

RTO West: Physical Rights Model for Transmission Access and Congestion Management
Working Document by Congestion Management WG

[September 6, 2000]

This document summarizes the major attributes of the flowpath-based physical rights model that was under development by the Congestion Management Work Group. Consensus, open issues and alternates developed during the collaborative progress from May 1 through September 1, 2000 are listed throughout this document and represents the snapshot of the WG as of September 1, 2000.

Overview of the Model

Under the proposed model:

- “Flowpaths” - RTO Grid facilities that experience commercially significant amounts of congestion - will be defined by the RTO.
- Flow Distribution Factors (FDFs), which indicate the incremental power flow on a flowpath stemming from an incremental injection at a bus and an incremental withdrawal at a reference bus, will be calculated by the RTO for each flowpath and each bus.
- Buses at which injections into the RTO Grid have a similar impact upon the use of flowpaths, i.e., buses that have reasonably similar FDFs, will be grouped into Congestion Zones.
- Firm Transmission Rights will be defined by the RTO for each of the flowpaths, based on the flowpath’s transfer capability. An FTR is an entitlement to schedule 1 MW of use of a flowpath in a particular direction for a particular hour. The RTO will make these FTRs available to Eligible Customers by determining Eligible Customers’ entitlements under Pre-Existing Contracts and Load Service Obligations and by conducting a series of annual, seasonal, monthly, weekly and daily auctions or other capacity release mechanisms.
- FTR-holders can purchase and sell FTRs in secondary markets (through bilateral arrangements, electronic transmission exchanges or other mechanisms) until shortly before the Operating Hour in which energy or capacity would be delivered via the RTO Grid.
- Recallable Transmission Rights (RTRs) are made available by the RTO for use by Eligible Customers. RTRs are created by the RTO using capacity that is associated with FTRs that were not scheduled during the day-ahead scheduling process.
- Non-Firm Transmission Rights (NTRs) are made available by the RTO for use by Eligible Customers. NTRs are created by the release of unused capacity associated with non-converted contracts, capacity scheduled for the delivery of operating reserves, and capacity associated with counterflows during the day ahead scheduling process. NTRs may be recalled at any time by the RTO should the underlying capacity become unavailable.
- Scheduling Coordinators (SCs) must submit Balanced Schedules - specifying injections, withdrawals, transmission rights, self-provided Ancillary Services and other information - to the RTO in order to gain access to the RTO Grid. SCs may also submit Proposed Schedules - schedules that do not include all of the transmission rights associated with injections and withdrawals - to the RTO for consideration pursuant to the rules described within this document. [Note: The roles and duties of an SC are defined in the Ancillary Services WG’s report.]
- Congestion on flowpaths is generally self-limited by the requirement that SCs ultimately have transmission rights in order to use flowpaths. Under some conditions, transmission rights can be derated in the event that there are outages of RTO Grid facilities. Any other congestion (“residual

congestion”) is managed by the RTO through the RTO’s redispatch of resources, repurchase of FTRs, and/or as a final resort, curtailment of schedules.

- Most of the congestion costs associated with the flowpath are borne by the path users (through the costs to purchase transmission rights and through the curtailment of FTRs under certain circumstances); and the costs of residual congestion - which should be small and/or infrequent - are borne by all grid users through an uplift charge.
- The RTO will operate a website (RTO Website) through which the RTO will make available to market participants transmission system data, system demand data, system conditions, NTR and RTR auction data, aggregated market data and other information to be defined.
- An Eligible Customer is (a) any electric utility (including the Transmission Owner and any power marketer), Federal power marketing agency, or any person generating electric energy for sale for resale where the electric energy sold or produced by such entity may be electric energy produced in the United States, Canada or Mexico and provided that such entity is not eligible for transmission service that would be prohibited by Section 212 (h)(2) of the Federal Power Act; or (b) any retail customer, or state-licensed aggregator serving retail customers, taking unbundled transmission service pursuant to a state retail access program or pursuant to a voluntary offer of unbundled retail transmission service by the Transmission Owner; or (c) any Scheduling Coordinator to the extent that it acts on behalf of an Eligible Customer as defined in (a) or (b) above.
- A Market Participant is an entity, including a Scheduling Coordinator, who participates in the RTO administered marketplace through the scheduling, buying, selling, transmission, or distribution or energy into, out of, or through the transmission system under the RTO.
- External Market Exchanges are not required, but several are likely to exist. They will receive and post updated FTR availability information from the RTO, continuously receive and post updated FTR releases and requests (bids & offers) from Market Participants, continuously facilitate trades between Market Participants for all tradable products (FTRs, ancillary services, energy, etc.), post currently traded prices for all products, including zonal forward prices for energy, and verify FTR transactions to the RTO’s transfer agent {Details regarding the transfer agent’s duties need to be defined}.

