

A Differential Comparison Of the RTO West Design To the SMD Proposal

RTO West

On March 29, 2002 the RTO West filing utilities¹ submitted their Stage 2 Proposal to the Federal Energy Regulatory Commission (FERC or Commission) in Docket Nos. RT01-35-005 and RT01-35-007. After some months of consideration, the FERC issued a declaratory order on September 18, 2002 (the RTO West Order). In response to rehearing requests a second order was issued on December 20, 2002 (the Rehearing Order) which provided additional guidance to the filing utilities. Taken together, these two orders approved the proposed governance, license plate pricing and the transition period of eight years for rate stability, use of catalogued transmission rights and the majority of the Stage 2 market design proposal with direction for modification of the congestion management, market design and ancillary services proposals. The orders deferred consideration of most Transmission Operating Agreement issues until a future filing is made which includes an RTO West Tariff and detailed information on the facilities to be transferred to RTO West control. The planning and expansion process was also approved with modifications requiring clear authority for RTO West to make final determinations. Work has been underway since September to respond to the FERC orders and to further develop the RTO West's market design. This comparison is based on progress made by the end of January, 2003

SMD Proposal

On July 31, 2002, FERC issued its Notice of Proposed Rulemaking in Docket No. RM01-12, entitled Remedying Undue Discrimination through Open Access Transmission Service and Standard Market Design (SMD NOPR). Under the SMD Proposal, the Commission proposes to eliminate the distinction between Point-to-Point and Network Integration Transmission Service combining them into a single Network Access Service (NAS). All uses of the transmission system, including transmission for serving bundled retail service would be taken under the SMD Tariff which integrates day-ahead and real-time energy markets with the provision of transmission service. Interest in the SMD NOPR has been intense throughout the industry. Voluminous comments have been filed with the Commission. SMD has been the primary grist for industry conferences for months with debates between advocates and opponents. There has been particularly strong criticism of the proposal's jurisdictional implications for state regulation of electric utilities.

¹ Avista Corporation (Avista), Bonneville Power Administration (Bonneville), Idaho Power Company (Idaho Power), NorthWestern Energy, (NorthWestern) [formerly Montana Power Company], Nevada Power Company (Nevada Power), PacifiCorp, Portland General Electric Company (PGE), Puget Sound Energy, Inc. (Puget), Sierra Pacific Power Company (Sierra Pacific), and joined by British Columbia Hydro and Power Authority (B.C. Hydro).

Making A Comparison

There has been sharp criticism in the Pacific Northwest, where some parties have asserted that RTO West is just SMD by another name and further that both should be rejected as failing to fit Northwest needs and circumstances. This might be called guilt by association because SMD and RTO West have several common features. However, the rhetorical logic of joint rejection is flawed. RTO West has been specifically designed to meet the unique characteristics of the hydro-thermal resources of the Northwest Power Pool Area.²

In the RTO West Order, the Commission noted that there is a substantial overlap in the issues covered by the RTO West Stage 2 Proposal and the SMD NOPR. There are however significant differences in approach to a number of features, including unit commitment, energy market participation, resource adequacy approach, transmission rights, and so on. The RTO West design is independent of SMD, having a long developmental history that began in the Fall of 1995. A detailed examination of possible governance structures was begun under the auspices of the Pacific Northwest Utility Conference Committee (PNUCC). The PNUCC work was considered by the Northwest Governors Regional Review in 1997 which recognized the need for independent governance of the combined transmission system. While the Regional Review was being completed, work began on an independent grid operator (IndeGO). The IndeGO discussions in 1996-8 considered the need for a congestion management system based on the economics of system dispatch.³

With the issuance of FERC's Order 2000, the RTO West began its development work by considering past work done in the Northwest on transmission organization and management. After months of effort on alternative approaches, the filing utilities reached the conclusion that a system based on nodal⁴ pricing was the most practical way to implement congestion management and at the same time honor pre-existing obligations and agreements. After a similar debate throughout the North America, most regions reached the same conclusion. As a result, SMD is also based on nodal pricing. However, there are significant differences, each representing an adaptation of nodal pricing as practiced elsewhere to meet Northwest characteristics and needs. The comparison table which follows describes and comments on these important differences and adaptations. To obtain Commission approval for the RTO West approach with these critical differences that meet Northwest needs, support from the congressional delegation would be very helpful.

