


JCM Initiatives Update

Carmel, IN
April 21, 2006





Common Evaluation of Long-Term Firm Transmission Service Requests

Overview

- Comparison of Current Processes
- Opportunities for Alignment
- Advantages of Alignment
- Plan to Align
- FAQs on the Plan
- Next Steps

Comparison of Current Processes

Similarities

- Both RTOs study the same elements
 - ✓ Flow Based Analysis
 - ✓ Network Analysis
- Both RTOs use the same study techniques
 - ✓ Deliverability studies are the root of both Network Analyses
- Both RTOs have the same output on the System Impact Study

Differences

- Study breakdown
 - ✓ PJM uses 3 phases in a Study
 - ✓ Midwest ISO uses 2 phases
 - ✓ The last phase by Midwest ISO covers the scope of the last 2 phases by PJM
- Continuation
 - ✓ PJM requires action on the customer to continue from one phase to another
 - ✓ Midwest ISO requires action to halt
- Stakeholder Participation
 - ✓ Ad Hoc Group engaged by Midwest ISO earlier in the process

Opportunities for Alignment

- This initiative only applies to Long-Term Firm requests
- One RTO takes the lead for the study
 - ✓ Current plan is to use the sink, or ultimate drive-out RTO
- Flow-based analysis done once by the lead
- Network analyses performed by each RTO on their own system, results compiled by lead
 - ✓ Note—contingencies on one RTO that affect the other will be addressed through study scope and techniques
- Constraint mitigation will be done by each RTO, results compiled by the lead
- Subsequent Facilities Studies will be handled by each RTO as required, coordinated through the lead
- Lead RTO coordinates customer response

Advantages of Alignment

- Participation is optional
 - ✓ Customers may elect a coordinated study and response
 - ✓ Alternatively, the current status quo is an option
- Gives one complete answer at one time
 - ✓ Customer gets constraints on the complete Midwest ISO & PJM path at the same time
 - ✓ Gives customer complete picture before decision period (i.e. confirm service, proceed to a Facilities Study, etc.)

Plan to Align

- The number of cross-border Long-Term Firm requests is small enough that the RTOs can manage differences, rather than reinvent the processes at this time
 - ✓ Working together should drive the RTOs to incorporate best practices from each RTO
 - ✓ This would yield a better end product through evolution than what we can get trying to re-engineer the process now
 - ✓ This will better serve all customers, not just those with cross-seam requests

Plan to Align (cont.)

- Currently documenting process flow diagrams for each RTO as the sink
 - ✓ Explain when/how stakeholders get involved
 - ✓ Information hand-offs
 - ✓ Etc.
- Next step is to review hurdles to implementation
 - ✓ FERC filing
 - ✓ Tariff alignment (timelines, etc.)

FAQs on the Plan

- Will the customer still be given the opportunity to obtain partial path reservations from one RTO or the other RTO?

Yes.

- What about cross border requests that are already in the queue? Will this process apply retroactively to any of those requests?

Yes, if requested and practical to do so.

- What is the earliest date this could be started?


Target 4Q 2006. Filing might push implementation 2007.

Next Steps

- Finish the process diagrams for each RTO leading the study
 - ✓ Distribution for 6/2 Stakeholder Meeting
- Determine whether any Tariff changes are required to allow the process
 - ✓ Followed by appropriate filings, if any
 - ✓ When: 2Q/3Q 2006
- Revise/develop the Business Practices and Manuals
 - ✓ Appropriate stakeholder review required here
 - ✓ When: 2Q/3Q 2006
 - ✓ Incorporate filing results

Feedback

- Comments
- Suggestions
- Questions



Alignment Of
OASIS Business Practices
(Transmission Service
Timing Requirements)

Overview

- Background Information
- Opportunities for Alignment
- Advantages of Alignment
- Proposed Firm Service Timings
- Proposed Non-Firm Service Timings
- Proposed Secondary Service Timings
- Feedback

Background Information

- OASIS Time Zone clarification
 - ✓ Midwest ISO operates in EST
 - ✓ PJM operates in EPT
 - ✓ The time zone will not change as a result of this project

- Respective RTO Timing Requirement Model
 - ✓ PJM: “No Earlier Than” and “No Later Than” times for the different products such that one service types closes before the next one opens
 - ✓ Midwest ISO: “No Earlier Than” and “No Later Than” times for the different products such that service product increments are able to be submitted at the same time

Opportunities for Alignment

- Examined the respective transmission service timing requirements for the “No Earlier Than”, “No Later Than”, “Determine Capacity Available” and “Customer Response/Confirmation” for each RTO
- From this comparison, a determination was made as to the “wider” of the respective timing requirements
 - ✓ Wider: Opens earliest, Closes latest, Shortest Determine Capacity Available response time, and Latest Customer Response/Confirmation time
 - ✓ Comparison spreadsheet has been posted as supplemental information for this presentation

Advantages of “Wider” Alignment

- Most favorable outcome for Market Participants
- Does not force both RTOs to change for each respective transmission service
- Minimizes amount of time Market Participant awaits answer on transmission service requests submitted on respective OASIS sites

Proposed Firm Service Timings

(Point-to-Point & Network Designated)

Term	RTO	No Earlier Than	No Later Than	Determine Capacity Available	Customer Response
Yearly	MISO/PJM	N/A	60 days		
Monthly	MISO/PJM	17 months	14 days	further investigation	further investigation
Weekly	MISO	60 days	7 days	2 business days	further investigation
	PJM	14 days			
Daily	MISO	14 days	13:00 1 business day	4 business hours	further investigation
	PJM	7 days			

- Certain Firm service products were unable to be changed at this time
- Certain Firm service products require further investigation by Midwest ISO and PJM to evaluate effects