- System Losses – The method to compute system losses was under discussion as the collaborative process ended.
- Contract Path Interim Scheduling – A proposal for a Contract Path scheduling was proposed as the WGs collaborative process ended. The WG was deadlock on the issue of “should the contract path scheduling be used as a backstop or an interim step. This issue remains open.

Major Aspects of the Model

1. Definition of Flowpaths and Congestion Zones

- Commercially significant flow paths are identified by the RTO using the criteria defined in the RTO Tariff.
- Zonal aggregation of busses by the RTO will be based on grid topology (with zones generally defined by the locations of busses with respect to the flowpaths), the evaluation of FDFs (coherency of generators, effect of approximation on flow path loading, etc.), and additional criteria.

The criteria for the defining flowpaths and zones have not been finalized. However, an agreed-upon

overarching objective is that the criteria should lead to the creation of the smallest number of flowpaths and zones needed to effectively manage congestion, and should facilitate the mapping of existing transmission rights to flowpaths.

A challenging implementation aspect of the model will be to make the tradeoff between commercial needs (simplicity of the model as seen by grid users, ability to translate existing rights to flowpath rights) and operational details (keeping residual congestion management costs to a reasonable level).

2. Definition of Transmission Rights (FTRs, RTRs and NTRs)

- All FTRs will provide the same class of firm service. I.e., there will not be different classes of firm transmission service.
- FTR-holders may (external to the RTO) sell, trade or otherwise release their rights to other Eligible Customers with whatever conditions deemed mutually acceptable by the parties. (For example, the parties can agree via an exchange or bilateral agreement to specially tailored recall provisions.)
- RTRs are transmission rights that are made available by the RTO using the transmission capacity that is associated with FTRs that have not been scheduled for use in the RTO's Day-Ahead Scheduling Process. RTRs will be released by the RTO to other grid users on a recallable basis, with the recall right extinguished at some time (120 minutes?) before the Operating Hour.
- NTRs are transmission rights that are released by the RTO during various steps of the day-ahead scheduling process. The NTRs make use of the capacity that the RTO has reserved in order to honor non-converted Pre-Existing Contracts (i.e., the capacity that has been reserved as NCRs - Non-Converted Rights), the transmission capacity that can be made available through scheduled counterflows, and the transmission capacity that has been reserved for the delivery of operating reserves. NTRs can be recalled by the RTO at any time (even during the Operating Hour), so - as is the case with non-firm rights today - the SC who uses NTRs must be prepared for such recall.
- The firmness attributes of FTRs are defined by a Term Sheet (Reference Attachment A)
- The RTO's management of FTRs is affected by facility outages, maintenance and differences between the commercial and the operational model. The following table defines the party impacted.

Situations which impact the firmness of FTRs
Who Pays / What Happens

Type of Problem
FTR Holder
PTOs
All Grid Users/RTO (See note 1)

Outages of Significant Facilities - Published "States of the System" (tied to outages of significant facilities)

YES, (FTR Derated or FDFs Change)
NO, Subject to Note 2
NO, See Note 2

Other Forced Outages - Typically affect flowpath ratings or FDFs by a "small" amount.

NO
NO, Subject to Note 2

YES, (through Buyback or
Redispatch)

Planned Maintenance, Large Construction / Rebuild (Where to draw the line between row 3 and row 4 needs more discussion (Is it based on the ability to plan one-year ahead? The definition of the Other?))

YES, up to limits described in term sheet, and only if greater than a de minimus level

NO, except when PBR are implemented. PTOs, at their option, may provide a guarantee that is defined in the Term Sheet. FTR hold can also procure insurance outside the FTR auction and Term Sheet process. (see Notes 3)

YES, to the extent it is not covered by
PTOs and FTR holders (through Buyback
or Redispatch)

Planned Maintenance (for "short outages", emergency maintenance (before outage) , changes required by RTO, etc.)