² The geographic footprint of the Northwest Power Pool Area and that proposed for RTO West are nearly the same, the differences being the inclusion of Nevada Power in RTO West and the absence of Alberta.

³ System dispatch is a process of selecting the most economic generating unit to respond to moment to moment changes in load.

⁴ Under nodal pricing the marginal price of energy is calculated at individual nodes. Nodes are the points at which two or more line intersect electrically, generally in a substation where circuit breakers and transformers are located. In substations, the electrical conductors that operate at the same voltage are called buses, e.g., the Bridger 345 kV bus or the Coulee 500 kV bus. Buses are also called nodes.

Issue	RTO West Design	SMD Proposal	Comments
Transmission Service			
<i>Transmission Services Provided</i>	<p>RTO West provides Transmission Use Service for new service and converted contracts.</p> <p>Non-converted Transmission Service provided to Participating Transmission Owners (PTOs) who use that service to honor unconverted pre-existing agreements and pre-existing obligations such as bundled retail service.</p>	<p>An Independent Transmission Provider (ITP) provides a standard transmission service for all customers to be called “Network Access Service” (NAS), including vertically integrated utilities bundled retail load. NAS combines the features of network and point-to-point services under Order No. 888 OATT into a single service.</p>	<p>RTO West provides two services, both of which are compatible with congestion management using nodal prices.</p> <p>The additional RTO West service is explicitly designed to permit parties with pre-existing agreements to continue taking service from their current transmission service provider or to voluntarily convert to direct service from RTO West.</p>
Nature of Transmission Service	<p>The service provides scheduling for source to sink at individual nodes or at node aggregation points, i.e., load zones or trading hubs.</p>	<p>The service provides customers the right to transmit between a source and a sink, including individual nodes or aggregation hubs.</p>	<p>Common nodal approach.</p>
Congestion Management	<p>When congestion occurs customer has option of:</p> <ul style="list-style-type: none"> (1) Using financial transmission rights, either Catalogued Transmission Rights (CTRs) or Financial Transmission Options (FTOs) to hedge congestion cost or (2) Paying full congestion cost charges. 	<p>When congestion occurs customer has option of:</p> <ul style="list-style-type: none"> (1) Using financial transmission rights called Congestion Revenue Rights (CRRs) to hedge congestion cost or (2) Paying full congestion cost charges. 	<p>The general approach is similar, but the transmission right definitions differ as described below.</p>
Embedded Cost Recovery	<p>Embedded costs recovered for Company Rate Period through Company Rates and Transfer Charges. The Company Rate Period will be eight years from the commencement of RTO West operations.</p>	<p>Embedded cost may be recovered through license plate rates with rate pancaking (export and through fees) eliminated between.</p>	<p>The RTO West approach is a license plate approach customized to avoid cost shifting. It uses an export fee to retain cost recovery from importing regions of the West, pending a reciprocity agreement to replace lost revenues.</p>

