

**Seams Issues Matrix**  
(Limited to potential business practice issues)

Orig #	1ST Sub-Category		2ND Sub-Category		Description of Seam Issue			Comments			Resp Org		Issue Type	Resp Org JIC	Priority	Currently Being Addressed	Submitter
	Category	Sub-Category	Sub-Category	Sub-Category	Category	Sub-Category	Category	Sub-Category	WEQ EC	WEQ EC							
36	Congestion Management	Congestion Management Market Coordination	Coordinate Hedging Instruments at Market Interfaces	Market Interfaces	Coordination of market based congestion hedging instruments, such as FTRs, between adjacent RTOs with markets, especially for out and thru' transactions			NAESB	NAESB	National	Undecided					Raj Rana - AEP	
35	Congestion Management	Congestion Management Market Coordination	Standardize Prices at Market Interfaces	Market Interfaces	Locational Marginal Prices (LMP) at borders of RTOs with markets (Price cap included)			NAESB	NAESB	National	Undecided					Raj Rana - AEP	
138	Congestion Management	Congestion Management Market Coordination			Coordination of congestion			NAESB	NAESB	National	NAESB		Yes			Karl Tammar - ISORTO Council	
9	Congestion Management	Standardize and Coordinate ATC Calculations and Postings			Transmission Calculations			NAESB	NAESB	National	Undecided			Yes - SSG - WI		Steven Cobb - SRP	
113	Market Design	Green Power Market			Green power attributes trading			NAESB	NAESB	National	Undecided					Jeff Mueller (PSEG), and Andy Rodriguez (PJM)	
16	Market Design	Transmission Ancillary Service Market Design and Coordination	Reactive Power Compensation		Compensation for Reactive Power			NAESB	NAESB	National	Undecided					Mark Lively - Lively Utility	
13	Market Design	Unscheduled/Parallel Path Flow Management	Compensation for Unscheduled/Parallel Path Flow		Compensation for Unscheduled Flows of Electricity			NAESB	NAESB	National	Undecided			Yes / IIPTF		Mark Lively - Lively Utility	
15	Market Design	Unscheduled/Parallel Path Flow Management	Compensation for Unscheduled/Parallel Path Flow		Compensation for Loop Flow			NAESB	NAESB	National	Undecided					Mark Lively - Lively Utility	
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".			NAESB	NAESB	National	Undecided					Dave Nick - DTE Energy	
134	Market Design	Unscheduled/Parallel Path Flow Management	Compensation for Unscheduled/Parallel Path Flow		Compensation for parallel flows			NAESB	NAESB	National	NAESB					Jeff Mueller (PSEG), and Andy Rodriguez (PJM)	
142	Market Design	Unscheduled/Parallel Path Flow Management	Compensation for Unscheduled/Parallel Path Flow		Pricing for native load loop flow impacts			Multiple	Multiple	Regional	Multiple		No			Ed Davis - Entergy	