YES, If greater than a de minimus threshold and only if sufficient advance notice, and only if FTR holders had an opportunity to pay for movement of maintenance

NO
YES, to the extent it is not covered by
PTOs and FTR holders (through Buyback
or Redispatch)

Commercial / Operations Gap - Approximations in methodologies (including impacts of load growth, temperature, loopflow, over-release of FTRs, de minimus thresholds).

NO

NO
YES, (through Buyback, Redispatch or
smaller FTR release)

Notes:

To all RTO users by grid uplift charge, or to smaller group of users by allocation to Company Rates? (To Be Determined)

TOA should specify binding maintenance standards for PTO.

Acceptability to IOUs is conditioned on PBR and limitation to direct cost and opportunity costs (no consequential damages); Publics cannot accept risk to revenue recovery.

Additional details related to the definition and uses of FTRs are under discussion in the Congestion Management Work Group. These include the timing and quantities of FTRs released by the RTO, the management of FTRs on flowpaths related by nomograms (will FTRs be curtailed pro rata, will grid users be allowed to trade FTRs on one path for FTRs on an interacting path?), etc.

3. Transitional Activities (Conversion from the pre-RTO system to the RTO system)

Market Participants will submit to the RTO their existing contracts or other claims to be used in mapping existing rights to flowpaths.

Issues that remain to be resolved in this area include the rules for suspension of existing contracts by PTOs, the rules for conversion of existing contracts, the rules for management of non-converted existing contracts, rules for mapping of existing rights, renewal rights, and whether existing rights-holders would receive the monetized value of FTRs or be allocated FTRs or something in between.

Referenced Attachment B Work Group paper addresses several of the open issues.

The RTO will calculate the FDFs that will be used to map or translate existing contract rights to flowpath rights, facilitate resolution of conflicts when claims exceed available capacity, and determine the allocations of revenues from auctions of flowpath rights or the allocations of flowpath rights (to be determined) to Market Participants.

4. Mid-Term Activities (Year-ahead to the Day-Ahead of the real-time Operating Hour)

The RTO will develop and make available its simplified commercial model of the RTO Grid, transmission loss factors, calculate and post flowpath capacity limits (annual OTC, seasonal OTC, monthly OTC, etc.), and calculate and post the FDF matrices that will be used by the RTO and Market Participants under various system conditions.

The RTO will define the annual and sub-annual capacity release processes or auctions and will conduct such releases and/or auctions in accordance with the provisions of the RTO Tariff. The RTO may choose to outsource the operation of such capacity releases and auctions, in which case the RTO will supply to the auction operator the quantities of FTRs available for auction. The RTO will post on its website the identities of the parties who obtain FTRs in the annual release process - whether by allocation or by auction.

The quantities of FTRs that will be made available for auction remain to be determined. Issues include how much transmission reserve margin the RTO should retain and how firm the FTRs should be.

The WG discussed various auction methods: For monthly and sub monthly FTR auctions and all RTR and NTR auctions, a single round, market clearing price auction will be used, with the market clearing price being defined to equal the highest losing bid. (Final price determination for RTRs and NTRs is described in the section on **One-Day Ahead of the Operating Day** at 0905). For FTR releases longer than a month, the WG would like to investigate both a multiple round discrete, market clearing price auction and a single round market clearing price auction.

Market Participants will individually determine their FTR requirements based on their portfolios of resources, loads, sales, trading positions, etc.; they will determine the FTR hedges they desire against predicted congestion; and they will acquire FTRs through the RTO's primary FTR release mechanism, and conduct trades (bilaterally or through Market Exchanges - continuously-operating electronic exchanges which may develop to facilitate exchanges of FTRs by Market Participants).

