

Comparison of FERC Standard Market Design Working Paper To RTO West Stage 2 Filing (March 29, 2002)

On March 15, 2002, The Federal Energy Regulatory Commission (FERC or Commission) issued a Working Paper in Docket No. RM01-2 addressing standardized transmission service and wholesale market design. This document compares the FERC's position in the Working Paper to the RTO West Stage 2 Filing made on March 29, 2002.

In the introductory section of its working paper, the Commission notes that the existing tariff has flaws that result in inefficiencies. Different flaws show up in different parts of the country. They result in "socialization" or "uplift" of congestion costs which obscures price signals to new generation, demand response or transmission construction. These flaws result in higher costs to ultimate consumers and distortions in the economy. The Commission proposes to remedy these flaws by *"...creating a new, flexible transmission service to be offered to all transmission providers to all customers, with a new standard market design for wholesale electric markets."* The Commission also concludes that one independent entity, which the commission calls the "transmission provider", must perform two of the functions that NERC identified in its Functional Model—the Balancing Authority and the Transmission Service Provider. The question of whether and independent transmission company can qualify as a transmission provider requires further consideration.

The general principles for Standard Market Design (SMD) include the following points, which are germane to the RTO West Stage 2 Filing:

- Deviations or changes from standards must be consistent with or superior to standard market design and compatible with neighboring systems to prevent seams issues.
- Imbalance markets and transmission systems must be operated by entities independent of market participants.
- Market rules should have no bias, so demand and intermittent resources can fully participate.
- While price signals support efficient decisions they are not full substitutes for transmission planning and expansion.
- Customers with existing contracts (real or implicit) should continue to receive the same service under SMD.
- SMD is not static and must not inhibit innovation or adaptation to regional requirements.

The table on the following pages uses the headings of the Working Paper to identify the issues addressed. The views of the Commission are summarized for each of the issues. The RTO West Stage 2 Filing approach to these issues is provided for comparison.

Issue	FERC Working Paper	RTO West Proposal
Transmission Service		
<i>Network Access Service</i>	<p>The standard transmission service for all customers will be “Network Access Service”, including vertically integrated utilities. It combines features of network and point-to-point services under Order No. 888 OATT.</p> <p>The service provides customers the right to transmit between a source and a sink, including individual nodes or aggregation hubs.</p> <p>Recovery of embedded cost is left for later resolution.</p> <p>When congestion occurs customer has option of (1) using “transmission rights” to pre-determine price or (2) paying full cost of congestion management.</p>	<p>Transmission Use Service for converted contracts with Non-converted Transmission Service to honor unconverted contracts.</p> <p>The service provides scheduling for source to sink at individual nodes. Aggregation hubs have been discussed but not finalized.</p> <p>Embedded cost for Company Rate Period is based on Company Rates and Transfer Charges to avoid cost shifting with export charge for exports without historic reservation rights from converted export contracts.</p> <p>When congestion occurs customer has option of (1) specifying the limit on congestion charges it is willing to bear or (2) submit scheduling requests with a commitment to pay whatever congestion clearing charges apply.</p>
Transmission Rights for Price Certainty	<p>Initial assignment is a key issue. Intent is to preserve the existing rights of current users of the system with options being allocation or auction revenues.</p> <p>Rights can be sold in secondary market.</p> <p>Transmission provider must offer available capacity but cannot sell more than capacity can accommodate.</p> <p>In long-term, entity paying for construction should receive associated rights but further consideration need.</p>	<p>Rights of current users who convert are preserved by either one of two congestion hedges (rights) CTRs or FTOs.</p> <p>FTOs can be sold in secondary market.</p> <p>RTO West will sell available capacity, with question of selling more than capacity by bids of forward incs and decs discussed.</p> <p>In long-term, parties funding new transmission for congestion relief receive FTO associated with new capacity.</p>
Transmission Without Price Certainty	<p>Customers without transmission rights can schedule by agreeing to pay any congestion costs of a particular transaction.</p>	<p>Customers without rights can schedule by agreeing to pay congestion cost associated with transaction.</p>
Day-Ahead Scheduling	<p>The day-ahead schedule would accommodate request of customers with and without transmission rights as well as transmission needed for delivery of purchase and sales from centralized energy spot market.</p>	<p>A two-settlement process is assumed in Congestion Management Proposal subject to finalization when Ancillary Services markets develop.</p>

