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Task Team Recommendation Summary Template

Task Team	Question/Statement of Issue	Recommendation or Proposed Options	Key Assumptions or Decision Factors
MOT-1	RTO West Forecast	Forecast will be released prior to DA Process	<ol style="list-style-type: none"> 1) Provide Information to market 2) Advisory only 3) Occurs ~ 5:00 am or similar time
MOT-2	A/S Requirements for SCs, by location	<p>Estimated requirement for upcoming day released with forecast</p> <ul style="list-style-type: none"> • By area location • Self-provider/Self-tracker requirements <u>provisions</u> must meet all technical requirements. Even if requirements satisfied and forecasted AS self-provided, the actual settlement of AS is against DA-RTO West prices for AS. 	<ol style="list-style-type: none"> 1) Advisory information only to provide SC's with RTO West's operational expectations 2) SC's have the best information about their own load and unit operations and are responsible for their own scheduling and bidding decisions 3) Differences in costs between estimated AS required to self-provide and the actual AS required by any SC at the end of the DA process are the financial responsibility of the SC.
MOT-3	Schedule and Bid Submission	<p>SC's will use a "single point of entry" to submit <u>balanced</u> schedules and/or bids (quantities by node or <u>by</u> zone with nodal distribution)</p> <ul style="list-style-type: none"> • Energy schedules • Self-provision schedules for A/S and Losses • Bids to supply IOS and energy for congestion clearing (incs and decs) • The bids to supply IOS can reflect a bid to supply capacity and a-inc/dec bids for congestion redispatch. 	<ol style="list-style-type: none"> 1) The "single point of entry" will be an electronic form/table for transmitting all relevant information. 2) All schedules and price bids will specify quantity and location. 3) Self-provided A/S schedules are implicit transmission reservations for resources provided out of area requirements.

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MOT-4	RTO West Runs Redispatch for Day-Ahead Process	<p>RTO West posts results:</p> <ul style="list-style-type: none"> • <u>Prices</u>: (a) Nodal energy prices and (b) Locational prices for capacity products • <u>Quantities Selected</u>: (a) Energy for congestion redispatch, (b) The IOS needed to supply A/S to those choosing to purchase from RTO West and (c) Supplemental Commitment¹ purchases needed to secure next-day operation (when RTO load forecast > sum of the SC's load schedules). 	<ol style="list-style-type: none"> 1) Clearing price auction used for energy. 2) Nature of locational capacity prices (area or possibly nodal) will be determined by RTO West 3) Bilateral schedules without bids and self-provided A/S are <u>ignored (i.e. assigned zero price for generation and infinite price for loads)</u> for setting clearing prices. 4) Prices for A/S capacity and congestion redispatch energy are co-optimized, i.e. the congestion effects of A/S provision are included in capacity and energy prices.² 5) Inc/Dec purchases for congestion redispatch are separate transactions between suppliers and RTO West.
MOT-5	Adjustments for Limit Schedules When Prices Exceed SC's Submitted Limit	<p>Two Options:</p> <ol style="list-style-type: none"> 1) <u>Two Interactions</u>: RTO West posts results of first run of security constrained dispatch, adjustment schedules accepted and RTO West makes second run which are <u>is</u> financially binding. 2) <u>Single Run</u>: The posted day-ahead prices are financially binding and limit schedules are not used. 	<ol style="list-style-type: none"> 1) Limit schedules if used are restricted to single point of injection to single point of withdrawal. 2) If limit schedules are allowed, all bidders should be permitted submit adjustment schedules so that first pass is a trial run only. Concern expressed that possible "game" may be played with initial submission.

¹ After receipt of schedules, RTO West will adjust its forecast for information provided by schedules and offers to provide service. The Supplemental Commitment will be made again the adjusted forecast. Recovery of Supplemental Commitment cost is from short schedules when possible or uplifted.

² Bids are selected that minimize the cost of providing RTO West's congestion clearing and AS requirements, subject to constraints defined by transmission system limitations.

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MOT-6	Day-Ahead Settlement	<ul style="list-style-type: none"> • Payments to <u>Settlement with</u> IOS providers and redispatch energy providers at posted prices. • Congestion Charge = (Sum of the Withdrawals times Prices at withdrawal nodes) minus (Sum of the Injections times Prices at injection nodes) • Congestion Hedge Credit = nodal prices applied to FTO/CTRs 	Results of Day-Ahead Process are financially binding on market participants.
MOT-7	Schedule Adjustment Period	<p>RTO West accepts bids and schedule for Real-Time Market:</p> <ul style="list-style-type: none"> • Energy injections and withdrawals that facilitate a balanced schedule in RT • A/S changes • Bids to supply IOS or Real-Time energy from resources that have not already been selected in the DA market <p>RTO West will maintain a continuous stack of A/S <u>IOS</u> bids to acquire any added capacity product needed due to loss of units, higher than expected load, replacement of spin, etc.</p>	<ol style="list-style-type: none"> 1) Starts with posting of Day-Ahead results (~16:00) 2) Ends at the cut off time “H-x” (i.e. x minutes prior to the beginning of the hour ending H) 3) H-x will be established by RTO West based on technology, minimum notice times, etc. 4) Bids submitted are valid until accepted or until withdrawn prior to H-x.
MOT-8	RTO West Runs Security Constrained Dispatch for Real-Time Process	<ul style="list-style-type: none"> • Selected suppliers notified. • Advisory prices posted prior to beginning of dispatch interval. • Actual prices calculated at close of interval and posted. • Price <u>locational</u> detail is the same as for Day-Ahead. 	<ol style="list-style-type: none"> 1) Starts at H-x 2) Real-Time dispatch interval is 10 minutes (subject of further seams discussions) 3) Settlement may be load weighted integral over the hour. 4) Least-cost dispatch optimization used.