5. Day-Ahead Scheduling Activities

- Market Participants (acting as, or through, Scheduling Coordinators) will submit Balanced Schedules (resources, demands and related transmission rights (FTRs, RTRs or NTRs) obtained from allocation, auction, or secondary market purchases) to the RTO, submit self-provided ancillary services to the RTO, notify the RTO of resources they will use for self-tracking, and submit bids to sell ancillary services and real-time Balancing Energy to the RTO (i.e., capacity bids and energy redispatch bids from resource portfolios).
- A Scheduling Coordinator may, at its option, submit its schedule in two parts: a Balanced Schedule and a Proposed Schedule. A Balanced Schedule is a schedule for which the Scheduling Coordinator has submitted all of the transmission rights (FTRs, RTRs or NTRs) associated with the schedule's deemed uses of the flowpaths. A Proposed Schedule is a schedule that is balanced in all respects except that the schedule does not include all of the necessary transmission rights. A Proposed Schedule is deemed to be a bid for NTRs at a stated price (in the absence of a submitted bid dollar value, the RTO will deem the SC's bid price to be zero dollars).
- The rationale for permitting schedules to be submitted without transmission rights is to enable the SCs to acquire NTRs on uncongested flowpaths in the case where such NTRs can be made available by the RTO because Balanced Schedules would create scheduled flows in the opposite direction. However, because the RTO will not become involved in the process of allocating or brokering transmission rights to SCs, if the sum of the NTRs that the RTO can make available after Balanced Schedules have been submitted is less than the sum of the NTRs desired by SCs who submitted Proposed Schedules, the RTO will reject the Proposed Schedules of those SCs who were not allocated sufficient NTRs to cover their schedules. The RTO will allow those SCs whose Proposed Schedules were rejected to alter those schedules or acquire the necessary rights and resubmit them as Balanced Schedules.

The Day-Ahead Scheduling Process is described below. The timeline is provided for discussion purposes only and will be finalized after the October 15, 2000 filing.

The Day-Ahead Scheduling Process (DASP) is the primary process through which all uses of the Grid - including the scheduling of energy, capacity, transmission rights and Ancillary Services - takes place.

Two Days Ahead of the Operating Day

1600: The RTO publishes on the RTO Website (the Website is the replacement for the OASIS in the RTO world) the forecasted system conditions for the Operating Day.

The RTO notifies the market participants of the quantities of additional FTRs that the RTO will release to the marketplace for the Operating Day (The release mechanism could be an auction or could be a release into a certified external-to-the-RTO electronic exchange).

1625: Deadline for submittal of FTR bids from the market participants to the RTO.

1630: The RTO notifies the winning FTR bidders.

One-Day Ahead of the Operating Day

0600: The RTO updates its forecast of system conditions and publishes this and any additional information regarding the status of the RTO Grid on the RTO Website.

0900: Each SC who holds FTRs must notify the RTO of the SC's intent to schedule the use of such FTRs for the Operating Day by including those FTRs in the SC's 1100 schedule submittal in the Day-Ahead Scheduling Process. If the SC informs the RTO that the SC does not plan to schedule the use of the FTRs in the Day-Ahead Scheduling Process, the RTO will make the associated capacity available to other SCs on a recallable basis by releasing RTRs, and the SC will preserve its right to schedule the use of the FTR in the Schedule Adjustment Process. If the SC does not submit such notification to the RTO, then the SC must schedule the use of the FTRs at 1100; and if the SC does not schedule the use of the FTRs at 1100, the RTO will make those FTRs available to other SCs and credit the proceeds from such a release against the RTO's uplift charges.

0905: Unused FTRs are released to SCs by the RTO through the RTO's auction of Recallable Transmission Rights (RTRs) for the Operating Day. In this auction, the RTRs will be sold to the highest bidders, with all winning bidders paying the RTR clearing price for the flowpath. SCs who acquire RTRs must schedule the use of the RTRs in the Day-Ahead Scheduling Process. If RTRs need to be recalled by the RTO, the RTO will recall them in the order of lowest bid price to highest bid price. (Through this mechanism, the RTO will have established a queue for recall - rather than a requirement to cut all RTRs pro rata - and SCs will have obtained the ability to establish RTRs of higher and lower recall quality.) The RTR clearing price for the flowpath - the price which will be charged to each SC whose RTR has not been recalled - will be determined after the recall deadline for the RTRs and will be equal to the bid price of the last-recalled RTR. (If no RTRs were recalled the price will be equal to the highest losing bid price, or zero in the event that demand for the RTRs was less than the quantity made available by the RTO.) The proceeds of the RTR auction will be allocated to those FTR-holders who made their rights available at 0900 and who did not subsequently exercise the recall rights associated with those FTRs.

The RTO will release NTRs at several times during the scheduling process as the NTRs are made available to the RTO - for example, at 1600 Two Days Ahead, here at 0905 Day-Ahead and at 1205 Day-Ahead. The NTRs that can be made available at 0905 are the NTRs that the RTO deems it prudent to release from the capacity that the RTO has reserved in order to honor non-converted Pre-Existing Contracts (i.e., the capacity that has been reserved as NCRs - Non-Converted Rights).. SCs who acquire NTRs must schedule the use of the NTRs in the Day-Ahead Scheduling Process at 1100. NTRs can be recalled by the RTO at any time (even during the Operating Hour), so - as is the case with non-firm rights today - the SC who uses NTRs must be prepared for such recall.