Proposed Non-Firm Service Timings

(Point-to-Point, Network Non-Designated, Spot In/Out)

Term	RTO	No Earlier than	No Later Than	Determine Capacity Available	Customer Response
Monthly	MISO/PJM	60 days	2 days	12 hours	24 hours
Weekly	MISO/PJM	14 days	30 hours (18:00 2 days)	4 hours	24 hours
Daily	MISO/PJM	3 days	13:00 1 day	30 minutes	2 hours
Hourly	MISO/PJM	13:00 1 day	intra-hour	15 minutes	30 minutes

Proposed Secondary Service Timings

(Non-Firm Redirect of Firm)

Term	RTO	No Earlier than	No Later Than	Determine Capacity Available	Customer Response
Monthly	MISO	N/A			
	PJM	2 months	4 days	2 days	24 hours
Weekly	MISO	N/A			
	PJM	2 weeks	2 days	4 hours	24 hours
Daily	MISO	N/A			
	PJM	2 days	1 day	30 min	2 hours
Hourly	MISO/PJM	13:00 1 day	intra-hour	15 minutes	30 minutes

- Midwest ISO evaluates Hourly Secondary Service
- PJM evaluates Hourly, Daily, Weekly and Monthly Secondary Service

Next Steps

- Individual Stakeholder processes
 - Tariff changes
 - Business practice and manual changes
 - Feedback
-
- Target implementation: Q3 2006*

* Subject to details required for FERC filing and response

Feedback

- Comments
- Suggestions
- Questions



Single Economic Dispatch Production Cost Study

Overview

- Study Description Overview
- Status Update
- Results Metric
- PROMOD Benchmark & Assumptions
- Scheduled Interchange Benchmark
- LMP Benchmark
- Input Data Assumptions

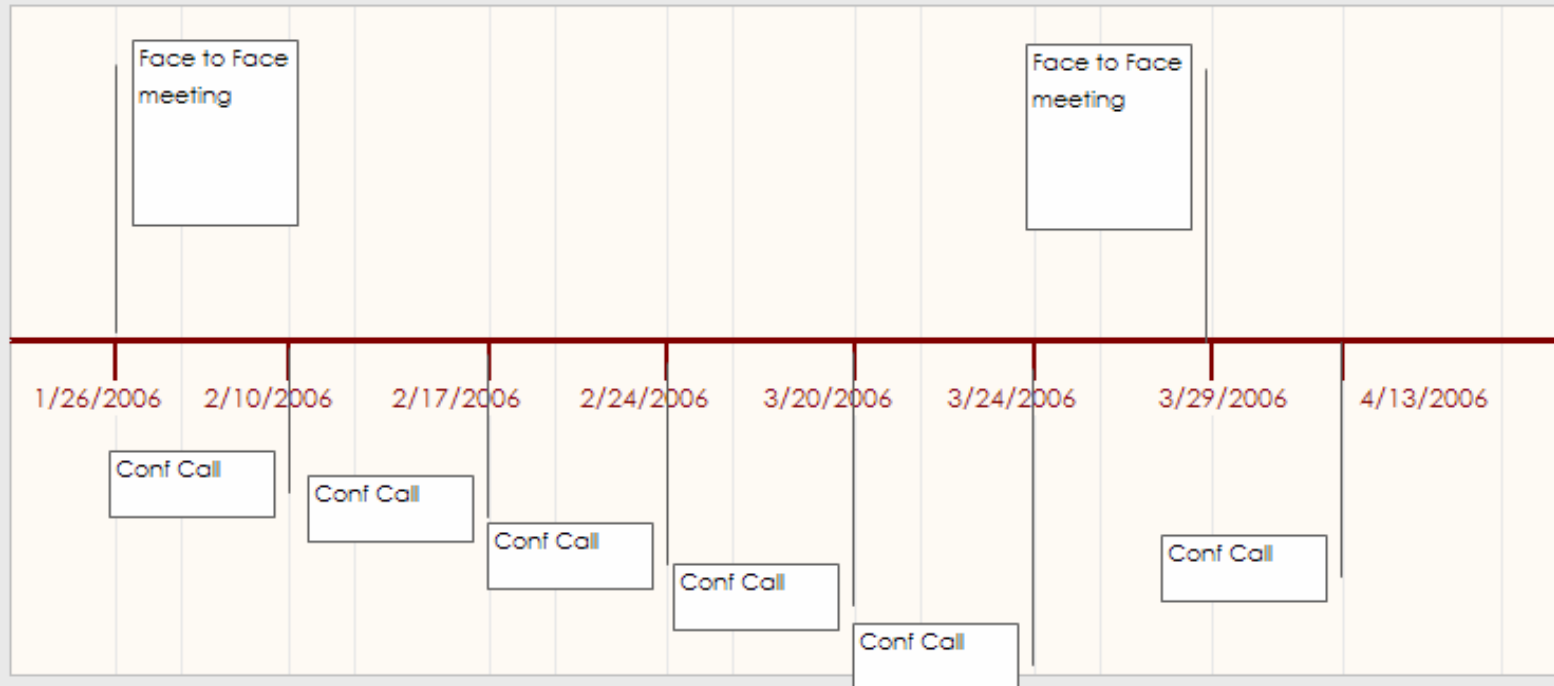
Study Description Overview

- Study conducted using commercially available production cost/power flow analysis tools
- Annual simulation using security-constrained commitment and economic dispatch algorithm with full transmission modeling
- Base Case: each market area separated by inter-market hurdle rates, re-dispatch for market-to-market constraints possible
- Change Case: Remove hurdle rates between MISO and PJM
- Single Market Benefit: Reduction in production cost between Base Case and Change Case

Status Update

Periodic Meetings

MISO PJM Production Cost Modeling Timeline



Data Exchange – Midwest ISO and PJM

Exchanged the following data:

