have the sole, unilateral discretion to accept or deny E-tags «Customer Name» submits to Power Services after the Power Services scheduling deadline, regardless of the reason for the late submission, and irrelevant of submission method (electronic, verbal, fax, etc.) (4) Changes to tagged energy amounts required by the Balancing Authority for reliability purposes shall be accommodated by Power Services and «Customer Name» at the time of such notification by the Balancing Authority. **16. CONGESTION MANAGEMENT AND NODAL SCHEDULING**	the scheduling and tagging functions and timelines. This relates to preschedules beyond the 48-hour timpestep period. BPA clarified that preschedule values shall comply in some fashion with operating limits. BPA added language describing valid tags since tagging will be the method by which energy is scheduled. BPA energy schedules are firm for the hour, but TX may be nonfirm, so this

	e. If there are congestion management requirements placed on the PS by the Balancing Authority, PS will solely manage the operational requirements of such congestion management provision as required and will apply the operational impacts of such provision proportionally to «Customer Name». The net of any expenses and revenues from adhering to the requirements as set forth in the preceding sentence will be applied to the Slice Revenue Requirement in the Slice True-Up Adjustment Charge. f. If the Federal Base System is required to be scheduled nodally, the determination of sources for the schedules will be separately determined from the modeling and scheduling process.	Section 16	**(PLACEHOLDER)** (a) If there are congestion management requirements placed on the PS by the Balancing Authority, PS shall solely manage the operational requirements of such congestion management provision as required and shall apply the operational impacts of such provision proportionally to «Customer Name». The net of any expenses and revenues from adhering to the requirements as described in the preceding sentence shall be applied to the Slice Revenue Requirement in the Slice True-Up Adjustment Charge. (b) If the Federal Base System is required to be scheduled nodally, the determination of sources for the schedules shall be separately determined from the modeling and scheduling process.	language could be misinterpreted.
	g. «Customer Name» will be responsible for assuring the sum of their tagged energy amounts and their memo schedules is equal to their Delivery Requests for each scheduling hour. If, at the end of the prevailing PS scheduling window, the sum of «Customer Name»'s tagged energy amounts and memo schedules and their Delivery Requests for the upcoming scheduling hour are not equal, «Customer Name» will be notified. In such event, «Customer Name» will be allowed to adjust their Schedule Requests, within established Delivery Limits, such that their Delivery Request equals the sum of their tagged energy amounts and memo schedules for the upcoming scheduling hour. «Customer Name» shall have until 15 minutes prior to the start of the upcoming scheduling hour to make such adjustments.	Ex F Section 3	(e) «Customer Name» shall be responsible for verifying the sum of its tagged and non-tagged energy schedules (e.g., transmission loss schedules, etc., that are not tagged) is equal to its Delivery Request for each delivery hour. (1) «Customer Name» shall be have the right to submit adjusted Input Variables to PS, pursuant to section 4(a) below, in order to alter the associated Simulated Output Energy Schedules within established Delivery Limits, such that «Customer Name»'s Delivery Request is equal to the sum of its tagged and non-tagged energy amounts for each delivery hour. (2) For each delivery hour, the amount «Customer Name»'s hourly tagged and non-tagged energy amount is in excess of its Delivery Request shall be subject to the UAI charge, and the amount «Customer Name»'s hourly tagged and non-tagged energy amount is less than its Delivery Request shall be forfeited.	
	h. ~~Following the close of a scheduling hour and receipt by «Customer Name» of their updated SWRM project elevations, «Customer Name» will be allowed to rebalance their SWRM Schedule Requests in an effort to affect such project elevations. Rebalancing means that the total hourly Delivery Request may not be changed, but the SWRM Schedule Requests for individual projects may be changed. Changes to Schedule Request must be within established Delivery Limits and must be offset by changes to Schedule Requests at other projects. The rebalancing window will be available to «Customer Name» for 45 minutes following receipt by «Customer Name» of updated SWRM project elevations for the hour~~.			The rebalancing concept would add complexity to the hourly SOA and Calibrated Simulator Discharge calculations. BPA believes the improved forward vision and updates to changing conditions greatly reduces the need for a rebalancing provision.
