The Virtues of A Virtual RTO

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A Virtual RTO?

- An Organization That is a RTO in All but Name? Minimum Attributes?
  - Regional Security Coordinator-Single OASIS
  - Congestion Management Using a Bid Based Security Constrained Economic Dispatch Process with Locational Nodal Pricing
    - LMP-Or is There Some Other Financial Settlement Process?
  - Operates a Central Real Time Spot Energy Market
  - Coordinates Seams-Loop Flows and Moves to Operate With and Monitor a Joint Congestion Dispatch with Neighboring Regions

- Other Elements to Include for Consideration?
  - Day Ahead Energy Market-Congestion Rights-FTR
  - Mitigation-Market Monitoring
  - Regional Tariff-Elimination of Rate Pancaking-Export Charges
  - Virtual Regional Dispatch

- What Now Exists--What Might be Feasible?
What We Have in Various Stages

Regional Transmission Organizations

Source: FERC Staff (using POWERmap)
### Who Can Coordinate with Whom and How?

**NY-NE-PJM**

**RTO/ISO- with LMP**
- Security Constrained ReDispatch-provide Shadow Prices
- Nodal LMP Pricing-Incorporate Shadow Prices in ReDispatch

**MISO**

**RTO**
- Physical TLR
- Internal Redispatch-TLR at Interfaces

**West**

**NON ISO**
- PTP -Physical Scheduled UnScheduled Flows
- Internal Zonal Balanced -Schedule Flow Relief at Interfaces

**All Others But Tx & SPP**

**NON ISO**
- PTP -Physical TLR/Unscheduled Flows
- PTP -Physical TLR Unscheduled Flows

**PJM**

**RTO**
- Physical TLR/Unscheduled Flows

**CAISO**

**ISO**

**NY-NE-PJM**

**RTO/ISO**
- with LMP
A Pragmatic View - For Regional Cooperation

- **A National Market with Regional Differences**
  - The RTO Concept -- The Pluses?

- **The Practical**
  - Next Steps for NE-NY
  - What of PJM & MISO?

- **The Political**
  - California - Governance & Functional Market Rules
  - The South & the Northwest - Can We Accommodate SMD & Regional Interests?

- **The Possible**
  - Regional RTO Heavy - NE - MidAtlantic - Midwest - SPP - West Connect
  - Single State RTO - ISO Hybrid - NY - California - Florida
  - Minimal Regional Standards for South - Northwest
  - Real Time System Administration Role for the New Electric Reliability Organization (ERO)?
SMD--There Were Some Positive Points

- The Reality of the Interconnection Reliability Requirements for the Eastern and Western Regions of the USA
- An Independent Central Security Coordinator Role Overseeing Competitive Energy Markets
- Wholesale Price Transparency--Market Liquidity for Efficient Pricing
- Optimize Savings Through Joint Operating Rules and Business System Commonality
- Increase Incentives for Regional Transmission and Generation Expansion
- Regional Market Monitoring and Market Efficiency Optimization
A Regional Virtual RTO-The Minimum Features?

**Independence**
- Governance
- Independent Entity Running Real Time Operations of the Grid

**Operational Authority**
- One Regional Security Coordinator for the Grid

**Short-Term Reliability**
- ERO Standards & Enforcement
- Security Constraint Regional Unit Commitment and Economic Dispatch

**Congestion Management**
- Elimination of TLR
- A Real Time & DA Energy Market
- Congestion Hedges

**Centralized OASIS with TTC/ATC**

**Market Monitoring**
- Regional with Commonality in Mitigation Rules

**Interregional Coordination**
- Seam Identification & Resolution
- Elimination of Export Fees-Regional Through & Out Fees

**Parallel Path Flows**
- Identification & Monitoring
A Harvard Professor’s Warning*

- **The Separation Fallacy “California Dreaming”**
  - Operation Oversight Only
  - An Energy Market Only
  - The Enron Legacy
    - Balanced Energy Schedules do not Guarantee Reliability
    - An Energy Market Alone will not Provide Price Transparency & Market Liquidity