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MOT-9	Real-Time Operations Balancing Energy	Dispatch instructions issued to suppliers (generators or demand)	All energy settled as single set of nodal prices.
MOT-10	Real-Time Operations Regulation	Direct electronic AGC signal from RTO West to SC to unit with metered response to RTO West.	~ 2 second control interval
MOT-11	Real-Time Operations Load Following	Message to alter set point from RTO West to SC with message confirmation and SC to unit with metering signal to RTO West.	~ 2 minute control interval
MOT-12	Ancillary Service Products	<p>RTO West acquires Integrated Operations Services (IOS) from suppliers to supply Ancillary Services (A/S) to SCs through the following markets:</p> <ul style="list-style-type: none"> • Regulation • Load Following • <u>Spinning</u> Reserve-Spinning • <u>Non-Spinning</u> Reserve-Supplemental • Replacement Reserve • Day-Ahead Redispatch Energy • Real-Time Balancing Energy 	<p>Stage 2 IOS → A/S Mapping:</p> <ul style="list-style-type: none"> • IOS(Reg. Freq. Response) → A/S(<u>Regulation</u>) • IOS(Ld. Follow Up/Down) → A/S(<u>Load Following</u>) • IOS(Spinning Reserve) → A/S(<u>Spinning</u> Reserve-Spinning) • IOS(Non-Spinning Reserve) → A/S(<u>Non-Spinning</u> Reserve Supplemental) • IOS(Replacement Reserve) → A/S(Replacement Reserve <u>An additional component of Spinning Reserve or Non-Spinning Reserve as required</u>) • IOS(Congestion Redispatch) → A/S(<u>Day-Ahead Redispatch</u> <u>Energy</u>) • IOS(Supplemental Energy) → A/S(<u>Real-time Balancing</u> <u>Redispatch</u> <u>Energy</u>)

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			See IOS Table details on qualifications and type bids.
MOT-13	Prices in A/S Markets	<p>“Rational Buyer” method applied to A/S, i.e., RTO West has the right to select a bid to provide any one product in place of a bid to supply any other product, if the following conditions are met:</p> <ol style="list-style-type: none"> 1) If doing so would reduce the total cost of procuring RTO West’s A/S; 2) If the resource selected is qualified to supply the product; 3) If the bidder has not specifically prohibited RTO West from selecting that resource to provide that product. 	<ul style="list-style-type: none"> • The price for higher quality product is greater than or equal to all lower quality products. • The quality of services from highest quality down is: <ol style="list-style-type: none"> 1) Regulation 2) Load Following 3) Reserve-Spinning 4) Reserve-Supplemental 5) Replacement Reserves • All energy is settled at single set of nodal prices.
MOT-14	Participation in A/S Markets	Entities offering capacity or energy to RTO West for A/S, Congestion Redispatch or Real-Time Balancing Market must be technically and commercially qualified.	<ol style="list-style-type: none"> 1) Conformance to same standards of technical performance and commercial accountability for all suppliers 2) Non-contracted parties are not qualified suppliers in RTO West markets.
MOT-15	Load Zones	Customers SCs may request creation of Load Zones which may be used for both scheduling and settlements.	Zonal price is load weighted average of the zones’ nodal prices. See White Paper .
MOT-16	Trading Hubs	RTO West will create Trading Hubs in	Hub price is fixed-weighted average of

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		response to customer SC requests for nodes with similar topological and price response characteristics.	the hubs' nodal prices. See White Paper .
MOT-17	Imbalance Penalties	<ul style="list-style-type: none"> • The consequences of imbalance or insufficient self-provided A/S are payment of the clearing prices for services. Short schedules also face share of Supplemental Commitment Commitment cost. • RTO West will design penalty structure to address potential behavior problems 	<ol style="list-style-type: none"> 1) A two-tier structure will be substituted for Stage 2 imbalance trading (i.e., penalties are triggered when system problem exists and applied to those who are off in the same direction as the system problem) See White Paper 2) Frequency and scale of errors will be considered in RTO West's penalties.
MOT-18	Costs of Failure to Supply IOS	Cost of replacing unsupplied IOS (and financial penalty) charged to the party failing to meet commitments for selected bids.	Detail provisions to be developed by RTO West
MOT-19	Penalties Failure to Supply IOS	To be defined by RTO West and may include disqualification with probation before re-qualification to supply.	Detail provisions to be developed by RTO West