At Operating Hour, all NTRs will be placed in a single stack regardless of when they were acquired. If NTRs need to be recalled by the RTO, the RTO will recall them in the order of lowest bid price to highest bid price. (Through this mechanism, the RTO will have established a queue for recall - rather than a requirement to cut all NTRs pro rata - and SCs will have obtained the ability to establish NTRs of higher and lower recall quality.)

In the NTR auction, the NTRs will be sold to the highest bidders, with all winning bidders whose NTRs are not recalled by the RTO paying the market clearing price for NTRs. The market-clearing price of the NTRs will be determined after the Operating Hour, and will be equal to the bid price for the last NTR that was recalled by the RTO. (If no NTRs were recalled by the RTO, the market clearing price will be calculated by determining the highest losing bid in each of the NTR release processes and taking the lowest of these highest losing bids. (Note that this also means that the market-clearing price will be zero in the event that demand for the NTRs was less than the quantity made available by the RTO.) The proceeds of the NTR auction will be credited against the RTO's uplift charges.

0910: The RTO notifies the winners of the RTR auction and posts any unsold RTRs on its Website, where they can be acquired by the SCs on a first come-first served basis.

The RTO notifies the winners of the NTR auction and posts any unsold NTRs on its Website, where they can be acquired by the SCs on a first come-first served basis. (SCs who acquire NTRs on this basis must schedule the use of the NTRs in the Day-Ahead Scheduling Process.)

1100: SCs submit their Balanced Schedules and their offers of Interconnected Operations Services to the RTO's IOS procurement process.¹

SCs submit their Proposed Schedules (i.e., schedules submitted without transmission rights. Each SC may also specify, in its Proposed Schedules, the prices at which it is willing to purchase any additional NTRs that the RTO will, at 1205, make available for the Operating Day. (If no prices are specified, the RTO will interpret the SC's price to be zero.)

"Balanced Schedules" include: (i) for each Congestion Zone, injections equal to withdrawals plus/minus trades with other SCs, all adjusted for transmission losses; (ii) accompanying FTRs, RTRs and NTRs; (iii) information specifying the IOS resources that the SC will use under "self-provision" and "self-tracking."

If the SC's schedule does not include all of the necessary transmission rights, the RTO will assume that the SC wishes to acquire those rights as NTRs that the RTO will release at 1205. If the RTO ultimately makes such rights available to the SC at 1205, the SC's schedule will then be deemed to have been a Balanced Schedule. If the SC is not allocated such NTRs by the RTO at 1205, then the SC must rebalance and resubmit its schedule by 1230; otherwise the SC's schedule will be rejected as unbalanced at 1230.

Need to add a process for the release of FTRs which have neither been released as RTRs at 0900 nor been scheduled at 1100.

An IOS bid that is submitted to the RTO is deemed to be a bid to deliver the IOS in the zone in which the IOS is located. Therefore no FTRs need to be attached. However, the SC may also associate transmission rights with the ISO bid, enabling the SC to deliver the IOS in alternative zones.

¹ Note regarding IOS bids: The intention is for the RTO to procure its IOS from an external-to-the-RTO ancillary services exchange. Therefore, this is simply a deadline by which time the SCs must submit their bids to sell IOS to such an exchange, if such bids are to be considered by the RTO in its procurement process.

1130: The RTO validates the Balanced Schedules and IOS bids that were submitted by the SCs² and gives the SCs an opportunity to correct data errors and resubmit their information to the RTO.

1200: Close of the schedule validation process. SCs must have corrected invalid schedules (for Balanced Schedules, invalid schedule implies imbalance between generation, losses, load, and transmission rights; for Proposed Schedules, invalid schedules are the same as for Balanced Schedules but there is no checking for transmission rights) by this time and resubmitted them to the RTO. If they have not done so, the RTO will use its administrative rules (to be developed) to balance the SC's schedule (through reductions in generation, load, etc.).

1200: The RTO conducts its IOS procurement process (covered by the Ancillary Services WG). Note that if the RTO chooses to move the delivery point to another zone, the RTO must procure the FTRs needed to move the IOS to the other zone.

1205: SCs are notified of the selections of IOS resources.