		Ex F Section 4	**4. SCHEDULING DEADLINES** (a) **Input Variables Submissions Affecting Each Delivery Hour** «Customer Name» shall have until 15 minutes prior to the start of each	This correlates to language

			delivery hour to submit revised Input Variables to PS in order to affect the associated Simulated Output Energy Schedules for that delivery hour. The Power Services Slice Scheduler shall have the sole, unilateral discretion to reject for any reason «Customer Name»'s Input Variables associated with the upcoming delivery hour that are submitted to Power Service after 15 minutes prior to the start of the start of that delivery hour. (b) **Real-Time E-Tag Submissions Affecting Each Delivery Hour** Power Service shall approve valid E-tags, as described in section 3(d)(2) above, that affect each delivery hour and are submitted to PS by «Customer Name» prior to the Power Service E-tag scheduling deadline, which is 30 minutes prior to the start of that delivery hour. The Power Services Slice Scheduler shall have the sole, unilateral discretion to accept or deny E-tags «Customer Name» submits for each delivery hour after the Power Service scheduling deadline for that delivery hour, regardless of the reason for the late submission, and irrelevant of submission method (electronic, verbal, fax, etc.) Tag changes mandated by the Balancing Authority for reliability reasons will be managed pursuant to Section 3(d)(4) above. (c) **Preschedule E-Tag Submissions** Unless otherwise mutually agreed, all «Customer Name» preschedule E-Tags will be submitted to Power Services according to NERC instructions and deadlines for E-tagging, as specified or modified by the BA and WECC.	in the last half of the Framework section 11(g) provision. This is consistent with the current scheduling deadline but is in terms of tag submittals rather than schedules.
Section 12	12. Requirements Slice Output Compliance a. «Customer Name»'s monthly Slice to Load (STL) energy delivery must be equal to or greater than the Requirements Slice Output (RSO) value for the month. i. «Customer Name»'s monthly STL energy delivery will equal the sum of «Customer Name»'s Delivery Schedules tagged and delivered to their retail load	Body Section 3(b)(7)	3(b)(7) **Disposition of Requirements Slice Output and Monthly Slice to Load Test** (A) Requirements Slice Output (RSO) purchased by «Customer Name» under this Agreement and made available by BPA shall be used solely for the purpose of serving «Customer Name»'s Net Requirements Load. «Customer Name» shall maintain monthly documentation establishing the delivery of RSO to serve its Net Requirements Load, such as by schedule or by tag for each such month. «Customer Name» shall make such documentation available to BPA upon request. (B) «Customer Name»'s Slice Output energy delivered for service to Total Retail Load (Slice-to-Load energy delivery) during each month must be greater than or equal to the RSO energy amount for each such month, all as determined below. (i) «Customer Name»'s monthly Slice-to-Load energy delivery shall be equal to the sum of (1) «Customer Name»'s delivery schedules	This section (A) is virtually identical to section 4(b)(3)(A) in the current contract body, but was not included in the Framework document.