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<i>Transmission Rights and Congestion Hedges</i>	Transmission rights are not needed to schedule service, but provide protection (or hedges) from exposure to congestion cost.	Transmission rights are not needed to schedule service, but provide protection (or hedges) from exposure to congestion cost.	The general approach is common, but the implementation details differ considerably.
Obligation v. Option Rights	The RTO West proposal uses option type transmission rights to provide a credit against congestion cost charges up to but not in excess of a right holder's actual congestion charges for a settlement period. Two types of option rights are provided – CTRs and FTOs.	<p>SMD uses obligation type transmission right (CRR) which provides a cash payment stream to the right holder equal to the difference in nodal prices between a named sink and source node. If the price difference is positive, the ITP pays the CRR holder. If the price difference is negative, the CRR holder pays the ITP. ITPs must offer CRR Obligations.</p> <p>SMD indicates that an ITP may offer CRR Options as well, which are one-sided, i.e., they pay the CRR holder when the price difference is positive, but when the price difference is negative the holder does not have to pay the ITP.</p>	<p>The existing trading structure of the Pacific Northwest relies heavily on day to night, week to week and season to season energy exchanges to make best use of its resource inventory of energy limited hydro-electric facilities with reservoir storage and of energy rich base load thermal plants (nuclear, coal-fired and combined cycle gas) that are most efficient when operated at a constant output level.</p> <p>RTO West's option type rights (CTR and FTO) emulate the feature of existing transmission rights, i.e., price protection for energy movement in one direction, without cost exposure if a right is not used.</p> <p>SMD's CRR Obligation rights would inhibit exchange transactions by potentially exposing parties to a new price risk when flows are reversed due to energy exchanges.</p>
Long Term Rights	In the long-term, parties funding new transmission for congestion relief receive the FTO associated with new capacity.	In the long-term, an entity paying for a system expansion will be able to obtain the new CRRs created.	The general approach is similar; however, the details of the SMD proposal are still open. In the RTO West proposal, backstop provisions have been included to cover market failure for chronic, significant congestion and for the allocation of costs to those who benefit from certain expansions.

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Transmission Rights Trading	<p>RTO West will sell available capacity, as FTOs.</p> <p>FTOs can be sold in the secondary market; CTRs are not tradeable.</p>	<p>ITPs offer CRRs based on a simultaneous feasibility test methodology.</p> <p>CRRs can be sold in the secondary market.</p>	<p>Experience with trading of obligation type rights in the Northeastern ISOs (PJM and NY) has shown that little trade occurs outside the formal ISO auctions. Even when not needed to protect their energy schedules, right owners have little incentive to sell the most valuable rights to other parties because the cash flows from the rights are independent of use.</p> <p>RTO West adopted a “credit against actual cost” to encourage release and sale of unused rights to those with actual energy schedules.</p>
Transmission Rights Continuity	<p>Pre-existing rights are not forced to convert. The PTOs will receive CTRs to protect themselves from congestion cost that arises from honoring unconverted obligations.</p> <p>The rights of current users who convert are preserved by opting for one of the two types congestion hedges (CTRs or FTOs). These rights continue through the term of the original contract.</p>	<p>Initial allocation of CRRs is to be made to current users of the system with existing transmission rights. After four years, it is proposed that these users would receive the revenues from the auction of those CRRs rather than the rights themselves.</p>	<p>The SMD proposal as drafted, all rights are converted to CRRs at the outset, but the actual rights are only held for four years. At the end of that period, the rights holder would have to bid against others to retain the rights or receive the revenue from the sale of the rights they previously held.</p> <p>RTO West makes conversion voluntary. If transmission customers find RTO West service to be advantageous, they may convert to FTOs. The choice to auction off such FTOs to others is purely voluntary for the right holder.</p>
Real-Time Transactions	<p>Transactions scheduled after day-ahead are subject to congestion cost, which may be covered by CTRs for pre-existing arrangements that permitted near real-time schedule changes.</p>	<p>Transactions scheduled after day-ahead flow at a charge covering losses and congestion cost.</p>	<p>Some existing transmission agreements permit schedule changes without penalty within 20 minutes of an operating hour or sometimes with an hour. CTRs are designed to emulate this protection from congestion cost after the day-ahead process ends. Under SMD this protection does not exist.</p>