- ✓ Fuel Costs
- ✓ Emission Costs (SO_x, NO_x)
- ✓ Base Loadflow Files
- ✓ Actual and Scheduled Interchange Data
- ✓ Hurdle Rate Assumptions
- ✓ List of Transmission Constraints

Status Update

- Midwest ISO & PJM hurdle rate sensitivities are progressing
- To date results between the two models are tracking reasonably well
- Further sensitivity analysis is required to gain confidence in the results

Results Metric

Adjusted production cost is used as a metric because it accounts for the value of supplying more or less generation than a market area's load (i.e. used for economy interchange). Therefore purchase and sale quantities are valued at the margin in each hour.

$$\text{Adjusted Production Cost for Market Area} = \text{Production Cost} + (\text{Purchases} * \text{Load Weighted LMP}) - (\text{Sales} * \text{Generation Weighted LMP})$$

PROMOD Benchmark & Assumptions

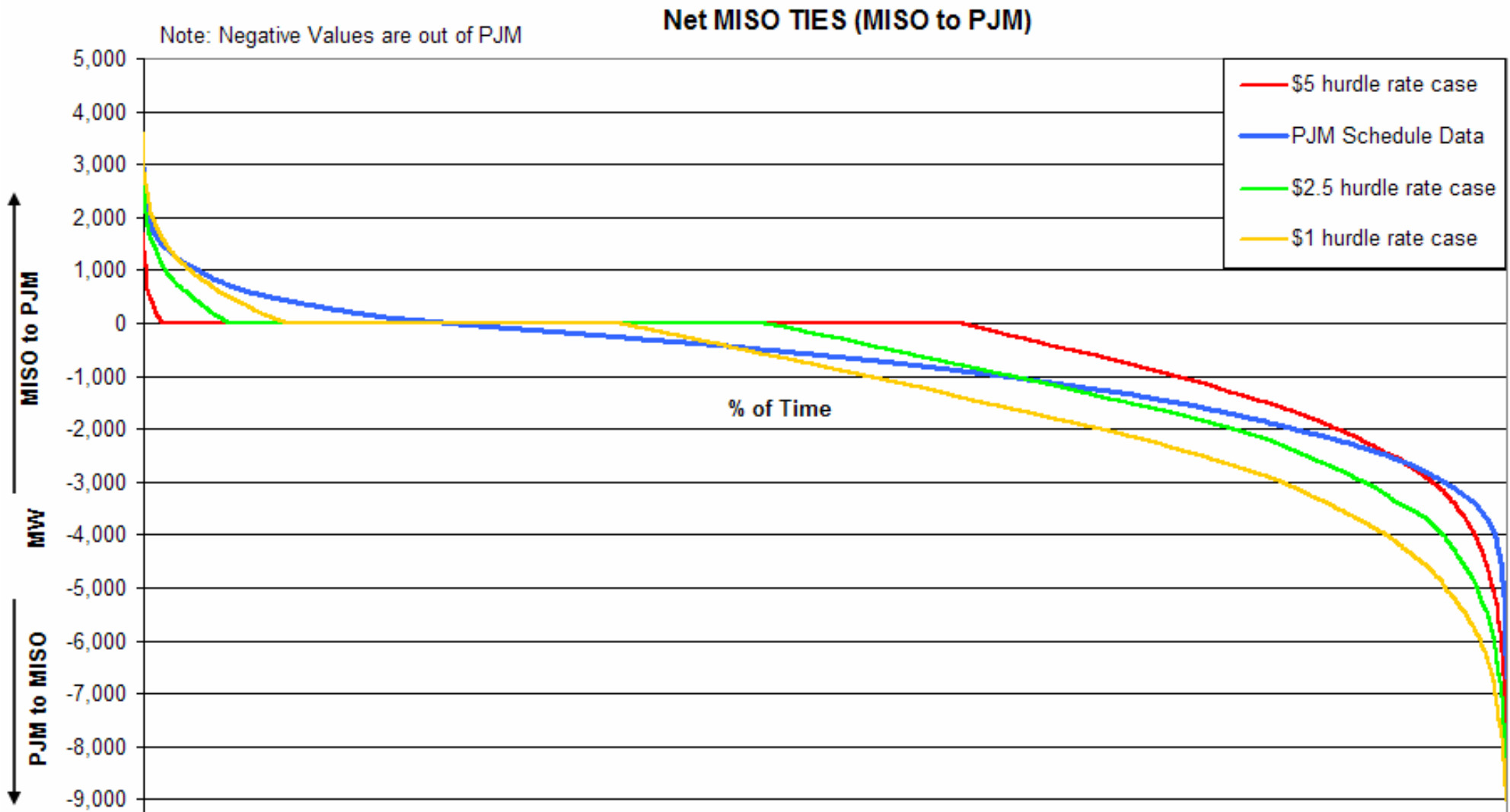
➤ Benchmark

- ✓ Scheduled interchange benchmark of different hurdle rate cases
- ✓ LMP benchmark on Midwest ISO market Hubs

