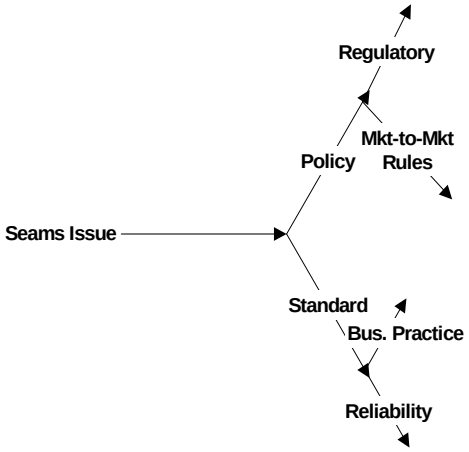
Comments of the ISO/RTO Council
Issue Assignment in the NAESB Seams Matrix

Attached is the ISO/RTO Council's input to NAESB on the Seams Matrix. This is quite a collection of issues, and we appreciate the work that went into it and the opportunity to provide input. The Matrix is a useful reference of market issues that exist throughout the industry and may be used as a sounding board for inter-RTO coordination. The list includes some duplication, but in general, each of the 8 major categories do fall primarily into the area of responsibility of one or the other of the three organizations (NERC, NAESB, and the IRC). Those issues involving regulatory policy are in the purview of FERC.

In order to effectively move forward, we suggest that each of the eight major categories be assigned to NERC, NAESB, or the IRC as primary owners of the issues in that category. We recognize that each specific issue may have interested parties from any number of these organizations. Assigning the various Seams Issues and Categories can be done most effectively using the Coordination Process of the three-way MOU. We can view the categories as being primarily either policy or standards based. Individual issues in the various categories, once more specifically defined and analyzed, may very likely benefit from standards.



Many of the issues identified in the matrix are being worked in regional forums. These have properties that are unique to the local market-to market rules. Once these issues are settled regionally, determinations can be made if there is wider area applicability and opportunities for broader standards.

The main point is to ensure that deliberation of which issues require standards, and in which forums those standard would be developed.

We recommend that primary ownership assignments of the 8 major categories be made, as outlined in the table below.

Category	# Issues	Primary Assignment
Congestion Management	37	IRC/FERC
Market Design	22	IRC/FERC
Market Monitoring/Compliance	4	IRC/FERC
Market Standards	15	NAESB
Planning	4	IRC/FERC
System Reliability	22	NERC
Transaction Scheduling	11	NAESB
Transmission Service	19	IRC/FERC
	134	

We look forward to continuing progress in addressing the issues identified with all stakeholders.

Seams Issues Matrix

(Recommendations of Steven Cobb)

Orig #	Category	1ST Sub-Category	2ND Sub-Category	Description of Seam Issue	Comments	IRC
36	Congestion Management	Congestion Management Market Coordination	Coordinate Hedging Instruments at Market Interfaces	Coordination of market based congestion hedging instruments, such as FTRs, between adjacent RTOs with markets, especially for out and thru' transactions		IRC/FERC
132	Congestion Management	Congestion Management Market Coordination	Joint Re-Dispatch Agreements	Interaction with American Transmission Company; possible joint redispatch agreement among ATC-PJM-Generators on ATC's system		IRC/FERC
115	Congestion Management	Congestion Management Market Coordination	Standardize Congestion Management Market Data Exchange	Congestion Management Procedures including reciprocal coordination agreement, exchange of data for real-time and projected operations, SCADA, EMS, Operations Planning and Planning information and models; better granularity, avoid double counting, use of state estimator and LMP to enable RTOs to accurately and consistently quantify flows/impacts outside of NERC IDC to enable RTO to RTO and market to market congestion management to achieve greater efficiencies without calling TLRs; MISO and PJM and expansions to use same methods.	Definition of AFC coordination process between RTOs.	IRC/FERC
35	Congestion Management	Congestion Management Market Coordination	Standardize Prices at Market Interfaces	LMP prices at borders of RTOs with markets (Price cap included)		IRC/FERC
68	Congestion Management	Congestion Management Market Coordination	Standardize Prices at Market Interfaces	Market Design - Prior to Day Ahead. Secondary Market	To the extent that at a minimum congestion redispatch occurs in an RTO (i.e. a limited energy market), can a method be developed to produce consistent prices at the boundaries? If not, can price discontinuities be tolerated or managed? (Issue I.b.1)	IRC/FERC
70	Congestion Management	Congestion Management Market Coordination	Standardize Prices at Market Interfaces	Market Design - Day Ahead. Congestion Management Market	If models with identical levels of detail for the West are not used by all three RTOs, do the various simplifications for areas outside any given RTO create problems in achieving a uniform set of redispatch prices? (Issue I.b.3)	IRC/FERC
72	Congestion Management	Congestion Management Market Coordination	Standardize Prices at Market Interfaces	Market Design - Day Ahead. Model spatial granularity	To the extent that at a minimum congestion redispatch occurs in an RTO (i.e. a limited energy market), can a method be developed to produce consistent day ahead prices at the boundaries? (Issue I.b.5)	IRC/FERC
80	Congestion Management	Congestion Management Market Coordination	Standardize Prices at Market Interfaces	Market Design - Day Ahead. Other Scheduling Requirements	To the extent that at a minimum congestion redispatch occurs in an RTO (i.e. a limited energy market), can a method be developed to produce consistent prices at the boundaries that send the same signal to the market? If not, can price discontinuities be tolerated or managed? (Issue I.b.13)	IRC/FERC