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Energy Market Design			
<i>Generator Unit Commitment</i>	Unit commitment is voluntary. Each load serving entity must schedule sufficient resources day-ahead to meet its expected load, thereby committing its own generation or that of its suppliers to be on-line and generating to meet load.	An ITP is required to operate a centralized bid-based, unit commitment process based on multi-part bids (start-up, no-load, minimum generation, etc.) to meet the needs of the day-ahead energy market.	<p>The classic unit commitment problem is associated with systems dominated by thermal generation where oil and gas units meet requirements in shoulder and peak hours. The process attempts to minimize the economic cost of energy over a period of days given the need to start units some hours before needed and pay such start-up costs daily versus paying the cost of keeping machines running at minimum output levels overnight.</p> <p>Given the resource mix of the RTO West area, only a supplemental unit commitment for reliability is needed. Otherwise, the economics of the unit commitment problem are not significant in the Northwest. There are two major blocks of energy production: base load thermal and hydro which supply approximately 35% and 60% respectively. Except for rare maintenance outages, the base load thermal is on in all hours. The hydro unit can come to full speed in minutes, so there is no need for a centralized unit commitment.</p>
Supplemental Reliability Commitment	If RTO West's forecast exceeds the load scheduled by transmission customers, RTO West may commit additional units based on voluntary bids from generators.	A supplemental commitment is run after the close of the day-ahead process, if the ITP's load forecast exceeds scheduled customer load.	The need for a supplemental reliability commitment exists in both models to ensure adequate coverage for forecasted load.

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Recovery of Unit Commitment Costs	The cost of this supplemental commitment will be charged to those who either underestimate or under-report their load.	If the energy prices for a 24-hour period are not high enough to cover energy cost plus start-up, minimum operating cost, etc., the minimum revenue guarantee charge is levied on all users.	RTO West targets the cost of forecast error as much as possible on the basis of cause and effect. SMD tends to spread it over all system users.
<i>Day-Ahead Energy Market</i>	<p>Market participants are to submit a balanced schedule that meets their own needs. The schedule may be a combination of bilateral transactions and self-supply.</p> <p>A day-ahead energy market is not provided to meet the needs of parties who fail to arrange for resources to match their loads. Failure to provide adequate resources to meet need may result in penalties.</p> <p>If congestion occurs, RTO West clears congestion by redispatch using voluntary bids to increase or decrease resource outputs.</p>	<p>Market participants may schedule bilateral transactions, self-provide ancillary services or acquire energy from the day-ahead market.</p> <p>The ITP is to operate a day-ahead market which allows parties to purchase energy from a pooled dispatch of units that voluntarily bid to supply. Load serving entities can self-supply load or pay spot prices from the energy market.</p> <p>The energy market component of the day-ahead market uses bids and auction process to set energy prices to be paid in each hour and to clear congestion simultaneously.</p>	<p>In SMD a load serving entity can come in “short”, i.e., with insufficient resources to meet its load and rely on the ITPs energy market to meet load, with the ITP committing additional resources if needed.</p> <p>At RTO West, a load serving entity is required to meet its own needs and not rely on a central market to meet obligations.</p> <p>Allowing “short schedules” turns the question of resource adequacy into a problem for all users.</p>
<i>Real-Time Energy Markets</i>	<p>RTO West will run a real-time balancing market, operating on a transparent basis.</p> <p>Nodal prices used for settlement will reflect the cost of congestion and balancing energy. Real-time prices will be established based on simultaneous auction acquisition of balancing energy and ancillary services.</p> <p>Deviations and imbalances from day-ahead will be settled against real-time prices for a ten-minute period and may be subject to penalties for deviations outside a “reasonable use” threshold.</p>	<p>ITPs must run a bid-based, security constrained real-time market with transparent operation.</p> <p>LMP will be used for both buyers and sellers and reflect both congestion and losses. Real-time prices will be established through market clearing price auctions, generally on five-minute periods within the hour.</p> <p>All deviations and imbalances from the day-ahead market will be settled at real-time price.</p>	<p>In real-time, only the control area operator is able to respond to moment-to-moment variation in loads and resources. In this respect the two models are similar.</p>