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	A customer without rights may set a maximum acceptable congestion charge for service or agree to pay regardless of price.	A customer without rights may set a maximum acceptable congestion charge for service or agree to pay the actual congestion cost.
Real-Time Transactions	Transactions scheduled after day-ahead flow at a charge covering losses and congestion cost.	Transactions scheduled after day-ahead pay congestion costs. Losses not yet addressed.
Source-to-Sink v. Flowgate Rights	<p>Rights are direction specific.</p> <p>A source-to-sink right allows inject and withdraw a given number of MW at specific locations and time without paying day-ahead congestion cost.</p> <p>A customer who does not use its rights is paid the congestion rents based on day-ahead prices.</p> <p>A flowgate right entitles the holder to receive the congestion revenues associated with a specific facility.</p> <p>Transmission provider must offer source-to-sink rights and flowgate rights upon market participant request when technically feasible.</p>	<p>Rights are direction specific.</p> <p>Rights are defined from injections points to withdrawal points (source to sink) for given MW and time period and allow use of system without paying congestion cost.</p> <p>A customer who does not use its rights is not paid by RTO West, but must sell rights in secondary market to obtain value of unused rights.</p> <p>Flowgate rights were abandoned in late 2001.</p> <p>RTO West will offer source-to-sink rights with no plans for flowgate rights.</p>
Obligation v. Option Rights	<p>Obligations require a customer to transmit between the sink and source points or to receive congestion rents (either positive or negative) between points.</p> <p>An option entitles customer to transmit or collect congestion rents but has no obligation to do either. Transmission provider must provide obligations and must offer options upon market participant request and when technically feasible.</p>	<p>The RTO West proposal does not included plans to issue obligation type transmission rights.</p> <p>RTO West transmission rights (congestion hedges) are options.</p>
Settlement of Rights	<p>All transmission rights settle against the prices in the day-ahead energy market eliminating congestion cost if scheduled or receiving/paying the congestion rents if unused.</p> <p>There are no real-time congestion hedges.</p>	<p>Under the two-settlement model, day-ahead schedules are financially binding. Option type transmission rights pay for congestion incurred but no more and do not result in negative charges.</p> <p>There is no real-time congestion hedge.</p>

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Losses	<p>Price differences in the energy market between nodes capture both congestion cost and losses.</p> <p>Those with transmission rights pay losses only; those without rights pay both congestion and losses. <i>(Note: Although there is not detail on losses, it appears that an AC load flow is to be used so that prices calculated in include losses, with some method for separating the price spread into losses and congestion cost as done in New York ISO.)</i></p>	<p>Losses have not been addressed. RTO West is to develop a loss methodology rather than the filing utilities doing that work.</p>
Energy Market Design		
<i>Day-Ahead Energy Market</i>	<p>Experience has shown having a day-ahead market improves efficiency and reliability. It lets system operator ensure sufficient generation committed for the next day's load. Day-ahead bids allow generators to reflect operating constraints and provide better scheduling opportunities for demand side to participate.</p> <p>The transmission provider must operate a day-ahead market in order to develop a joint day-ahead schedule for transmission service, energy and ancillary services, based on bids submitted, to maximize combined economic value of all three.</p> <p>The energy market component of the day-ahead market, uses bids and auction process to (1) select the units to run the next day and (2) set energy prices to be paid in each hour for energy scheduled day-ahead.</p>	<p>A two-settlement system is assumed in the Congestion Management Proposal.</p> <p>A day-ahead energy market is not proposed only congestion redispatch market; customers must submit balanced schedules.</p> <p>Unit commitment is voluntary in the first instance, with RTO West having a secondary unit commitment process against its own load forecast to assure reliability.</p>
General Features	<p>Transmission provider must run a voluntary, bid based, security constrained day-ahead market.</p> <p>Day-ahead market is to be transparent (clear rules with software producing predictable results).</p> <p>Market participants should be able to schedule bilateral transactions or self-supply rather than bid in the market.</p>	<p>There is no day-ahead energy market; RTO West will run a voluntary, bid-based, security constrained, congestion redispatch market.</p> <p>Where operated, RTO West's markets will meet transparency requirements.</p> <p>Market participants can submit bilateral schedules and self-supply ancillary services.</p>