➤ Input Data & Assumptions

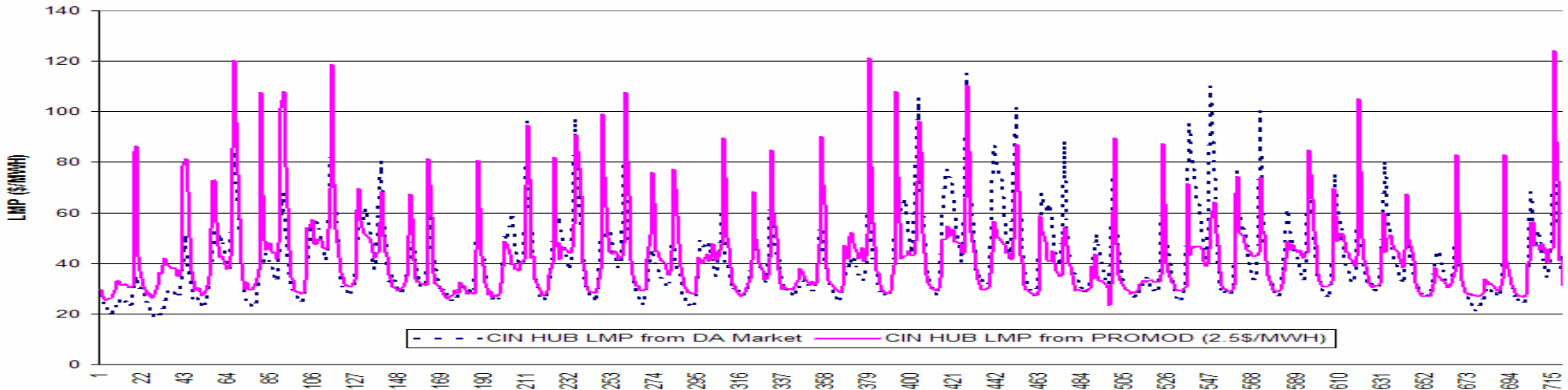
- ✓ Fuel Forecasts
- ✓ Load Forecasts
- ✓ Treatment of Losses