- **Integrated Regional System Operations**
  - A Central Coordinated Regional Congestion Management System
  - Bid Based Security Constrained Economic Dispatch
    - Real Time Locational Nodal Prices That Are Transparent & Liquid
    - Combining Short Term Reliability ReDispatch with Nodal Pricing Allows an Incentive for the Market to Provide the Feasible Solution Rather than a Central ISO Operator

*Avoiding The Separation Fallacy: Comments by Dr. Hogan before the FERC, RM01-12, March 12, 2002*
The Practical Landscape

The Northeast-New York Markets

- NE-NY-PJM has shown the successful use of LMP pricing with respect to transmission congestion management & short term reliability
- NE has the ability to converge on an operational-financial basis many joint market functions with New York including a capacity market
- Virtual regional dispatch may provide some of these synergies
- Elimination of export fees - a market advantage to NE consumers $21 million savings to NE-$12 million loss to NY consumers; possible uplift through a seams elimination cost adjustment (SECA) mechanism
- Virtual regional dispatch has significant opportunity for consumer savings for economic transfer of generation between the two regions*
- Modest production cost savings in economic dispatch *

Virtual Regional Dispatch - Joint Operations and Obstacles to Success

- **Governance**
  - Tariff Differences
  - Export Charges
  - Scheduling Rules
  - Auction - Allocation of FTR
  - Credit Requirements
  - Mitigation Measures
  - Uplift Allocation & Make Whole Provisions

- **Virtual Regional Dispatch**
  - Is the RTO/ISO Taking a Market Position in the Real Time Energy Market to Optimize it or to Achieve a Desired Outcome?

- **Operational**
  - Joint Models - Joint Scheduling
  - Node Identification & Dispatch
  - Ancillary Market Requirements
  - Timing of Settlements
  - Proxy Busses to External Flowgate Monitoring
  - Virtual Bids - Shadow Prices & ReDispatch Determinations

- **Nomenclature - Using the Same Terminology**
The Practical Landscape

- MISO
  - The Existing Regulatory “Limbo” With Respect to the Old “Alliance” Companies is Preventing the Ability of MISO to Move to an Integrated Operating Model
  - Regional Footprint has Some State PSCs with Opposite Positions With Respect to Transmission Owner Membership in RTO
  - The Worst of Two Worlds-No Real Time Centralized ReDispatch-No Real Time Regional Coordination Among 23 Control Areas
  - FERC Must Decide on the Status of AEP-Commonwealth Edison in the MISO-PJM Market if a LMP Type Market is to Occur
  - Elimination of Through & Out Rates is a Concern With Respect to Uplift Among Differing Transmission & Load Entities
  - Ability of MISO Members to Withdraw & Transmission Companies (ITCs) with Differing Layers of Responsibility a Concern
Where We Really Need A Virtual RTO

- **PJM-MISO Coordination**
  - **MISO Region is Contractual Rather Than Electric Topological**
    - Between PJM and MISO They Have Identified Over 300 Flowgates That Have an Impact on Each Other
    - Integration of Commonwealth Edison Into PJM Without AEP is Problematic
    - Loop Flows Between Two Regions Are and Can Create Congestion Without a Corresponding Match in LMP Prices--Huge Potential for FTR Shortfall
    - Market Monitoring-Many Seam Issues in Coordinating LMP Market Between Two Systems If AEP Is Not Operating Under Same Rules
  - **Must Move Beyond Joint Regional Coordination**
    - Congestion on One Impacts Another-Requires a Single Operating Market
    - Can One RTO Run the Spot Energy Market for Both While Allowing for Two RTOs?
The Political

- **FERC and SMD**
  - Energy Title Status and the Delay in RTO Implementation
  - Administration “Voluntary” RTO Approach
  - States’ Rights in the South and the West
  - Governance with Respect to the California ISO

- **RTO Heavy/RTO Light**
  - Reconsider National Requirements Versus Regional Demands
  - Those That Want-Keep-Those That Don’t-Can We Set a Minimum Base Line?
  - Can We Separate Real Time Operation/Market Requirements From Expansion Planning and Native Load Concerns?