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Orig #	Category	1ST Sub-Category	2ND Sub-Category	Description of Seam Issue	Comments	IRC
92	Congestion Management	Congestion Management Market Coordination	Standardize Prices at Market Interfaces	Market Design - Real Time. Model objective function	How much would a common dispatch interval mitigate against price discontinuities at boundaries? (Issue I.d.2)	IRC/FERC
62	Congestion Management	Congestion Management Market Coordination		Market Design - Prior to Day Ahead. Financial or Physical	Must the offerings be identical? How can congestion management discontinuities be mitigated? (Issue I.a.3)	IRC/FERC
63	Congestion Management	Congestion Management Market Coordination		Market Design - Prior to Day Ahead. Option or Obligation	Do different CM models create barriers to trade, and if so, how can these differences be mitigated? (Issue I.a.4)	IRC/FERC
64	Congestion Management	Congestion Management Market Coordination		Market Design - Prior to Day Ahead. Revenue Stream/ or Offset CM Cost	Must the term of congestion offerings be identical? How can congestion management discontinuities be mitigated? (Issue I.a.5)	IRC/FERC
129	Congestion Management	Congestion Management Market Coordination		Selection process for market/TLR coordinated flowgates; inclusion of flowgates in PJM FTR/ARR auctions; flowgates with and without effective control by markets; updates to flowgate list, phase-in; dispute resolution; let RTO calculate flows outside of IDC and TLR; audit rights; confidentiality of data; consideration of flowgates outside PJM and MISO	Standardized rules for determining flowgates impacted by an RTO.	IRC/FERC
138	Congestion Management	Congestion Management Market Coordination		Coordination of congestion	Several regional efforts are underway. Coordinate practices and methods between areas with different market approaches.	IRC/FERC
125	Congestion Management	Determining Control Area Boundaries		Retention of former CAs in the model	When expanding Control Area boundaries (i.e., merging Control Areas) is it necessary to retain "Historic" boundaries for use in NNL estimation or other reasons?	IRC
73	Congestion Management	Operate Markets Within Transmission Limits		Market Design - Day Ahead. Model objective function	Who coordinates the scheduling constraints (i.e., security constrained dispatch) on paths that cross RTO boundaries to ensure that inter-RTO schedules do not exceed reliability standards? (Issue I.b.6)	IRC/NERC
130	Congestion Management	Operate Markets Within Transmission Limits		What happens when MISO and PJM and outside PJM/MISO firm and CBM exceed TTC - day ahead mechanism to reduce oversubscribed conditions		IRC
43	Congestion Management	Standardize and Coordinate ATC Calculations	Contract Tie Capacity Sharing	Allow Sharing Contract Tie Capacity between Entities across Seams	Lack of Coordination and Sharing of Tie Capacity is an artificial market barrier	IRC/NAESB
59	Congestion Management	Standardize and Coordinate ATC Calculations	Coordinate Hedging Instruments at Market Interfaces	Inter-control area congestion management / parallel flow management	Develop congestion hedges across control area boundaries.	IRC/FERC
44	Congestion Management	Standardize and Coordinate ATC Calculations	Standardize TRM and CBM Calculations	Calculation and Values of TRM and CBM consistent	Underutilization of Transmission Capacity	IRC/NERC

Seams Issues Matrix

(Recommendations of Steven Cobb)

Orig #	Category	1ST Sub-Category	2ND Sub-Category	Description of Seam Issue	Comments	IRC
17	Congestion Management	Standardize and Coordinate ATC Calculations and Postings	Reconcile ATC Calculations Between Physical and Financial Transmission Markets	TTC-ATC calculation/posting	Interface between a financial market (no physical transmission arrangements) and physical transmission regions (selling transmission capacity through OASIS reservations): Problems of TTC-ATC calculations coordination. Counterparties include IMO, NYISO, and ISO-NE.	IRC/NERC
61	Congestion Management	Standardize and Coordinate ATC Calculations and Postings	Reconcile ATC Calculations Between Physical and Financial Transmission Markets	Market Design - Prior to Day Ahead. Congestion Revenue Rights (CRRs) [Firm Transmission Rights (FTRs) in MD02, FTOs in RTO West]	Are all transmission rights both physical and financial required to be identical to mitigate the seams problems? (Issue #I.a.2)	IRC/FERC
9	Congestion Management	Standardize and Coordinate ATC Calculations and Postings		Transmission Calculations	Transmission calculations are not consistent. Solution: Standardized ATC Calculations.	IRC/NERC
55	Congestion Management	Standardize and Coordinate ATC Calculations and Postings		Improved TTC/ATC posting	Monthly and yearly posting of TTC/ATC values to support transaction pre-scheduling. Clarify how the ATC values calculated by each ISO should be used to ascertain the ability of the interface to support transactions.	NERC, IRC H51FERC, and Regulators
109	Congestion Management	Standardize and Coordinate ATC Calculations and Postings		ATC Differences - Individual control areas determine ATC for jointly operated transmission interfaces. Differences in ATC calculations can confuse the marketplace, which may react by avoiding transactions that would otherwise be economic due to the uncertainty and perceived risk.		IRC/NERC
116	Congestion Management	Standardize and Coordinate ATC Calculations and Postings		ATC/AFC Coordination - MISO and PJM to coordinate with any external parties wishing to do so, respecting all significant flowgates external to their respective boundaries; availability and levels of service and curtailments for firm and non-firm, network and point to point.		IRC/NERC
20	Congestion Management	Standardize TCC Calculations Across Interfaces		TTC coordination	Disagreement between two operators on the physical capability of an interconnection (line 7040 and Phase II). Counterparties are NYiso and ISO-NE.	IRC/NERC
69	Congestion Management	System Market Modeling Coordination	Standardize Prices at Market Interfaces	Market Design - Day Ahead. Energy Spot Market	In order to achieve a uniform set of redispatch prices, if that is necessary, do the network models have to be identical, with the exact system? Each time each one is used does it have to be synchronized with the other RTOs or is a single process required? In addition do the programs that use the models have to be identical in order to get the uniform set of redispatch prices? (Issue I.b.2)	IRC/FERC
47	Congestion Management	System Market Modeling Coordination		Operational Model Updates	Areas must have up to date models for operational use of other areas across the seam	IRC/NERC