Scheduled Interchange Benchmark

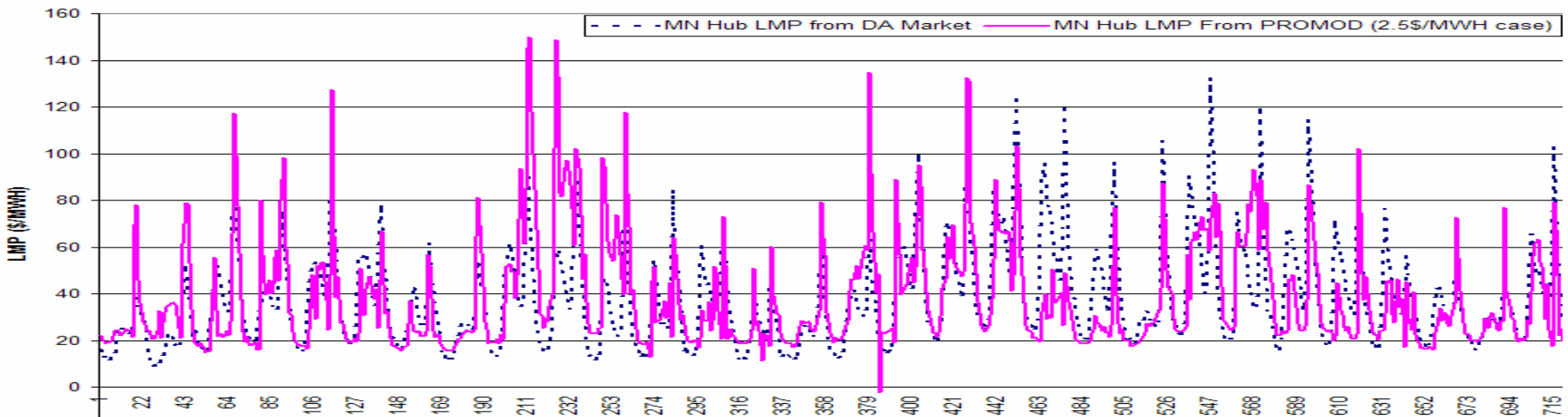


LMP Benchmark: CIN and MN hub

Compare of CIN Hub LMP

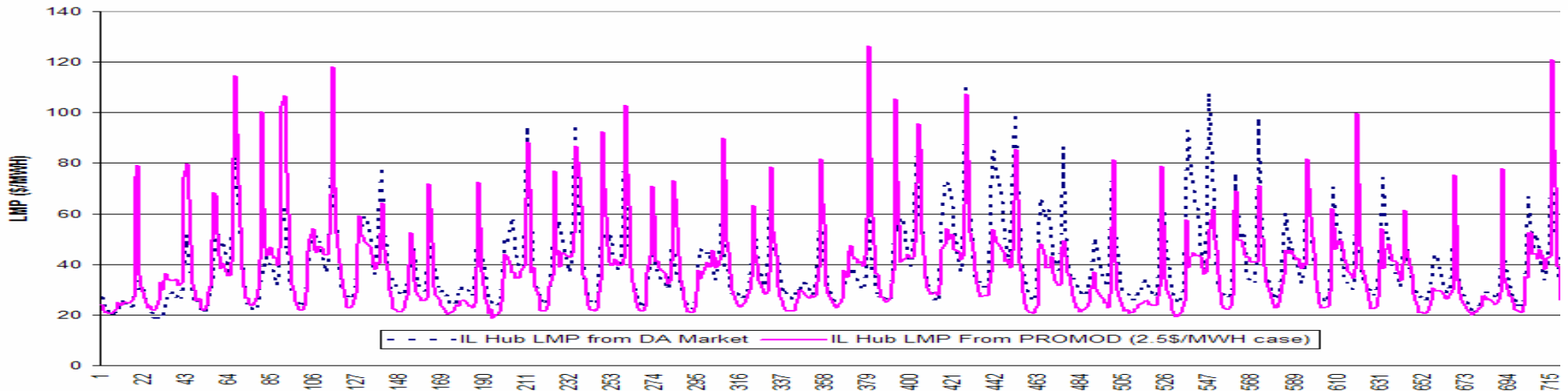


Compare of MN Hub LMP

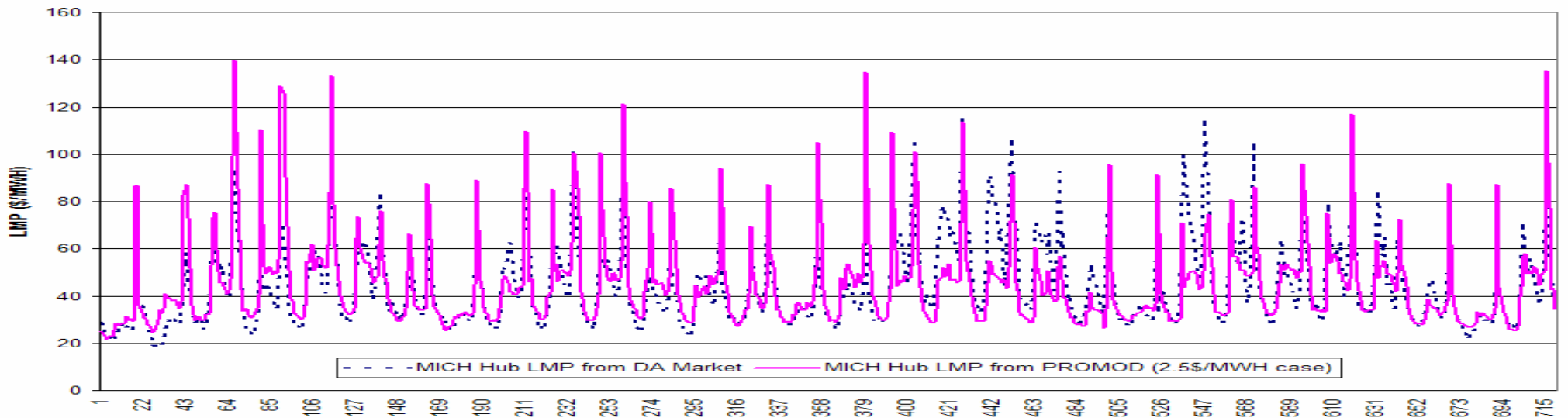


LMP Benchmark: IL and MICH hub

Compare of IL Hub LMP

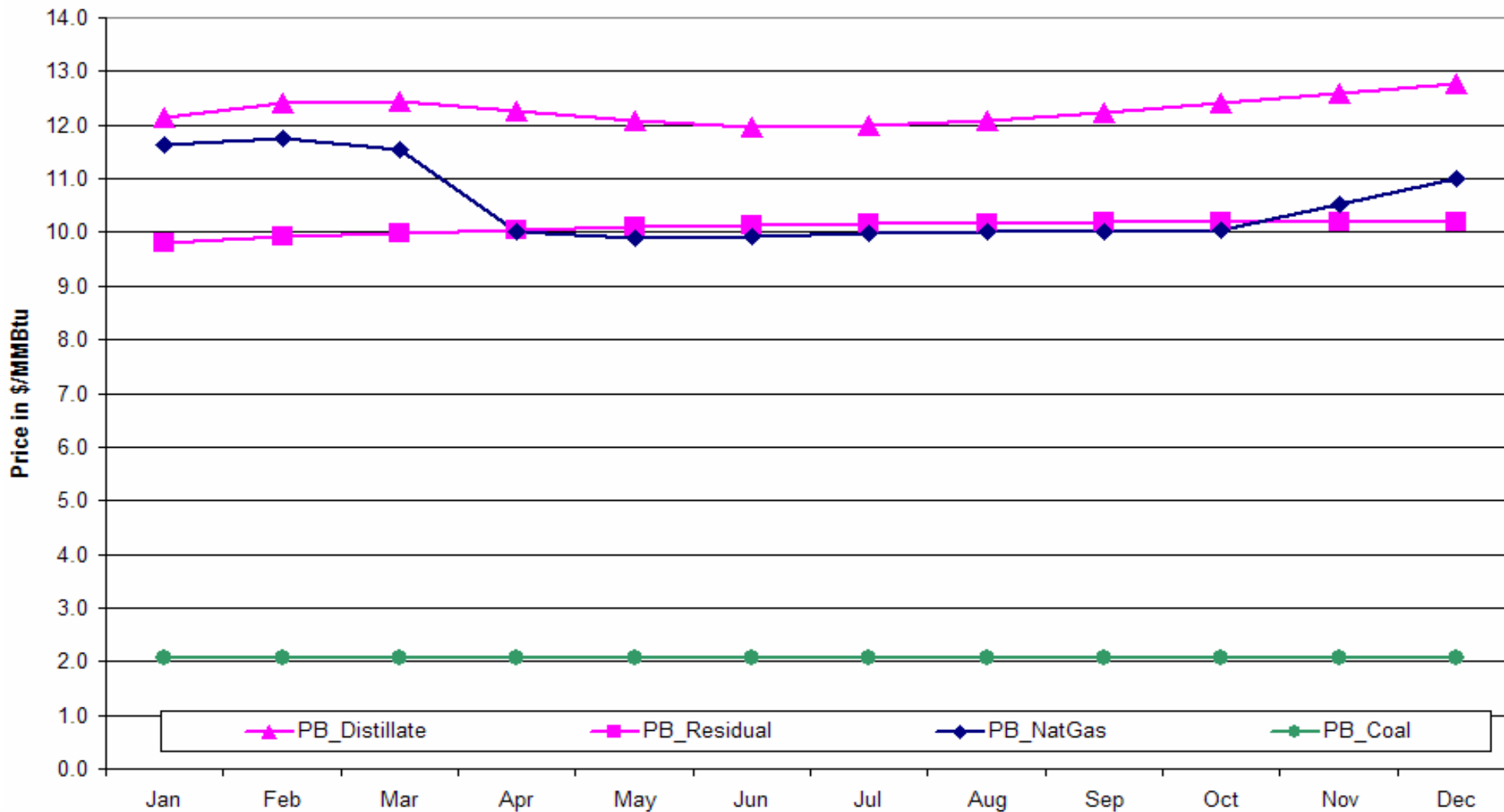


Compare of MICH Hub LMP



Input Data Assumptions: Fuel Forecasts

Fuel Price Forecasts (2006)