The RTO releases additional NTRs to the SCs. The additional NTRs are those that can be made available because of: (i) counterflows that have been scheduled by SCs (through the scheduled use of FTRs and RTRs), (ii) the scheduling of Operating Reserves (Spinning, Non-Spinning and Replacement) across flowpaths; and (iii) capacity that remains reserved by the RTO for the purpose of honoring non-converted Pre-Existing Contracts. If the quantities of NTRs that the RTO can make available at this time are sufficient to enable the acceptance of all of the Proposed Schedules, the RTO will allocate the NTRs to the Proposed Schedules and the Proposed Schedules will become Balanced Schedules. However, if the quantities of NTRs that the RTO can make available at this time are insufficient to meet the demands for all of the NTRs desired by SCs who submitted Proposed Schedules, the RTO will reject all of the Proposed Schedules and release the NTRs through the process described below.

The releases of NTRs will be made to SCs based on the price bids they submitted with their Proposed Schedules at 1100. The NTRs will be sold to the highest bidders, with all winning bidders paying the NTR clearing price for the flowpath. SCs who acquire NTRs must schedule the use of these NTRs at 1230 in the Day-Ahead Scheduling Process. If NTRs need to be recalled by the RTO, the RTO will recall them in the order of lowest bid price to highest bid price. (Through this mechanism, the RTO will have established a queue for recall - rather than a requirement to cut all NTRs pro rata - and SCs will have obtained the ability to establish NTRs of higher and lower recall quality.) The NTR clearing price for the flowpath - the price which will be charged to each SC whose NTR has not been recalled - will be determined after the Operating Hour and will be equal to the bid price of the last-recalled NTR. (If no NTRs were recalled the price will be equal to the highest losing bid price, or zero in the event that demand for the NTRs was less than the quantity made available by the RTO.) The proceeds of the NTR auction will be credited against the RTO's uplift charges.

1230: Between 1205 and 1230, SCs who acquired NTRs through the process described above are required to incorporate the NTRs into their schedules and resubmit their schedules to the RTO. SCs who did not receive NTRs must update their schedules to be consistent with their final portfolios of rights (FTRs, RTRs and NTRs).

² Note: Validation of IOS bids is performed simply to ensure that there is no double counting of resource capacity.

The 1230 schedule submittal must also include the SC's resource-specific Ancillary Services schedules. (Prior to this time, the SC was permitted to specify its resources on a "virtual resource" or "portfolio" basis. Note that after this time, the SC may still change its schedules through the Schedule Adjustment Process, described elsewhere.)

At 1230, the RTO will perform final validation of each SC's schedule. The RTO will use its administrative rules (described elsewhere) to balance the SC's schedule (through reductions in generation, load, etc.).

- 1300: The RTO identifies the schedule adjustments required to eliminate residual congestion. (This congestion management process - which is primarily based on the use of voluntarily-submitted incremental/decremental bids and transmission rights buyback - is described elsewhere.)
- 1315: The RTO informs each SC of the SC's final day-ahead schedule.
- 1400: The RTO coordinates schedules and flows with other Control Area Operators.
- 1400: Each SC submits NERC/WSCC tags.
- 1500: Between 1400 and 1500, the RTO performs Control Area checkout with other Control Areas, and completes its Operating Plan for the Operating Day (including determining the resource stacks for Balancing Energy and Operating Reserves).

6. Schedule Adjustment Activities (Post-Day-Ahead Scheduling Process)

The Schedule Adjustment Process (SAP) is an ongoing, continuous process, within which the RTO shall process SCs' requests for schedule changes as they are received by the RTO, on a first-come, first-served basis. This process begins at the close of the Day-Ahead Scheduling Process and continues until X minutes prior to the start of the Operating Hour (where X is currently contemplated to be between 60 - 120). During this period the SCs may adjust their portfolios (demands, supply and trades) and submit schedule changes (incremental schedules) with accompanying transmission rights to the RTO.

SCs must submit Balanced Schedules with FTRs, RTRs or NTRs. Any schedule that is not balanced will be rejected by the RTO.

An SC's request to change Generating Unit output levels, to re-designate resources which provide Ancillary Services, or to change import or export schedules will be subject to RTO approval, which shall be granted provided that: (i) there is sufficient time for the RTO to evaluate the impacts of the proposed change; and (ii) the proposed change would neither increase Congestion nor otherwise create a Grid security problem.