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75	Congestion Management	System Market Modeling Coordination		Market Design - Day Ahead. Model objective function	Does the use of both AC and DC OPFs introduce compatibility problems? (Issue I.b.8)	IRC/NERC
121	Congestion Management	System Market Modeling Coordination		Market flow data - reflect ISN and SDX data	Standardize inputs to estimation of power flows (i.e., GLDFs, outages, etc…).	IRC/NERC
123	Congestion Management	System Market Modeling Coordination		GDLF calculation	Standardized methodology for determining distribution factors - standard OPF model for each interconnection?	IRC/NERC
135	Congestion Management	System Market Modeling Coordination		Historic NNL values should not be reflected indefinitely in the future, and an appropriate mechanism to rationalize the historic flows to recognize eventual market conditions should be developed		IRC/FERC
133	Congestion Management	Transmission Market Design	Redispatch of Generation	Define "RTO area wide dispatch"	AJR - This refers to centralized dispatch across a RTO Footprint, rather than within a CA Boundary.	IRC/FERC
110	Congestion Management	Transmission Market Design	Transmission Market Manipulation	ATC Manipulation - Market participants schedule transactions day-ahead and beyond with no intent to deliver energy. Cancellation in real-time by a market participant results in unused ATC, ramp capability that cannot be used by other market participants. Valuable capability is left unused.		IRC/FERC
53	Congestion Management	Transmission Market Design	Transmission Service Product Type Priority	CAISO ETC rights scheduling - Contract Reference Number	CAISO uses Contract Numbers to track ETC rights. This causes Phantom Congestion and does not allow ETC rights holders to sell and schedule their transmission	IRC/FERC
88	Congestion Management	Transmission Market Design	Transmission Service Product Type Priority	Market Design - Day Ahead. Centralized Unit Commitment.	Does a recallable physical right conflict with a redispatch set in a day-ahead clearing process? (Issue I.b.21)	IRC/FERC
98	Market Design	Energy Market Design and Coordination	Demand Side Energy Market Coordination	Market Design - Post Real Time. Settlement stages	How does bidding or demand-side response between or among RTO's affect the scheduling and dispatch of obligations within the RTO's? Can these kinds of trades between RTOs be accommodated? Does trade of these services between RTOs have implications for either the exporting or importing RTOs ability to meet reliability criteria? (Title to power needs to be established) (Issue II).	IRC/FERC
90	Market Design	Energy Market Design and Coordination	Hour Ahead & Real-Time Energy Market Coordination Across Market Interfaces	Market Design - Hour Ahead. Timing	How does hour-ahead market integrate with neighbors who do not have hour-ahead process? (Issue I.c.2)	NAESB, NERC, & IRC
91	Market Design	Energy Market Design and Coordination	Hour Ahead & Real-Time Energy Market Coordination Across Market Interfaces	Market Design - Hour Ahead. Energy Market, Congestion Management Market, and Ancillary Services Market	Is it necessary to align real time markets? If so, can a method be developed to produce consistent real-time prices at the boundaries? (avoid an price discontinuity due to separate calculation of prices with different information.) (Issue I.d.1)	IRC/FERC