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<p>Scheduling and Bidding Rules</p>	<p>Demand side must be able to participate as buyers and sellers.</p> <p>Sellers must have the option of submitting multi-part bids (related bids for start-up, no-load and energy).</p> <p>Market participants must <u>not</u> be required to submit balanced bids, but they may choose to do so.</p> <p>Special rules may be necessary if deviations from day-ahead in real-time will threaten transmission reliability.</p> <p>Bids need not be tied to specific resources. However for reliability purposes bids must indicate if they are tied to a physical resource.</p> <p>Limits on bidding may be necessary to mitigate market power, e.g., requiring that a start-up bid remain in place for several months.</p> <p>Additional scheduling options may be required for energy limited resources, however these options should be available to all generators unless necessary to mitigate market power.</p> <p>Intermittent resources should be able to participate in the day-ahead market on the same basis as other resources.</p>	<p>Sellers submit one-part bids.</p> <p>Market participants <u>must</u> submit balanced schedules.</p> <p>Deviation from day-ahead schedules potentially subject participants to penalties for significantly under-scheduling or over-scheduling their demand during the day-ahead scheduling process.</p> <p>Bids must be tied to specific resources.</p> <p>Market power mitigation rules not addressed; to be developed later.</p> <p>Hydro resources are allowed to self-commit, as are all generators. Pre-existing agreements for optimization of hydro use are to be honored with all other pre-existing contracts.</p> <p>Provisions for exempting intermittent resources from penalties are under discussion.</p> <p>Demand-side participation is anticipated in ancillary services markets; details are to be developed later.</p>
<p>Price Determination and Settlement</p>	<p>Nodal prices must be used for both buyers and sellers in the day-ahead market with energy prices incorporating the total value of generation, transmission congestion, and losses at each node of the system.</p> <p>An auction must be run to establish a single market-clearing price at each node, at a minimum on an hourly basis, but shorter intervals are acceptable.</p> <p>Hourly energy prices are based only on energy bids. If a seller's total bid costs (including start-up, no-load, minimum run time, etc.) over the entire day is not met by hourly clearing prices it will receive an uplift payment for the net daily shortfall.</p>	<p>Congestion redispatch prices are established on a nodal basis. Inclusion of loss cost in nodal is not yet addressed.</p> <p>Congestion redispatch prices will use inc/dec bids from Scheduling Coordinators on an hourly basis.</p> <p>Under self-commitment of resources start-up, minimum run and no-load costs are the responsibility of the bidder.</p> <p>The day-ahead settlement will be financially binding on Scheduling Coordinators. Imbalances between day-ahead and real-time will be settled at real-time energy balancing market prices.</p>

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	<p>The results of the day-ahead market must be financially binding on buyers and sellers. Imbalances from failure to produce or take as scheduled will be settled at the real-time energy market price.</p> <p>Upon request of market participants, the transmission provider will establish trading hubs, with a hub price based on the weighted average of prices at the selected nodes.</p> <p>The transmission provider must post prices and other market information and settle markets on a timely basis to provide market participants reliable information.</p>	<p>Trading hubs have been discussed and concern expressed regarding price difference between hubs and nodes. Hubs may be developed later.</p>
<i>Real-Time Energy Markets</i>	<p>Transmission providers must run a bid-based, security constrained real-time market with transparent operation.</p>	<p>RTO West will run a real-time balancing market, operating on a transparent basis.</p>
General Features	<p>Market participants must be able to revise their schedules for bilateral transactions and self-supply after the close of the day-ahead market, with imbalances from day-ahead settled through the real-time market.</p>	<p>Market participants may revise their schedules after the close of day-ahead process, as long as they are feasible, and will pay real-time congestion costs associated with schedules.</p>
Scheduling and Bidding Rules	<p>Bids to sell in the real-time market must be one-part bids; however they may include minimum run time.</p> <p>Demand-side must be able to participate in real-time market.</p> <p>Limits on bidding flexibility may be needed to address market power issues.</p> <p>Additional scheduling options may be needed for special conditions of energy constrained resources but all generators must have the same options.</p> <p>Intermittent resources should be able to participate in the real-time market on the same basis as other resources.</p>	<p>One part bids for energy in the balancing market.</p> <p>Demand-side resources may bid in the ancillary service markets.</p> <p>Market power mitigation has not yet been addressed as detailed market rules are to be developed later.</p> <p>Hydro resources are allowed to self-commit, as are all generators. Pre-existing agreements for optimization of hydro use are to be honored with all other pre-existing contracts.</p> <p>Provisions for exempting intermittent resources from penalties are under discussion.</p>
Price Determination and Settlement	<p>Nodal prices must be used for both buyers and sellers and reflect both congestion and losses.</p>	<p>Nodal prices used for settlement will reflect the cost of congestion and balancing energy.</p>