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<i>Regulation and Operating Reserves</i>	RTO West will operate markets for regulation and operating reserves to obtain the capacity needed to serve Scheduling Coordinators who do not self-supply these ancillary services.	ITP must insure regulation and operating reserves are provided, using a market-oriented approach.	RTO West also provides for self-tracking, allowing users to dynamically provide regulation and load following services to meet their own load and resource variation.
Market Power Monitoring and Mitigation	Market power mitigation will be developed in future work.	<p>Market power mitigation has three mandatory components and voluntary fourth component:</p> <ul style="list-style-type: none"> (1) Local market power mitigation. (2) A safety-net bid cap. (3) A resource adequacy requirement. <p>A voluntary provision for automatic mitigation of prices may be added if needed for unusual market conditions.</p>	<p>Market Power Mitigation for RTO West will need to account for jurisdictional differences among participants.</p> <p>Setting of bid-caps of automatic mitigation procedures will be more complex for hydro than for thermal-only systems, because the process will have to recognize temporal differences in energy cost for energy taken from or put into storage, i.e., the opportunity cost of energy limited hydro resources.</p>
<i>Monitoring</i>	<p>The Market Marketing Unit (MMU) will be independent of RTO West management and will report directly to the Board and submit reports directly to FERC when a significant market problem is identified.</p> <p>MMU will perform periodic reviews and analysis with reports to Board and Commission using data available to the RTO in the course of its normal operation. If additional information is required, RTO West would make a Section 205 filing to get authority to obtain such data.</p>	<p>Market monitoring focuses on two areas: (1) identify and propose solutions to problems in market design and (2) focus on behavior of market participants and monitor withholding whether physical or economic.</p> <p>Each RTO should have an MMU that is independent of ITP management and report directly to the RTO Board and FERC with reports provided to the ITP and the state regulators.</p> <p>When the market monitor determines that parties have violated the rules of ITP's tariff, pre-determined penalties will be applied.</p>	<p>SMD provides for the MMU to administer fixed penalties for rule violation.</p> <p>RTO West proposed monitoring only with enforcement handled by FERC.</p>

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Long-Term Generation Adequacy			
	<p>Each load serving entity is responsible to meet its own resource requirements. The adequacy of such plans is judged through state regulatory reviews for investor owned utilities and through the Northwest Public Power Planning Council for Bonneville.</p> <p>Discussion among agencies and market participants in the RTO West area have been initiated to evaluate how standards should be set and coordinated to insure that adequate infrastructure is built to meet future loads.</p>	<p>A long term resource adequacy is necessary to diminish the incentive and ability of suppliers to practice and profit from either economic or physical withholding, and spot market prices alone may not be sufficient to induce investors to build necessary resources.</p> <p>ITPs must forecast future demand and assure that each load serving entity acts to meet its share of future resources through self-supply, purchase contracts, or demand response programs.</p> <p>If a power shortage occurs and the ITP cannot satisfy demand in the spot market to meet minimum operating reserves, the ITP must add a per-MWh penalty during the shortage to be paid by an entity not meeting its share of regional resource for that year.</p> <p>If the ITP must curtail load in such an emergency, the load of non-compliant entities will be curtailed before those that met the standard.</p> <p>The planning reserve level should be established by the Regional State Advisory Committee. FERC has set a default level for planning reserve at 12%.</p>	<p>For SMD, permitting load serving entities to use the ITPs day-ahead market to meet load without penalty, i.e., permitting short schedules, requires enforceable long term adequacy to insure infrastructure is built to meet all load served by the ITP's transmission system.</p> <p>RTO West does not permit short schedules and leaves load serving entities with the same obligations to meet their load that currently exists.</p> <p>A long term adequacy standard for the market participants in the RTO West area will probably need to be probabilistic in nature to consider both energy and capacity dimensions of generation adequacy. The expected energy content of hydro resources is a major variable which must be recognized in the Northwest. The simple planning reserve standard suggested as the backstop provision for the SMD model is inadequate.</p>