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Orig #	Category	1ST Sub-Category	2ND Sub-Category	Description of Seam Issue	Comments	IRC
93	Market Design	Energy Market Design and Coordination	Hour Ahead & Real-Time Energy Market Coordination Across Market Interfaces	Market Design - Real Time. Dispatch interval	Can a method be developed to produce consistent real-time prices at the boundaries? (avoid an price discontinuity due to separate calculation of prices with different information.) If not, can discontinuities be tolerated or managed? [This may be more of a settlements issue than a consistency issue.] (Issue I.d.3)	IRC/FERC
131	Market Design	Energy Market Design and Coordination		Express sunset provisions for implementation of Day 2 markets		IRC/FERC
113	Market Design	Green Power Market		Green power attributes trading		Regulatory / NAESB
96	Market Design	Market Settlement Systems	Energy Market Settlement Process at Market Interfaces	Market Design - Real Time. Penalties	Do settlement systems have to be common as long as price discontinuities at the boundaries are managed? (Issue I.e.1)	NAESB/IRC
97	Market Design	Market Settlement Systems	Energy Market Settlement Process at Market Interfaces	Market Design - Post Real Time. Settlement stages	How are inter-RTO settlements managed? (Includes the revenue adequacy issues related to achieving consistent prices.) (Issue I.e.2)	NAESB/IRC
86	Market Design	Transmission Ancillary Service Market Design and Coordination	Ancillary Service Auction Coordination	Market Design - Day Ahead. Ancillary Service Market	All three propose auctions: Do the auctions have be identical? Is it possible to use price exchange (say as imputed bids) in connection with interactive calculation to minimize the spread between the A/S auctions? (Issue I.b.19)	IRC/FERC
81	Market Design	Transmission Ancillary Service Market Design and Coordination	Ancillary Service Prices at Market Interfaces	Market Design - Day Ahead. Congestion Prices.	Can a “best practice” model for definition and acquisition of ancillary services products be developed to produce consistent prices at the RTO boundaries? (Issue I.b.14)	IRC/FERC
16	Market Design	Transmission Ancillary Service Market Design and Coordination	Reactive Power Compensation	Compensation for Reactive Power	Lack of compensation lessens incentives for operators to solve problems and for accountants to spend money on metering.	IRC/FERC
85	Market Design	Transmission Ancillary Service Market Design and Coordination	Transmission Service Requirements for Ancillary Service Delivery	Market Design - Day Ahead. Ancillary Service Market	Does the RTO of the A/S seller recognize the transmission capacity reservation required to enable the reserves to respond for outages in the RTO of the buyer? (Issue I.b.18)	NAESB/IRC
74	Market Design	Transmission Ancillary Service Market Design and Coordination		Market Design - Day Ahead. Model objective function	What is the effect of linking energy and ancillary service markets in the optimizations on model coordination issues? (Issue I.b.7)	NAESB, NERC, & IRC
83	Market Design	Transmission Ancillary Service Market Design and Coordination		Market Design - Day Ahead. Ancillary Service Market	When ancillary services are provided from within one RTO for another RTO, does the providing RTO recognize them as obligations within the seller’s RTO? (Issue I.b.16)	IRC/FERC
84	Market Design	Transmission Ancillary Service Market Design and Coordination		Market Design - Day Ahead. Ancillary Service Market	How can AS bids be coordinated across three markets to avoid both double counting and inefficient limitations on bids? (Issue I.b.17)	IRC/FERC

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Orig #	Category	1ST Sub-Category	2ND Sub-Category	Description of Seam Issue	Comments	IRC
87	Market Design	Unit Commitment Procedure Standardization		Market Design - Day Ahead. Acquisition Mechanism	Does unit commitment need to be standardized? Is this an area where each RTO can have its own method, which matches its resource mix and system responsiveness? (Rapid response of hydro gen. versus lead time requirements for thermal gen.) (Issue I.b.20)	IRC/FERC
13	Market Design	Unscheduled/Parallel Path Flow Management	Compensation for Unscheduled/Parallel Path Flow	Compensation for Unscheduled Flows of Electricity	Lack of compensation lessens incentives for operators to solve problems and for accountants to spend money on metering.	IRC/NAESB
15	Market Design	Unscheduled/Parallel Path Flow Management	Compensation for Unscheduled/Parallel Path Flow	Compensation for Loop Flow	Lack of compensation lessens incentives for operators to solve problems and for accountants to spend money on metering.	IRC/NAESB
29	Market Design	Unscheduled/Parallel Path Flow Management	Compensation for Unscheduled/Parallel Path Flow	Allocation of transmission capacity on reciprocal flow gates amounts to transmission service without compensation. Legitimizes "parallel loop flow".		IRC/NAESB
66	Market Design	Unscheduled/Parallel Path Flow Management	Compensation for Unscheduled/Parallel Path Flow	Market Design - Prior to Day Ahead. Duration	How will rights for loop flows (non-contract flows) in other RTOs be allocated/acquired? (Issue I.a.7)	IRC/NAESB
134	Market Design	Unscheduled/Parallel Path Flow Management	Compensation for Unscheduled/Parallel Path Flow	Compensation for parallel flows		IRC/FERC
142	Market Design	Unscheduled/Parallel Path Flow Management	Compensation for Unscheduled/Parallel Path Flow	Pricing for native load loop flow impacts		IRC/FERC
77	Market Monitoring/ Compliance	Anti-Gaming Coordination		Market Design - Day Ahead. Schedule Components	Will different RTO congestion management systems enhance opportunities for gaming or affect generation dispatch efficiency? (Issue I.b.10)	IRC/FERC
11	Market Monitoring/ Compliance	Market Monitoring Entity Requirements		Market Oversight	New and mature markets need oversight to ensure that existing rules are complied with and new rules are adequate in meeting the scenarios they were designed to govern. Solution: Independent Market Auditor or Monitor.	FERC
94	Market Monitoring/ Compliance	Penalty/Sanction Coordination		Market Design - Real Time. Imbalance Price	Do penalties need to be the same in each RTO? (Issue I.d.4)	IRC/FERC
95	Market Monitoring/ Compliance	Penalty/Sanction Coordination		Market Design - Real Time. Penalties	Will inconsistent imbalance penalty practices hamper non-dispatchable resource sales across RTO boundaries? (Issue I.d.5)	IRC/FERC
3	Market Standards	Energy Market Standard Product Definitions		Definition & treatment of Firm/nonfirm Power	Annual Plan Item 4ci moved from MOS	NAESB
10	Market Standards	Energy Market Standard Product Definitions		Energy Products	Entities have disagreements concerning the definitions of various energy products. Solution: Standardized Energy Products.	NAESB
25	Market Standards	Energy Market Standard Product Definitions		Need for common physical market and products - regional variations permitted		NAESB
34	Market Standards	Energy Market Standard Product Definitions		Clarification of Product Definitions	Complete/Standard definitions for Liquidated Damages (LD), "Into", etc.	NAESB