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	Category	Sub-Category	Category	Sub-Category	Market Oversight	Market Monitoring/Requirements	Energy Market Standard Product Definitions	Energy Market Standard Product Definitions	Energy Market Standard Product Definitions	Energy Market Standard Product Definitions	Energy Market Standard Product Definitions	Energy Market Standard Product Definitions			
11	Market Monitoring/Compliance	Market Monitoring/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.	Multiple	Regional	Multiple	Yes - SSG - WI	Steven Cobb - SRP
3	Market Standards	Energy Market Standard Product Definitions			Definition & treatment of Firm/nonfirm Power					Annual Plan item 4ci moved from MOS	NAESB	National	Undecided	No	Lou Oberski - Dominion Energy
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	National	NAESB	Yes - WECC	Steven Cobb - SRP
25	Market Standards	Energy Market Standard Product Definitions			Need for common physical market and products - regional variations permitted						NAESB	National	NAESB	No	Linda Horn - WE Energies
34	Market Standards	Energy Market Standard Product Definitions			Clarification of Product Definitions					Complete/Standard definitions for Liquidated Damages (LD), "into", etc.	NAESB	National	NAESB	No	Tony Reed - Southern
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	National	NAESB	Yes	Karl Tammar - ISO/RTO Council
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	National	NAESB	Yes	Marjorie Perleman - Energy East
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	National	NAESB	Limited	Carl Monroe, Southwest Power Pool
140	Market Standards	Market Standard Communication Protocols and Transparency			Standard messaging protocols for market notifications					Market participants will benefit from common messaging protocols.	NAESB	National	NAESB	No	Karl Tammar - ISO/RTO Council
1	Market Standards	Market Standard Operating Time			Non Standard Time Zone					The lack of a standard Time Zone causes Market Inefficiencies	NAESB	National	NAESB	No	Phil Cox - AEP
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.	NAESB	National	NAESB	Yes / IIPTF	Mark Lively - Lively Utility
46	Planning	Transmission Expansion and Generator Interconnection Coordination			Generator Interconnection - Affected Systems					Generation Interconnections close to seam affects both areas	NAESB	National	Undecided	Limited	Carl Monroe, Southwest Power Pool
57	Planning	Transmission Expansion and Generator Interconnection Coordination			Generator Interconnection Transmission Requirements					Need consistent approach to treating merchant generation interconnection procedures with transmission	Multiple	Regional	Multiple	Northeast ISO	Joe Rossignoli National Grid
114	Planning	Transmission Expansion and Generator Interconnection Coordination			Interregional Transmission Planning Procedures					Coordination of interregional planning including transmission facilities and generator interconnection procedures	Multiple	Regional	Undecided	In Northeast Power Markets Seams Action Plan	Jeff Mueller (PSEG), and Andy Rodriguez (PJM)

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	Category	Sub-Category	Category	Sub-Category	Issue Type	WEQ EC	Responsible Party	Issue Type	JIC	Responsible Party	Issue Type	JIC				
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.	Multiple	Regional	Multiple	Yes				Yes		Linda Horn - WE Energies	
50	System Reliability	Generation-Load Balance	Interchange Schedule Ramping Requirements	Schedule Ramp Management	Ramping standard differences across the seams hinder business	NAESB	National	Undecided	Limited						Carl Monroe, Southwest Power Pool	
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	National	NAESB	Yes - WECC						Steven Cobb - SRP	
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	National	Undecided	Yes						Marjorie Peifman - Energy East	
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	National	NAESB							Syd Berwager - Bonneville PA	
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	National	Undecided							Syd Berwager - Bonneville PA	
8	Transaction Scheduling	Interchange Scheduling Standardized Protocols		Scheduling	Inconsistent procedures among entities. Solution: Western Interconnection Standardized Interchange Scheduling Protocols.	Multiple	Regional	Multiple	Yes - SSG - WI						Steven Cobb - SRP	
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.		NAESB	National	NAESB	In Northeast Power Markets Seams Action Plan						Jeff Mueller (PSEG), and Andy Rodriguez (PJM)	
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	National	NAESB	In Northeast Power Markets Seams Action Plan						Jeff Mueller (PSEG), and Andy Rodriguez (PJM)	
4	Transmission Service	Transmission Market Standard Product Definitions and Priorities		Definition & treatment of Firm/nonfirm Transmission	Annual Plan item 4cii moved from MOS	NAESB	National	Undecided	No						Lou Oberski - Dominion Energy	
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.		NAESB	National	NAESB	In Northeast Power Markets Seams Action Plan						Jeff Mueller (PSEG), and Andy Rodriguez (PJM)	
141	Transmission Service	Transmission Market Standard Product Definitions and Priorities		Replacement of contract path with flow-based transmission service		Multiple	Regional	Multiple	No						Ed Davis - Energy	
117	Transmission Service	Transmission Service Procurement	Common Reservation System for Market Interface Transmission ATC	Contract Tie Capacity - One Stop Shopping		NAESB	Regional	NAESB	No						Jeff Mueller (PSEG), and Andy Rodriguez (PJM)	