Input Data Assumptions: Load and Losses

➤ Load forecasts

- ✓ Load forecasts come from FERC 714 filings in the database
- ✓ NEA scales the values to match the sub regional totals to the NERC Electricity Supply & Demand (ES&D) database
- ✓ For internal quality assurance purposes, these values are checked with loadflow

➤ Treatment of Losses:

Load in PROMOD load file = Actual Load + Loss; loss is not calculated by PROMOD; LMP loss component is approximated by PROMOD (This option was set in JCM PROMOD runs)

Feedback

- Additional Sensitivities Discussion
- Questions
- Comments



Broader Price Transparency Initiatives (Enhanced Joint Website)

Overview

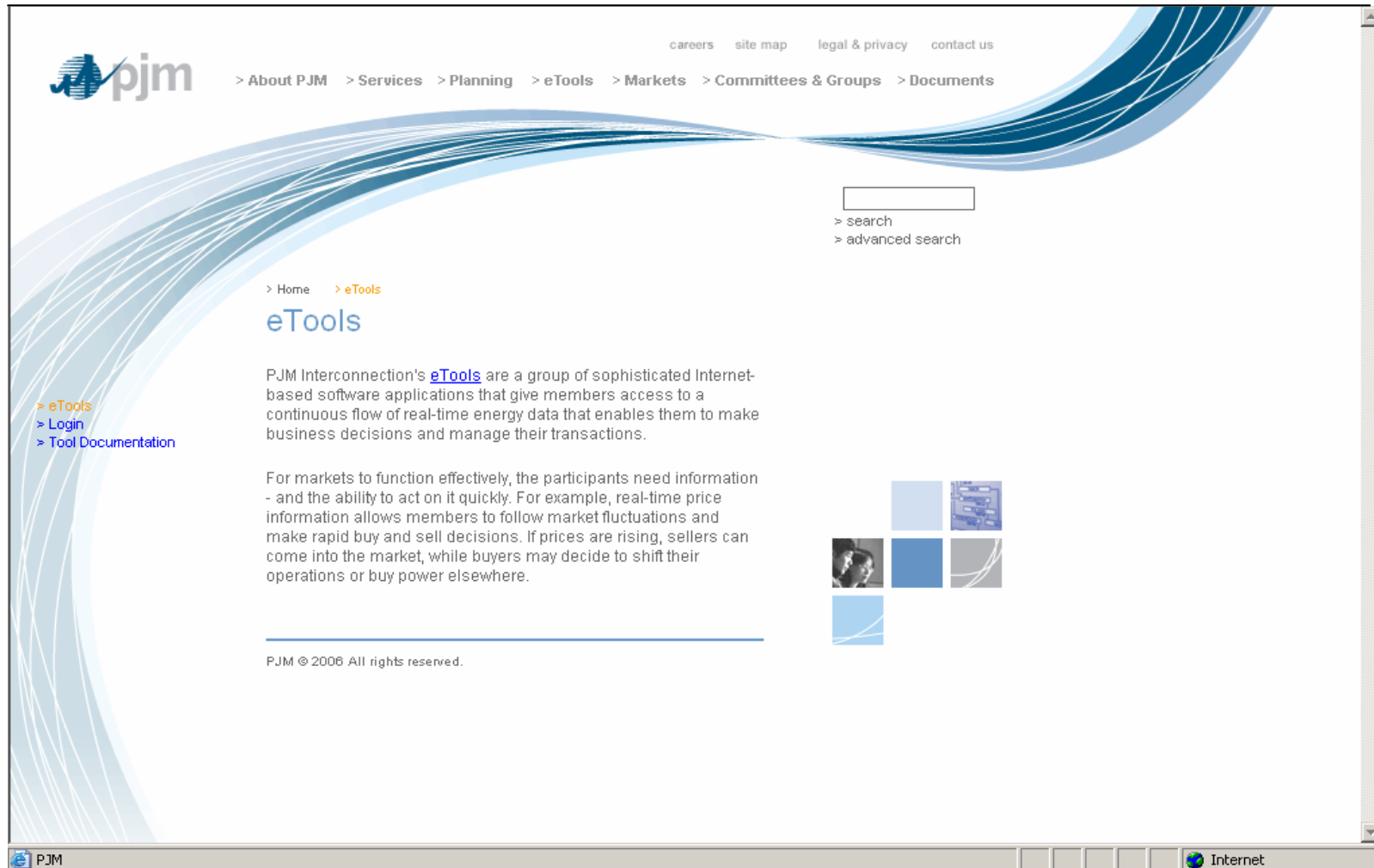
- Overall Joint Website Enhancement Objectives
- Current Websites
- Options Considered to Access Data
- Enhanced Joint Website
- Release 1
- Release N: Enhancements
- Milestone Schedule

Overall Joint Website Enhancement Objectives



- To enhance PJM's and Midwest ISO's **communications with participants** and other stakeholders by providing a trusted, robust, consolidated source for the RTOs joint efforts, documentation and information
- To enable PJM and Midwest ISO participants to make decisions based on **jointly published public information** about market results and system conditions
- To **establish the technical foundation** and user interface framework upon which the joint website can continue to be expanded