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139	Market Standards	Energy Market Standard Product Definitions		Standard definition of energy products	Energy products and services have common attributes in all markets. Standards definitions will improve efficiencies in communicating and operating between areas with various market designs	NAESB
7	Market Standards	Market Standard Communication Protocols and Transparency		Market Price Information	Market pricing methodology not comprehensive, consistent or dependable. Solution: Standardized Indices, Independently Managed.	NAESB, FERC, IRC, and Regulators
42	Market Standards	Market Standard Communication Protocols and Transparency		Data Visibility	Inability to view neighboring markets information through a common software such that this sometimes hinders Market Participants ability to complete business in a timely fashion.	NAESB/IRC
52	Market Standards	Market Standard Communication Protocols and Transparency		Confidentiality of Data and Information Shared	Standards of Confidentiality would enhance the capability to resolve data sharing and information posting	NAESB/IRC
71	Market Standards	Market Standard Communication Protocols and Transparency		Market Design - Day Ahead. Model spatial granularity	To what extent do RTOs need to see other RTOs' scheduling information? (Issue I.b.4)	NERC/IRC
140	Market Standards	Market Standard Communication Protocols and Transparency		Standard messaging protocols for market notifications	Market participants will benefit from common messaging protocols.	NAESB/IRC
1	Market Standards	Market Standard Operating Time		Non Standard Time Zone	The lack of a standard Time Zone causes Market Inefficiencies	NAESB
136	Market Standards	Market Standard Operating Time		Inconsistent Market Event Timelines	There is a disconnect between the timing of bids and offers in the Ontario market and the releasing of firm transmission in MISO for which schedules have not been submitted for use as non-firm transmission.	IRC
137	Market Standards	Market Standard Operating Time		Inconsistent Market Event Timelines	Timing issues between bid based markets (one example only - not knowing whether your bid has been accepted in "sink" market before having to commit in the "source" market).	IRC
14	Market Standards	Physical and/or Financial Resolution of Inadvertent Interchange		Compensation for Inadvertent Interchange	Lack of compensation lessens incentives for operators to solve problems. Explicit compensation for inadvertent interchange is necessary for appropriate definition of other products, in that such compensation ensures that the defined product is delivered.	IRC/FERC
111	Market Standards	Transmission Ancillary Service Market Design and Coordination	ICAP Market Standardization	Capacity Market - Differences in ICAP definitions, requirements, deliverability, and recall procedures have hampered the ability of suppliers to sell ICAP between Northeast ISOs (include regional resource adequacy model, external 30-minute reserves participation, harmonize demand response programs)		NAESB/IRC