- **Electric Reliability Organizations-ERO**
  - Are They the New RTO-Light?
  - Will the Imposition of Reliability Penalties Demand Real Time Regional Control?
  - Beware the Separation Argument-Must Not Separate Regional Operational Control From a Real Time Congestion Management Pricing System
California

The Issues

- Board of Directors and CAISO Independence Must Be Settled
- Existing and Proposed Market Design Remains Confused and Is Still Tilted Towards a Zonal-Balanced Physical Schedule Mode
- Is MDO2 a True Intent Towards Creating an Optimal Market Design to Overcome the Existing Market Mitigation Approach?
- A Restrictive Energy Cap and No Corresponding Capacity Market-How Do You Recover Long Run Marginal Cost of New Investment?
- How To Better Coordinate California and the Remainder of the West

The Opportunity

- A Spot Market Using LMP Based Security Constraint Dispatch
- A Regional Virtual Dispatch Coordination With Arizona -Nevada-Northwest With Respect to Economic Dispatch
- A Regional Capacity Market to Meet Capacity Planning Requirements
Virtual RTOs in the South?

- Southern & Entergy Do Operate Many Functions of an RTO
- Each Independently Operates a Regional Joint Transmission System
  - Southern (Ga, Al, Parts of Fl, Miss)
  - Entergy (Ark, La, Parts of Tx, Miss)
- Economically Dispatch Their Units
- Joint Tariff for Their Operating Companies
- Regional Planning for Transmission Expansion
Getting Around Just Say No

- **Can We Get The Best Attributes of SMD**
  - Open Access & Independent Oversight of Grid
  - Regional Economic ReDispatch of Generation
  - Operation of a LMP Spot Market in Lieu of TLR
  - Regional Market Monitoring
  - Is the Entergy “Weekly Procurement Process” Proposal a Start?

- **Can We Satisfy States’ Rights?**
  - Transmission Expansion on a Participant Funding Basis.
  - Regional & State PSC Oversight & Governance
  - Grid Florida Status?
Non-jurisdictional

➢ TVA
  - Resolution of TVA “Inside the Ring” Status
  - Participation in Either MISO or PJM-Beyond the Existing MOUs?
  - Develop A Spot Regional Energy Market With The Southern RTOs

➢ BPA
  - Recognize that They and PacifiCorp are the RTOs in the NW
  - Overcome the “Hydro” Concern With Respect to Congestion Management
  - Coordinate a Joint Economic Dispatch With California-Nevada
  - Can the ERO Process Be a Way to Overcome Non-Jurisdictional Issues?
The ERO

- ERO in Lieu of NERC Regional Councils
  - Governance Changes-Funding-FERC Backstop
  - Legislation to Move to a Regulatory-Penalty Mode
  - Can You Have the Ability to Levy Penalties Without a Real Time Monitoring and Control of the Spot Market?

- NERC Recently Announced Dropping of MRD Standards for the Eastern Interconnect
  - Stating that: “As the Commission has surmised, a comprehensive market-based congestion management solution, such as that offered by location-based marginal pricing is a practical and effective solution and far superior to MRD for dealing with congestion”*

- Senate Energy Title Language: “Allows for development of and enforcement of standards that provide for an adequate level of reliability of the bulk power system.”

- A Role as a Real Time Independent System Administrator of the Markets--RTO Light?

*NERC Final Report on MRD-FERC ER02-033 9-11-2003*
The New Paradigm

**RTO-Heavy**
- NE
- MISO-PJM
- Other
- NY
- CAISO
- Forming
- SPP
- West Connect

**The Minimum**
- *Independent Governance*
- *Open Access*
- *Bid Based*
- *Security Constrained*
- *Economic Dispatch*
- *Locational Pricing*
- *Market Oversight*
- *Regional Market Monitor*

**RTO-Light**
- The South
- Grid FL
- TVA
- BPA/Northwest
- ERO with Operational/Market Oversight Responsibilities

*ERCOT--State Jurisdictional Only*