The WG needs to address RTO West unique real-time and near real-time scheduling requirements.

The RTO will receive, validate and incorporate continuous adjustments to schedules submitted by SCs as long as no new congestion is created, update the RTO's operational models and operating plans, respond to contingencies which result in decreases in transfer capability or otherwise create congestion, and procure any additional IOS resources required using call contracts obtained through an ancillary services exchange.

An alternative under consideration is that the RTO would accept schedules that created new residual congestion, but the SC would be responsible for paying the cost of eliminating that congestion.

External Market Exchanges will continue to operate as described under “Mid-Term Activities.” (Note: these are voluntary arrangements. No external Market Exchanges are required.)

Throughout the Schedule Adjustment Process, the RTO will continuously update load forecasts and grid ancillary services requirements, receive and validate Balanced Schedules from Scheduling Coordinators, calculate loading on flowpaths and other Grid facilities, release unused capacity (as RTRs and NTRs), determine if any residual congestion exists and eliminate such congestion through the use of redispatch bids and/or buyback of FTRs, develop the Operating Plan for the upcoming day (including determining the resource stacks for Balancing Energy and Operating Reserves).

The details of the Schedule Adjustment Process will require further development.

7. Real-Time Activities (from X minutes prior to the Operating Hour through the Operating Hour)

Scheduling Coordinators that have been selected to provide ancillary services will respond to control signals from the RTO (details - permissive price or response to RTO calls on Balancing Energy stack need to be defined). SCs may make arrangements, bilaterally or through Market Exchanges, for real-time changes to schedules and submit them to the RTO for approval.

External Market Exchanges will facilitate real-time exchanges between SCs. (Note: these are voluntary arrangements. No external Market Exchanges are required.)

The RTO will receive, validate and incorporate continuous adjustments to schedules submitted by SCs as long as no new congestion or operational problems are created, receive real-time metering data and respond to energy needs through dispatch of the Balancing Energy stacks, and clear congestion using redispatch procedures, including the dispatch of resources in the Balancing Energy stacks.

The real-time processes are still to be developed. Currently performed activities, such as tagging, need to be considered when developing the real-time processes. The above paragraph is representative of activity within the period.

8. Post-Real-Time Activities (Settlement Activities)

The RTO will receive validated settlement-quality data, including metered injections and withdrawals, and transmission and generation availability. The RTO will calculate zonal Balancing Energy prices based on the marginal bid for delivery of energy dispatched by the RTO in the zone, determine each SC’s energy imbalances for each Congestion Zone (energy imbalance equals actual or deemed injections minus actual or deemed withdrawals), send preliminary imbalance account statements to each SC, and settle with each SC for final net Balancing Energy payments and for ancillary services. The RTO will also accumulate costs for resolving residual congestion for future use in updating flowpaths.

Scheduling Coordinators are responsible to provide validated settlement-quality meter data to the RTO. SCs will receive imbalance accounting information from the RTO, trade their imbalances in with other Market Participants, pay the RTO for any net energy deficiencies (or receive payment for excess energy provided to the RTO), and pay for ancillary services obligations that were not met through self-provision or self-tracking.

External Market Exchanges may facilitate the trading of energy imbalances among SCs.

Post-Real-Time Activities need to be defined. [???

A significant issue that remains under discussion is the allocation of the costs associated with residual congestion.

One position is that the costs associated with the management of residual congestion will be allocated to transmission users who create the congestion to the extent possible. The remainder of residual congestion will be collected for congestion cost accounting on a path (flowpath or non flowpath) specific basis. Since the RTO establishes flowpaths and zones the residual congestion uplift change will be allocated on a RTO wide basis for the initial implementation. If the RTO establishes a process to make planning/expansion decisions on a local (i.e., larger than company) basis, then it may be appropriate to target internal (residual non-flowpath) congestion clearing costs to those planning areas. Those areas may then decide whether to continue to bear those costs as an RTO uplift, or build to clear the problem, subject to RTO approval and mitigation of external effects.

An alternative position is that the costs associated with the management of residual congestion need to be broken into specific categories. If the costs were associated with major system outages (as listed in the FTR term sheet), then the FTR holders would bear those costs. Otherwise, those costs would be allocated by the RTO as uplift, either RTO-wide or on a local or area basis.

End of document

Attachments:

A – Description of Firm Transmission Rights (FTRs) – Term Sheet
B – RTO West: Pre-Existing Contracts and Obligations