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Orig #	Category	1ST Sub-Category	2ND Sub-Category	Description of Seam Issue	Comments	IRC
46	Planning	Transmission Expansion and Generator Interconnection Coordination	Generator Interconnection - Affected Systems	Generation Interconnection Studies	Generation Interconnections close to seam affects both areas	IRC/FERC
57	Planning	Transmission Expansion and Generator Interconnection Coordination	Generator Interconnection Transmission Requirements	Transmission interconnection procedures	Need consistent approach to treating merchant generation interconnection procedures with transmission	IRC/FERC
114	Planning	Transmission Expansion and Generator Interconnection Coordination	Interregional Transmission Planning Procedures	Coordination of interregional planning including transmission facilities and generator interconnection procedures		IRC/FERC
26	Planning	Transmission Expansion and Generator Interconnection Coordination	Transmission Expansion Cost and Construction Responsibilities	Transmission expansion planning - coordination between systems and determine who is obligated to build and pay for improvements	Being reviewed by PJM/MISO.	IRC/FERC
48	System Reliability	Emergency Operations	Computer Failures	Communication of Computer Failures	Needed for reliable operations and emergency operations	NERC
49	System Reliability	Emergency Operations	Emergency Operating Procedures for Market Interfaces	Emergency Procedures	Emergency procedures require operations across seams	IRC/NERC
128	System Reliability	Emergency Operations	System Monitoring and Contingency Plans	Contingency plans; critical path analysis		NERC/IRC
118	System Reliability	Emergency Operations	System Restoration Procedures	Emergency and Restoration Plans - operating procedures for Voltage Collapse and Stability		NERC
122	System Reliability	Functional Model		Control area - control zone responsibilities vs. market operator		NERC
50	System Reliability	Generation-Load Balance	Interchange Schedule Ramping Requirements	Schedule Ramp Management	Ramping standard differences across the seams hinder business	NAESB & IRC
108	System Reliability	Generation-Load Balance	Interchange Schedule Ramping Requirements	Failure of Transactions due to Ramping of Control Area Interchange - Desirable transactions between control areas may be "blocked" from access to the grid due to insufficient dispatch capacity to absorb large schedule changes while maintaining energy/load balance within the control area.		NAESB, NERC & IRC
51	System Reliability	Generation-Load Balance	Inter-Market Resource Requirements	Resource Adequacy	Parties in one area rely on resources in other areas. Validation of their reliance on the other area must be coordinated.	IRC/FERC
27	System Reliability	Inter-Market and Intra-Market Facility Outage and Maintenance Coordination		Outage Maintenance Coordination	Being reviewed by PJM/MISO. See PJM presentation "Status Report to FERC on July 31, 2002 Alliance Order" dated Jan 2003, page 6 as posted under NAESB WEQ Seams subcommittee July 8 date	IRC/NERC
45	System Reliability	Inter-Market and Intra-Market Facility Outage and Maintenance Coordination		Coordination of Transmission and Generation Outages	Both forced and planned outages	IRC/NERC
120	System Reliability	Inter-Market and Intra-Market Facility Outage and Maintenance Coordination		Facilities in close electrical proximity under different RTOs - outage maintenance coordination, access and expansion planning		IRC/NERC

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30	System Reliability	Operate Markets Within Transmission Limits		Market allocations over flow gates are approved without regard to flow gate capacity resulting in over subscription of flow gates.		NERC
99	System Reliability	Operating Reserves/Resource Adequacy	Energy and Reactive Capacity Reserve Requirements	Demand Response Participation.	If there is an RTO capacity requirement for all RTOs, how will double-counting across RTOs be avoided? Note: RTO West and WestConnect are not currently proposing a resource adequacy requirement independent of the requirement for balanced schedules. (Issue X.1).	IRC
100	System Reliability	Operating Reserves/Resource Adequacy	Energy and Reactive Capacity Reserve Requirements	Resource Adequacy. Resource Adequacy Assessment.	If there is an RTO capacity requirement for all RTOs, do different resource adequacy approaches result in different penalty structures and if so, does this create problems, e.g., opportunities for arbitrage? Note: RTO West and WestConnect are not currently proposing a resource adequacy requirement independent of the requirement for balanced schedules. (Issue X.2).	NERC
119	System Reliability	Operating Reserves/Resource Adequacy	Energy and Reactive Capacity Reserve Requirements	NERC Regional Criteria and Reserve Sharing - define operating policy changes, waivers, or certifications that are needed to permit security-constrained dispatch over multiple existing control areas to allow flows not to be tagged; Joint Reliability Coordination - NERC Policies 5 and 9		IRC NERC
82	System Reliability	Operating Reserves/Resource Adequacy	Reliability Aspects of Inter-Market Scheduling of Ancillary Services	Market Design - Day Ahead. Ancillary Service Market	How does bidding of ancillary services between or among RTOs affect the scheduling and dispatch obligations within the RTOs? Can this kind of trade between RTOs be accommodated? Does trade of these services between RTOs have implications for either the "exporting" or "importing" RTO's ability to meet reliability criteria? (Issue I.b.15)	IRC/FERC
107	System Reliability	Transaction Curtailments	Market Impacts of Transaction Curtailments for Reliability Reasons	Transaction Curtailment - Transaction curtailments for security may extend beyond the reliability need due to differences in market timing. Extended curtailments are disruptive to both the marketplace and the reliable operation of the grid.		IRC/FERC
126	System Reliability	Unscheduled/Parallel Path Flow Management	Interchange Distribution Calculator Requirements	Definition of coordination between market entity (PJM or MISO) and the IDC; define necessary changes to IDC; updates of base cases and book of flowgates		NERC