	service area and their Delivery Schedules delivered to BPA-TS as loss return schedules. ii. The RSO value for the month will equal the lesser of 1. The Critical Slice Amount (CSA), and 2. The Forecasted Net Requirement, less the Block energy amount. iii. If «Customer Name»'s monthly STL energy delivery equals or exceeds the RSO value, «Customer Name» will have met the requirement to delivery a sufficient amount of Slice to Load for the month. iv. If «Customer Name»'s monthly STL energy delivery does not meet the criteria specified in section 12(b)(iii), but «Customer Name»'s STL energy delivery exceeds their monthly Actual Net Requirement «Customer Name» will be deemed to have a monthly STL exceeding their RSO value for the month. v. If «Customer Name»'s monthly STL energy delivery does not meet the criteria specified in either section 12(a)(iii) or 12(a)(iv) and «Customer Name»'s AESO for the month is less than 105% of the RSO value, then «Customer Name» will be deemed to have a monthly STL exceeding their RSO value for the month so long as their STL energy delivery is greater than 95% of «Customer Name»'s AESO. b. If «Customer Name» does not comply to the requirements specified in section 12(a), a penalty may be assessed based on the under-delivery amount. The under-delivery amount will be the lesser amount by which «Customer Name» failed to meet the requirements of either 12(a)(iii), 12(a)(iv), or 12(a)(v) above. The penalty will be an additional payment made by «Customer Name» to BPA equal to the product of the energy under-delivery amount and twice the greater of the difference between the average MIDC On-Peak Firm Index and the average MIDC Off-Peak Firm Index for the month, and the difference between the average MIDC On-Peak Firm Index and the average MIDC Off-Peak Firm Index for the previous 12 months.		tagged and delivered to its Total Retail Load service area, and (2) «Customer Name»'s delivery schedules submitted to TS as loss return schedules. (ii) «Customer Name»'s RSO energy amount for each month shall be equal to the lesser of: 1. «Customer Name»'s Critical Slice Amount (CSA). 2. «Customer Name»'s forecasted Net Requirement, less the sum of the Tier 1 Block Amount and Tier 2 Block Amount. 3. «Customer Name»'s actual Net Requirement, less the sum of the Tier 1 Block Amount and Tier 2 Block Amount. (C) If «Customer Name»'s monthly Slice-to-Load energy delivery is greater than or equal to its RSO energy amount, then «Customer Name» shall have satisfied the requirements of the RSO Test (the "Test") for such month. (D) If «Customer Name»'s monthly Slice-to-Load energy delivery is not greater than or equal to its RSO energy amount, and «Customer Name»'s Actual Energy Slice Output (AESO) for the month is less than 105 percent of its RSO energy amount, then «Customer Name» shall be deemed to have satisfied the Test, provided that «Customer Name»'s Slice-to-Load energy delivery is greater than 95 percent of its AESO for such month. (E) If «Customer Name» does not satisfy the Test per section 3(b)(7)(C) and is not deemed to have satisfied the Test per section 3(b)(7)(D) for any month, then a penalty charge shall be assessed to «Customer Name» based on its under-delivery amount. (i) «Customer Name»'s under-delivery amount shall be equal to the lesser of the amount «Customer Name»'s Slice-to-Load energy delivery is less than (1) «Customer Name»'s RSO energy amount for the month, or (2) 95% of «Customer Name»'s AESO for the month. (ii) BPA plans to determine the appropriate charge at a later date and place it within the	Combined the Actual Net Requirement criteria from 12(a)(4) in the Framework in this section. The outcome of the test is the same either way. Framework section 12(a)(iv) was incorporated into 3(b)(7)(B)(ii) above.

	c. BPA may waive the penalty described in Section 12(b) above due to extenuating circumstances, which may include (non-exclusive): The inability to shape Slice Output to «Customer Name»'s net firm load shape within a month, transmission curtailments prohibiting the delivery of Slice Output to «Customer Name»'s service territory, and significant and unexpected changes in the Federal System capability within-month. If «Customer Name» requests a wavier «Customer Name» shall support such request by providing BPA data demonstrating their difficulty in meeting the RSO requirement.		final contract offer. The nature of the charge will be determined after further regional discussion, but may be a charge to «Customer Name» equal to the product of «Customer Name»'s energy under-delivery amount and (1) the Unauthorized Increase rate for such month, (2) the peak hourly Mid-C rate for such month, or (3) twice the difference between two market index rates for such month, such as the Mid-C heavy load and Mid-C light load market index rates. (F) «Customer Name» may request that BPA waive the penalty charge determined in section 3(b)(7)(E)(ii) above. «Customer Name» may only request a waiver if «Customer Name» supports such request by providing BPA data demonstrating the basis for its inability to satisfy the Test. BPA shall have the sole discretion to approve or deny such request for waiver of the penalty.	The 3 options listed as potential penalty charges reflect a range of opinions both within BPA and among customers. Failing the RSO test is equivalent to marketing Requirements power, so there needs to be an appropriate disincentive and consequence. For a waiver of the penalty, the onus is placed on the customer to provide BPA data that demonstrates actions or conditions that kept them from complying with the test.