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		Transmission Service Procurement	Transmission Service Procurement	Common Western Interconnection Wide OASIS	Intra-Hour Transmission Service Procurement	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.	Multiple	Regional						
6	Transmission Service	Transmission Service Procurement	Transmission Service Procurement	Common Western Interconnection Wide OASIS	Intra-Hour Transmission Service Procurement	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.	Multiple	Regional	Undecided		Yes - Various Transmission Providers	Steven Cobb - SRP	
33	Transmission Service	Transmission Service Procurement	Transmission Service Procurement	Intra-Hour Transmission Service Procurement	Standard for Purchasing of Intra-Hour Transmission			The ability to purchase transmission after the top of the hour when the transmission service is predetermined as available in prior hour.	NAESB	National	NAESB		No	Tony Reed - Southern	
67	Transmission Service	Transmission Service Procurement	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)	Multiple	Regional	Multiple		SSG-WI, CMA Work Group	Syd Berwager - Bonneville PA	
28	Transmission Service	Transmission Service Settlement	Transmission Service Settlement	Consolidate Multiple Market Transmission Service Settlement Statements	Multiple transmission service charge invoicing			Being reviewed by PJM/MISO.	NAESB	National	NAESB		Yes	Linda Horn - WE Energies	

#	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	<i>Intentionally Left Blank.</i>
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).

## **Seams Catalog Column Headings:**

- A Original Number** - The number originally assigned the seam issue. Used to track each issue as it was categorized and re-categorized.
- B Category** - Seam issues are grouped into one of 8 categories:
1. Congestion Management
  2. Market Design
  3. Market Monitoring / Compliance
  4. Market Standards
  5. Planning
  6. System Reliability
  7. Transaction Scheduling
  8. Transmission Service
- C 1st Sub-Category** - The seam issues categories are further delineated into 1st sub-categories.
- D 2nd Sub-Category** - The seam issue 1st sub-categories are even further delineated into 2nd sub-categories.
- E Description Of Seam Issue** - Brief description of the seams issue.
- F Comments** - Additional comments providing background or further definition of the seam issue.
- \*** **Association / Notes** - Identification of associated seam issues based on their Original Number. (Ed. Note: this column was eliminated once seams issues were categorized).
- \*** **Seam Interface Type** - Each seam interface has 2 acting parties. Here the market status relationship between the 2 acting parties are identified, e.g., RTO Market to RTO Market, RTO Market to Non-RTO Market, Non-RTO Market to Non-RTO Market. (Ed. Note: this column was eliminated once seams issues were categorized).
- G Resp Org Cobb** - Recommended assignment by Steven Cobb, Salt River Project.
- H Resp Org IRC** - Recommended assignment by Karl Tammar, NYISO, as representative of the IRC.
- I Resp Org Mueller** - Recommended assignment by Ken Brown and Jeff Mueller, PSEG.
- J Resp Org WEQ EC** - Recommended assignment by WEQ EC for JIC meeting held on Feb. 18-19, 2004.
- K NERC Choice** - Recommended assignment by NERC for JIC meeting held on Feb. 18-19, 2004. Not part of the WEQ Seams Subcommittee's work product. Included for informational purposes only.
- L Issue Type** - Categorization of seams issue as either "national" or "regional" in scope.
- M Responsible Organization JIC** - The recommended organization as assigned by the NERC / NAESB / IRC Joint Interface Committee (JIC) at meeting held on Feb. 18-19, 2004.
- N Region 1** - The RTO, ISO, or Non-RTO Market Region that is the 1st acting party to the seam issue is identified here.
- O Region 2** - The RTO, ISO, or Non-RTO Market Region that is the 2nd acting party to the seam issue is identified here.

### **Seams Catalog Column Headings:**

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- P Priority** - The organization assigned a seam by the NERC / NAESB / IRC Joint Interface Committee (JIC) will use this column to prioritize their efforts.
- Q Seam Impediment Type** - Identification of what causes the seam issue, e.g., market rule, business practice, physical barrier.
- R Currently Being Addressed** - Identification of another body that is currently working on the seam issue.
- S Submitter** - The name of the person and organization providing the matrix information.
- T Reference Papers** - If reference papers are provided to support the information, a letter is assigned to the document. The index of reference papers appears at the end of the matrix.
- U NAESB Support** - Comments of WEQ EC in support of their recommendations contained in column J. Not part of the actual catalog adopted by the EC or JIC. Included for informational purposes only.