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	<p>Real-time prices will be established through market clearing price auctions, generally on a five-minute period with the hour.</p> <p>All deviations and imbalances from the day-ahead market will be settled at real-time price. Where uninstructed deviations threaten reliability special rules and penalties may be required.</p> <p>The transmission provider must post prices and other market information and settle markets on a timely basis to provide market participants reliable information.</p>	<p>Details of market clearing auctions to be established later.</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 to discourage over use of balancing market. Special rules will apply to involuntary schedule modifications such as forced outages.</p>
<i>Regulation and Operating Reserves</i>	<p>Transmission providers must insure regulation and operating reserves are provided, using a market-oriented approach. Since regulation and operating reserves have technical differences, differences in their market rules are appropriate.</p>	<p>RTO West will operate markets for the regulation and reserves it must obtain to serve Scheduling Coordinators who do not self-supply or self-track. Detailed market rules are not yet developed.</p>
General Features	<p>LSEs have the responsibility to procure regulation and operating reserves or pay for those procured by the transmission provider.</p> <p>Suppliers of regulation and operating reserves must meet specific operational requirements.</p> <p>The transmission provider must have a bid-based day-ahead and real-time market so it can procure on behalf of LSEs. Market power mitigation may be needed if there are a limited number of sellers.</p> <p>Locational requirements can be used for operating reserves and may require reservation of transmission capacity; however cost of “transmission reserves” must be included in the total cost of procurement.</p>	<p>Scheduling Coordinators may self-provide or self-track or buy from RTO West.</p> <p>Suppliers of regulation and reserves will have to meet operational standards.</p> <p>RTO West will procure energy and capacity to provide ancillary services in a voluntary, bid-based auction. Market power mitigation authority for RTO West is proposed.</p> <p>Location requirements for ancillary services will be the responsibility of RTO West. As a provider of last resort, it will procure sufficient resources (generation, import/export and demand-side) and necessary transmission to meet its requirements.</p>
Scheduling and Bidding Rules	<p>LSEs may meet requirements with self supply, bilateral transactions or paying market-clearing price or through a combination of such transactions.</p>	<p>Scheduling Coordinators may self-schedule, self-track, use bilateral transactions or purchase from RTO West as provider of last resort.</p>

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	<p>The transmission provider must provide regulation and operating reserves in a bid-based auction for those who do not self-supply.</p> <p>Demand-side supply of operating reserves must have non-discriminatory bidding opportunities.</p> <p>Regulation and operating reserve markets must allow sellers to submit availability bids in addition to energy bids.</p>	<p>RTO West will use a bid-based market to acquire regulation and operating reserves.</p> <p>Demand-side resources that qualify technically can bid to provide resources.</p>
<p>Price Determination and Settlement</p>	<p>Day-ahead regulation and operating reserve markets must clear simultaneously with the day-ahead markets for energy and transmission service, with market-clearing prices that jointly optimize energy, regulation, operating reserves and transmission service.</p>	<p>Simultaneous operation of ancillary services markets is not specified at present.</p>
<p>Other Changes to Improve Efficiency</p>		
	<p>These changes will require extensive revision of the current pro forma tariff.</p> <p>CBM should not automatically receive a transmission right allocation but be posted on OASIS and specifically reserved and paid for by the entity requiring the service.</p> <p>Calculations of transmission capability and performance of facilities should be performed by an independent entity.</p> <p>The new tariff should recognize the regional nature of today's energy markets. Transmission providers who are not part of an RTO must contract with an independent entity to perform calculations on a regional basis.</p> <p>Proactive long-term planning and expansion must be done regionally. The recommended solution(s) must be put out under request(s) for proposal for construction and/or implementation. If a transmission provider is not part of an RTO it must participate in regional long-term planning and expansion.</p>	<p>RTO West Tariff to be developed after Stage 2 filing.</p> <p>No specific provisions for CBM discussed yet.</p> <p>RTO West will independently calculated Total Transmission Capability and Available System Capacity with the PTO able to challenge in dispute resolution.</p> <p>RTO West tariff will be regional in scope and application.</p> <p>RTO West includes regional planning and expansion with efforts underway to develop West-wide planning and expansion process.</p>