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127	System Reliability	Unscheduled/Parallel Path Flow Management	Interchange Distribution Calculator Requirements	Industry oversight and reporting of PJM and MISO impact calculations - IDC cost, cost allocation to reimburse NERC		NERC
23	System Reliability	Unscheduled/Parallel Path Flow Management	Parallel Path/ Unscheduled Flow Monitoring and Operation	How different congestion management methodologies will interact to ensure parallel flows and impacts are recognized and controlled to ensure system reliability.	Being reviewed by PJM/MISO.	IRC/FERC
24	System Reliability	Voltage Control		Voltage Operating Procedures	Being reviewed by PJM/MISO. See PJM presentation "Status Report to FERC on July 31, 2002 Alliance Order" dated Jan 2003, page 6 as posted under NAESB WEQ Seams subcommittee July 8 date	NERC/IRC
5	System Reliability	Operating Reserves/Resource Adequacy	Energy and Reactive Capacity Reserve Requirements	Provision of reserves across multiple control areas	Annual Plan Item 4cii moved from MOS	NERC
39	Transaction Scheduling	Controllable Line Scheduling		Controllable Line Scheduling	Concept of operations for general methodology to schedule controllable lines between RTOs. Being reviewed by NYISO	NAESB/IRC
58	Transaction Scheduling	Controllable Line Scheduling		Controllable line scheduling	Concept of Operations for general methodology to schedule controllable lines has been drafted. A multi-ISO stakeholder group (similar to JCAG) needs to be formed to review the draft Concept of Operations to provide stakeholder input.	NAESB/IRC
60	Transaction Scheduling	Controllable Line Scheduling		Cross-border price convergence	The lack of price convergence at the control area boundaries may inhibit the desire of market participants to arbitrage between neighboring markets. This issue is being referred to the individual ISO Market Committees for further definition on the business issue that needs resolution.	IRC
12	Transaction Scheduling	Interchange Scheduling Standardized Protocols	Develop Electronic Scheduling	Interchange/Intrachange Scheduling Data Exchange	Current E-Tagging process is inadequate for exchanging reliability and market data within the Western Interconnection. Solution: Electronic Scheduling	NAESB, NERC
41	Transaction Scheduling	Interchange Scheduling Standardized Protocols	Inter-Market Ramping Requirements Standardization	Scheduling Coordination (including Ramp Rates)	RTOs have different ramp rates and scheduling requirements that require Market Participants to complete multiple submissions for the same transaction.	NAESB
79	Transaction Scheduling	Interchange Scheduling Standardized Protocols	Standardize Inter-Market Scheduling Timelines	Market Design - Day Ahead. Other Scheduling Requirements	Should the time intervals and submission times be synchronized to mitigate obstacles to inter-RTO trade? (Issue I.b.12)	NAESB
78	Transaction Scheduling	Interchange Scheduling Standardized Protocols	Tools and Procedures to Accommodate Inter-Market Interchange Scheduling Requirements	Market Design - Day Ahead. Schedule Components	Can tools be developed for scheduling submission that assist the user in meeting any differences in protocols between RTOs? (Issue I.b.11)	NAESB
8	Transaction Scheduling	Interchange Scheduling Standardized Protocols		Scheduling	Inconsistent procedures among entities. Solution: Western Interconnection Standardized Interchange Scheduling Protocols.	NAESB

Seams Issues Matrix

(Recommendations of Steven Cobb)

Orig #	Category	1ST Sub-Category	2ND Sub-Category	Description of Seam Issue	Comments	IRC
76	Transaction Scheduling	Interchange Scheduling Standardized Protocols		Market Design - Day Ahead. Model objective function	Do differences in the scheduling requirements (e.g., requirements for balanced schedules) between RTOs create seams problems for inter-RTO schedules? If so, can these problems be mitigated? (Issue I.b.9)	NAESB, NERC, & IRC
104	Transaction Scheduling	Interchange Scheduling Standardized Protocols		Transmission Checkout Failure - Operators curtail transactions due to mismatched tag data, different MW volumes, etc. The curtailment of transactions due to data incompatibility is disruptive to both the marketplace and the reliable operation of the grid.		NERC
106	Transaction Scheduling	Interchange Scheduling Standardized Protocols		Transaction Scheduling - Inconsistent information and market timing rules lead to uncertainty and risk that discourage the scheduling of some inter-regional transactions.		NAESB
32	Transmission Service	Transmission Market Design	Transmission Service Product Type Priority	MISO- PJM market allocation will give preference to the market as Network over PTP even though the Market allocation my be a non paying transmission customer.		IRC/FERC
40	Transmission Service	Transmission Market Standard Product Definitions and Priorities	Multiple Proxy Bus Development	Multiple Proxy Buses for Free Flowing Interfaces	Development of multiple proxy buses between RTOs for scheduling and pricing.	IRC/NAESB
4	Transmission Service	Transmission Market Standard Product Definitions and Priorities		Definition & treatment of Firm/nonfirm Transmission	Annual Plan Item 4cii moved from MOS	IRC/FERC
103	Transmission Service	Transmission Market Standard Product Definitions and Priorities		Transmission Service - Market participants require consistent treatment of transmission products across multiple control areas to reduce perceived market risk, scheduling confusion and uncertainty.		IRC/FERC
124	Transmission Service	Transmission Market Standard Product Definitions and Priorities		Wide area dispatch and network resources to network loads - resource deliverability if not a firm network load		IRC/FERC
141	Transmission Service	Transmission Market Standard Product Definitions and Priorities		Replacement of contract path with flow-based transmission service		IRC/FERC
54	Transmission Service	Transmission Service Pricing	Discounting of Market Interface Transmission ATC	Transmission service charge discounting	Ability for TOs to discount TSC rates on external interfaces to selectively reduce export charges and encourage use of ties. The software exists, however, there does not appear to be any business incentives to exercise discounts.	IRC/FERC
22	Transmission Service	Transmission Service Pricing	Market Interface Transmission Service Pancaking	Rate pancaking elimination	Being reviewed by PJM/MISO.	IRC/FERC
38	Transmission Service	Transmission Service Pricing	Market Interface Transmission Service Pancaking	Rate Pancaking	Charges to Market Participants who conduct business over more than one RTO. Reciprocal agreements needed to eliminate these charges. NYISO and ISO-NE	IRC/FERC