Section 13	13. Schedule and Tagging Validations, and Penalty Assessment a. A process for validating «Customer Name»'s Schedule Requests against Delivery Limits will be developed, along with appropriate consequences for violations. b. «Customer Name» will be responsible for monitoring potential Delivery Limit violations on a prospective basis and adjusting SWRM input variables as needed to eliminate such violations. c. Delivery Limit validations associated with the Coulee-Chief Complex and LCOL Complex will be based on Schedule Requests established by «Customer Name» as of 15 minutes prior to each delivery hour. Delivery Limit validations associated with BOSS will be based on «Customer Name»'s BOSS Base Amount and BOSS Flex Amount as of the end of the prevailing PS scheduling window. Delivery Limit violations that occur due to after-the-fact changes will not be subject to penalties. d. For all SWRM projects, except Grand Coulee, Project Storage Bound validations will be applied on an hourly basis. e. For Grand Coulee, Project Storage Bound validations will be	Ex M Section 11	**17. OPERATING CONSTRAINT VALIDATIONS, VIOLATIONS, AND PENALTY ASSESSMENT** «Customer Name»'s Simulated Output Energy Schedules and simulated project operations shall be validated against Operating Constraints for each Simulator Project to determine any Operating Constraint violations. Penalties shall be applied to «Customer Name»'s violations of Hard Operating Constraints and Absolute Operating Constraints. (a) «Customer Name» shall be responsible for monitoring potential Operating Constraint violations on a prospective basis and adjusting Input Variables as needed to eliminate such violations. (b) Hourly Operating Constraint validations and violations associated with the Simulator Projects shall be based on Input Variabless established by «Customer Name» and submitted to PS prior to the PS real-time scheduling deadline pursuant to section 4(a) of Exhibit F, Power Scheduling. (c) Hourly Delivery Limit validations and violations associated with the BOSS shall be based on «Customer Name»'s BOSS Base schedule and BOSS Flex schedule established by «Customer Name» as of the PS etag scheduling deadline pursuant to section 4(b) of Exhibit F, Power Scheduling. (d) For all Simulator projects except Grand Coulee, Project Storage Bound validations shall be applied on an hourly basis. (e) For Grand Coulee, Project Storage Bound validations shall be applied	BPA developed more detail around the types of penalties that might apply to violations of operating constraints.

	applied once per day, except when the upper PSB is 1290 feet. When Grand Coulee's upper PSB is 1290 feet, upper PSB validations will be applied hourly. f. Pursuant to section 11(g) above, «Customer Name»'s hourly tagged energy amounts in excess of their Delivery Requests will be treated as a UAI, and «Customer Name»'s hourly tagged energy amounts less than their Delivery Requests will be forfeited. g. Schedule Requests in excess of hourly maximum Delivery Limits will be charged at the UAI rate. h. All other limit violations will be subject to charges based on a market proxy rate such as the ICE Day Ahead Power Mid C-Firm Index. i. Delivery Limit violations resulting from Balancing Authority required actions will not be subject to penalties.		once per day, except when the upper PSB is 1290.0 feet. When Grand Coulee's upper PSB is 1290.0 feet, Grand Coulee upper PSB validations shall be applied hourly. (f) The amount by which Simulated Output Energy Schedules exceed hourly maximum generating capability shall be charged at the UAI rate. (g) PS reserves the right to determine whether additional Operating Constraint violations and penalties are needed as the Simulator and its specification manual are developed. (h) Additional Operating Constraint violations shall be subject to charges based on either the UAI charge or a market proxy rate such as the ICE Day Ahead Power Mid C-Firm Index. (i) Operating Constraint violations resulting from within-hour Balancing Authority reliability required actions shall not be subject to penalties.	The Framework section 13(f) is incorporated into Ex F, section 3(e)(2) above. At this point we do not know all the types of violations that can occur. As the Simulator and specification manual are developed, this will become evident.