PJM Website



The screenshot displays the PJM website's eTools page. At the top left is the PJM logo. A navigation menu includes links for careers, site map, legal & privacy, and contact us. Below this is a breadcrumb trail: > About PJM > Services > Planning > eTools > Markets > Committees & Groups > Documents. A search box is present with links for search and advanced search. The main content area features a breadcrumb trail: > Home > eTools, followed by the heading 'eTools'. The text describes PJM Interconnection's eTools as sophisticated Internet-based software applications for real-time energy data. A paragraph explains that market participants need information and the ability to act quickly, with examples of price fluctuations and market decisions. A small graphic of five blue squares is located to the right of the text. At the bottom left of the content area, there are links for eTools, Login, and Tool Documentation. The footer of the page reads 'PJM © 2006 All rights reserved.' The browser's taskbar at the bottom shows the PJM icon and the Internet Explorer address bar.

careers site map legal & privacy contact us

> About PJM > Services > Planning > eTools > Markets > Committees & Groups > Documents

> search
> advanced search

> Home > eTools

eTools

PJM Interconnection's [eTools](#) are a group of sophisticated Internet-based software applications that give members access to a continuous flow of real-time energy data that enables them to make business decisions and manage their transactions.

For markets to function effectively, the participants need information - and the ability to act on it quickly. For example, real-time price information allows members to follow market fluctuations and make rapid buy and sell decisions. If prices are rising, sellers can come into the market, while buyers may decide to shift their operations or buy power elsewhere.

> eTools
> Login
> Tool Documentation

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PJM Internet

Midwest ISO Website

Midwest ISO
We manage power.

Help Contact

Search

Home Committees Market Info Planning Training About MISO Documents

Meetings & Events Calendar

April 2006

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

[View 30 days ahead]

Friday April 14

No meetings scheduled this day.

Welcome to MISO

MIDWEST ISO - WE MANAGE POWER

The Midwest Independent Transmission System Operator is an essential link in the safe, cost-effective delivery of electric power across much of North America. The Midwest ISO is committed to reliability, the nondiscriminatory operation of the bulk power transmission system, and to working with all stakeholders to create cost-effective and innovative solutions for our changing industry.

New to our site?
Meet MISO
HERE

Who We Are

As a fully integrated regional transmission organization, the non-profit Midwest ISO assures industry consumers of unbiased regional grid management and open access to the transmission facilities under Midwest ISO's functional supervision.

What We Do

- Midwest ISO optimizes the efficiency of the interconnected system, provides regional solutions to regional planning needs and continually minimizes any risk to reliability.

Recent News

April 4, 2006
Midwest ISO Files Report on Consolidation of Balancing Authority Functions
[full story](#)

Quick Links

- Energy Markets Tariff
- Filings to FERC
- Compliance Hotline
- Employment Opportunities

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To contact a Client Account Representative, please call 866-296-6476

Local intranet

Existing Joint Website

joint and common market

> Contact Us > Site Map

The Joint and Common Market Working Groups Documents FAQs

Welcome to the Midwest ISO - PJM Interconnection Joint and Common Market Web site

The Midwest Independent Transmission System Operator, Inc. and PJM Interconnection are working together to develop complementing system operations and one robust, non-discriminatory wholesale electricity market to meet the needs of all customers and stakeholders in 23 states, the District of Columbia and the Canadian province of Manitoba. The market is being developed through an open stakeholder process and is being designed to serve residents regardless of whether they reside in states with bundled or unbundled retail rates.

■ Midwest ISO Territory Served
■ PJM Territory Served

PJM Internet

Options Considered to Access Data

- **eData** on PJM website – Midwest ISO LMP data added to database in same format as NYISO (limited to LMP)
- **PTP** on Midwest ISO website - PJM LMP data added to database (does not have same functionality as eData)
- **Joint** website linking to the best features of eData and PTP (only have to go to one location for JCM information (Calendar, Search and Price data))

- ✓ Use PTP LMP Contour Map, which has better geographic representation
- ✓ Use the new FLEX version of eData for graphical displays
- ✓ Very efficient approach- takes advantage of existing servers
- ✓ Reduces the coding changes by Midwest ISO and PJM
- ✓ Shortest time to implement - in service by 4Q06

Enhanced Joint Website

Corporate Information

Joint Events Calendar

Joint Documents

Joint Document Search
Capability

joint and common market

Welcome to the Midwest ISO - PJM Interconnection
Joint and Common Market Web site

Search

Meetings & Events Calendar

February 2006

S	M	T	W	T	F	S
		1	2	3	4	
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28				

[View 30 days ahead]

Wednesday February 8

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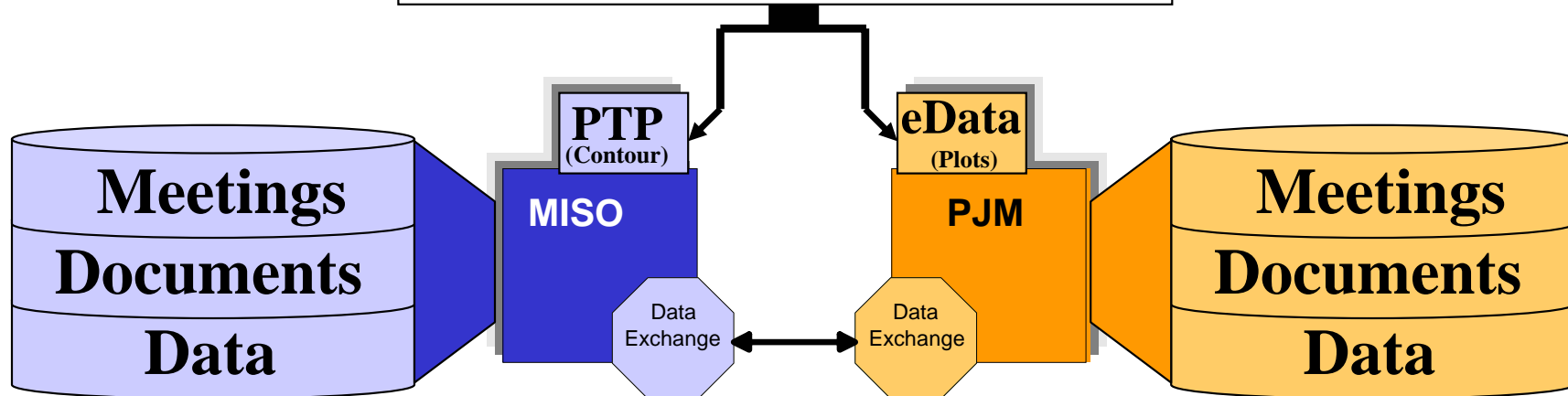
Real-Time Information