Seams Issues Matrix

(Recommendations of Steven Cobb)

Orig #	Category	1ST Sub-Category	2ND Sub-Category	Description of Seam Issue	Comments	IRC
105	Transmission Service	Transmission Service Pricing	Market Interface Transmission Service Pancaking	Export Charges (Pancaking) - Control-area specific export charges remove incentives to transact business when transaction margins are of the same magnitude or less than the prevailing export charges. Such charges include transmission and ancillary service components.		IRC/FERC
117	Transmission Service	Transmission Service Procurement	Common Reservation System for Market Interface Transmission ATC	Contract Tie Capacity - One Stop Shopping		NAESB
6	Transmission Service	Transmission Service Procurement	Common Western Interconnection Wide OASIS	Transmission Access	No transmission market one stop shopping available for the Western Interconnection - entities can't find needed information to efficiently conduct business on a preschedule or real-time basis. Solution: Common OASIS Site needed.	NAESB
89	Transmission Service	Transmission Service Procurement	Hour Ahead Transmission Service Market Standardization	Market Design - Day Ahead. Release of Unused Transmission Capacity after Close of DA Markets	How are boundary prices to be synchronized between RTO's if only one RTO has a hour ahead process? Is it necessary to align hour ahead markets? (Issue I.c.1)	NAESB, NERC, & IRC
33	Transmission Service	Transmission Service Procurement	Intra-Hour Transmission Service Procurement	Standard for Purchasing of Inter-Hour Transmission	The ability to purchase transmission after the top of the hour when the transmission service is predetermined as available in prior hour.	IRC/FERC
65	Transmission Service	Transmission Service Procurement	Long-Term Transmission Service for New Construction	Market Design - Prior to Day Ahead. Duration	To the extent that longer term transmission rights are needed for new construction, can agreement be reached to issue long term rights? (Issue I.a.6)	IRC/FERC
67	Transmission Service	Transmission Service Procurement	Secondary Transmission Service Market Standardization	Market Design - Prior to Day Ahead. Primary Release Mechanism	There seems to be agreement here that a secondary market would be outside the RTO. If the resulting secondary market is not westwide, will coordination be needed? (Issue I.a.8)	NAESB
112	Transmission Service	Transmission Service Procurement	Transmission Service for ICAP Market	Long-term Transmission Service Availability to Support ICAP Transactions - Firm transmission reservation requirements to establish "Deliverability" as a requirement to buy external ICAP results in an economic advantage for internal suppliers and a barrier to market entry for external suppliers.		IRC/FERC
28	Transmission Service	Transmission Service Settlement	Consolidate Multiple Market Transmission Service Settlement Statements	Multiple transmission service charge invoicing	Being reviewed by PJM/MISO.	NAESB/IRC
56	Transmission Service	Transmission Service Settlement	Consolidate Multiple Market Transmission Service Settlement Statements	Multiple transmission service charge invoicing	Companies that conduct business across Control Area borders are faced with receiving a TSC bill from each TO. A single charge should be provided to each transaction to the appropriate parties and revenues allocated to the TOs according to the appropriate usage formulas.	IRC & NAESB

#	Reference Paper or Supporting Document Provided
A	“Profit-Enhancing Seam Management: A White Paper on Pricing The Unscheduled Flows of Electricity Across the Seams Between Utilities Using A Geographically Differentiated Auction of Inadvertent Interchange”, released 2001 March 25 (Mark Lively - Lively Utility).
B	"WOLF: Wide Open Load Following," A presentation to the NERC Market Interface Committee, 2002 September 4-5, Houston, Texas (Mark Lively - Lively Utility).
C	E-Mail by Mark Lively to NAESB WEQ Seams Subcommittee of 9/4/2003 8:28:10 PM Eastern Standard Time (Mark Lively - Lively Utility).
D	See the PJM/MISO JOA dated 8/5/03 (Linda Horn - WE Energies).
E	MISO - PJM Managing Congestion to Address Seam Paper, April 28, 2003 (Dave Nick - DTE Energy) (Ed. note: white paper updated Aug. 4, 2003).
F	*Intentionally Left Blank.*
G	Northeast ISOs Seams Resolution Report: History of Seam Issues Resolution (Jan. 15, 2003); and Ongoing Northeast ISOs "Seams" Projects, 2003-2004 (Jan. 14, 2003) (Joe Rossignoli - National Grid).
H	In Northeast Power Markets Seams Action Plan - October 9, 2002 and July 14, 2003, and July 3, 2003 timeline update (Jeff Mueller - PSEG).
I	Attachement A of MISO and PJM Reliability Plans (Jeff Mueller - PSEG).
J	MISO compliance filings in FERC Docket No. EL03-35-004 and in Whitepaper "Managing Congestion to Address Seams" PJM and MISO May 16, 2003 (Jeff Mueller - PSEG).
K	ATC's Attachment K (Jeff Mueller - PSEG).
L	M. Lively, Forcing Reserves to Compete with a Physical Market (2002) (Lou Oberski -- Dominion Energy).