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	<p>Software should be modular to allow multiple vendors to provide components of the overall software platform with standardized data formats and data transfer protocols to minimize implementation costs.</p>	<p>Decisions on software implementation will follow seating of RTO West Board and execution of implementation plan.</p>
Market Power Monitoring and Mitigation		
<i>Principles</i>	<p>Structural solutions to mitigate market power are generally more effective than behavioral mitigation, so market rules need to be designed to mitigate market power.</p> <p>Market monitoring focuses on two areas: (1) identify problems in market design and propose solutions and (2) focus on behavior of market participants and monitor withholding whether physical or economic.</p> <p>Commission has responsibility and authority to take corrective actions when needed.</p> <p>When behavioral rules are needed to mitigate market power, they should be clear and not discretionary. Ex-ante mitigation is preferable to price changes.</p>	<p>Market power mitigation to be addressed after the Stage 2 Filing.</p>
<i>Mitigation Measures</i>	<p>A bid cap, as a proxy for demand bidding, must be in effect until there is sufficient demand response.</p> <p>Transmission provider may identify must run units for reliability, but bids must be subject to on-going behavioral mitigation, such as call options and bid caps unless structural solutions are possible.</p> <p>Limitations on bid flexibility may be needed.</p> <p>Transmission provider must be able to coordinate maintenance and outage schedule for both generation and transmission and information should be made available to the market on a timely basis.</p>	<p>Identification of load/generation pockets, must run units and other market power mitigation issues will be addressed after Stage 2 filing.</p> <p>RTO West will coordinate transmission maintenance and outages. There is no plan to coordinate generation maintenance; this has been considered to be off limits for RTO West.</p>

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<i>Monitoring</i>	<p>Each RTO should have an MMU that is independent of RTO management and reports directly to the RTO Board and FERC.</p> <p>The MMU will monitor all markets in its region conducting periodic reviews and analysis and propose rule changes to the Commission. <i>(Note: The MMU does not have enforcement authority.)</i></p> <p>The MMUs should work with each other to develop market performance measures common to all regions.</p>	<p>The MMU will be independent of RTO West management and will report directly to the Board and to FERC.</p> <p>MMU will perform periodic reviews and analysis with reports to Board and Commission but has no enforcement role.</p> <p>Discussions underway for a single West-wide MMU.</p>
Long-Term Generation Adequacy		
	<p>There may be a need to include measures to ensure LSEs maintain a reasonable supply reserve margin.</p> <p>There is no consensus in the industry on such standards; further discussion is needed.</p>	<p>No discussion of formal generation adequacy standard. Balanced schedules require Scheduling Coordinators to plan for the supply needs of their customers. Retail service provider resource plans and adequacy standards continue under current state oversight.</p> <p>Generation adequacy in RTO West must go beyond installed capacity and consider ability to meet annual energy requirements.</p>
State Participation in RTO Operations		
	<p>SMD will establish a formal role for state regulators in RTOs.</p> <p>An advisory committee should be established for each RTO with participation from state representatives. Specifics will vary regionally.</p> <p>MMU should send reports on efficacy of markets and need for rule changes directly to the advisory committee.</p>	<p>States are represented in the classes selecting the RTO West Board.</p> <p>State regulatory agencies can be RTO West members at no charge and participated in the Advisory Committee.</p>

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System Security		
	<p>Commission will expect transmission providers, market participants and generators to comply with the recommendations offered by the President's Critical Infrastructure Protection Board.</p>	<p>RTO West will be compliant with requirements that insure a secure, reliable transmission system.</p>
Transitional Considerations		
	<p>Rule will be phased in order to implement certain changes as soon as possible—OATT changes in Phase 1 and tariff redesign in Phase 2.</p> <p>First phase will include: (1) Physical trading hubs allowing suppliers outside a control area to schedule to physical hubs within a transmission providers system so load can choose from a variety of resources, (2) Clarifications and updates to tariff.</p> <p>Compliance for physical trading hubs and clarifications will be 60 days after Final Rule becomes effective.</p>	<p>OATT changes will occur for filing utilities as individual transmission providers well before RTO West commences operation when FERC's tariff redesign is expected to be in place.</p>
Issues that Need Further Discussion		
	<p>Many issues involved in transition to the new services: (1) transition of customers with existing service to Network Access Service, (2) allocation of transmission rights, (3) development of schedule for phased compliance of SMD.</p> <p>Many of these issues may need to be resolved on a regional basis.</p>	<p>RTO West has made specific provisions for a transition period based on input from stakeholders in the region: (1) It will honor pre-existing contracts and allow voluntary conversion of such agreements; (2) Converting contracts will be allocated either CTRs or FTOs to replace the congestion hedge value of their pre-existing contracts, (3) a Company Rate Period will prevent cost shifts in embedded cost recovery while the congestion management system matures and customers gain experience to guide their contract conversion decisions.</p>