Joint Data Display Capability

LMPs

Loads

Net Scheduled Interchange



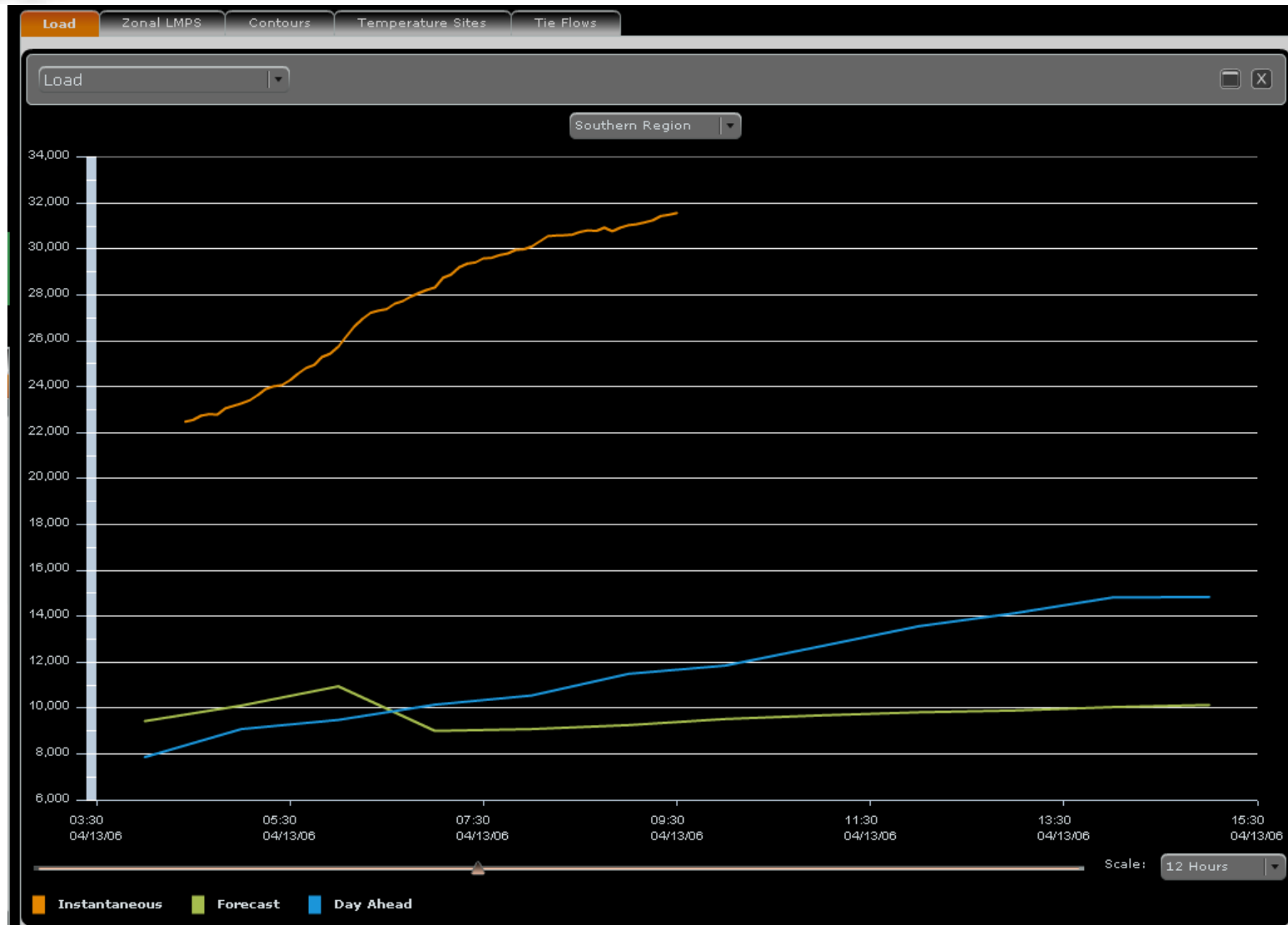
Release 1: Data Selection Criteria

- Data common to both sites to be displayed in first release
- Stakeholders indicated both LMP and Load information are essential; interest also expressed in Tie Flow Schedules
- LMP Contour Maps are currently widely used by both Midwest ISO and PJM market participants; a single map showing LMP values at key locations in Midwest ISO and PJM thought to add value

Release 1: Operational Information

Group - Category	Notes	Update Frequency
LMPs by pnode	<ul style="list-style-type: none">▶ Prices for ~300 pre-selected pnodes▶ Plotting of RT, DA and Integrated LMPs for pre-selected pnodes	5 minutes and Hourly
LMP Contour Map	<ul style="list-style-type: none">▶ RT LMP only covering PJM and MISO	5 minutes
Total Load Graph	<ul style="list-style-type: none">▶ Graph over time▶ DA projected, RT actual▶ Text of current load	5 minutes (RT) and Daily (DA)
Net Scheduled Interchange	<ul style="list-style-type: none">▶ Plotting of Tie Flows and Schedules	5 minutes

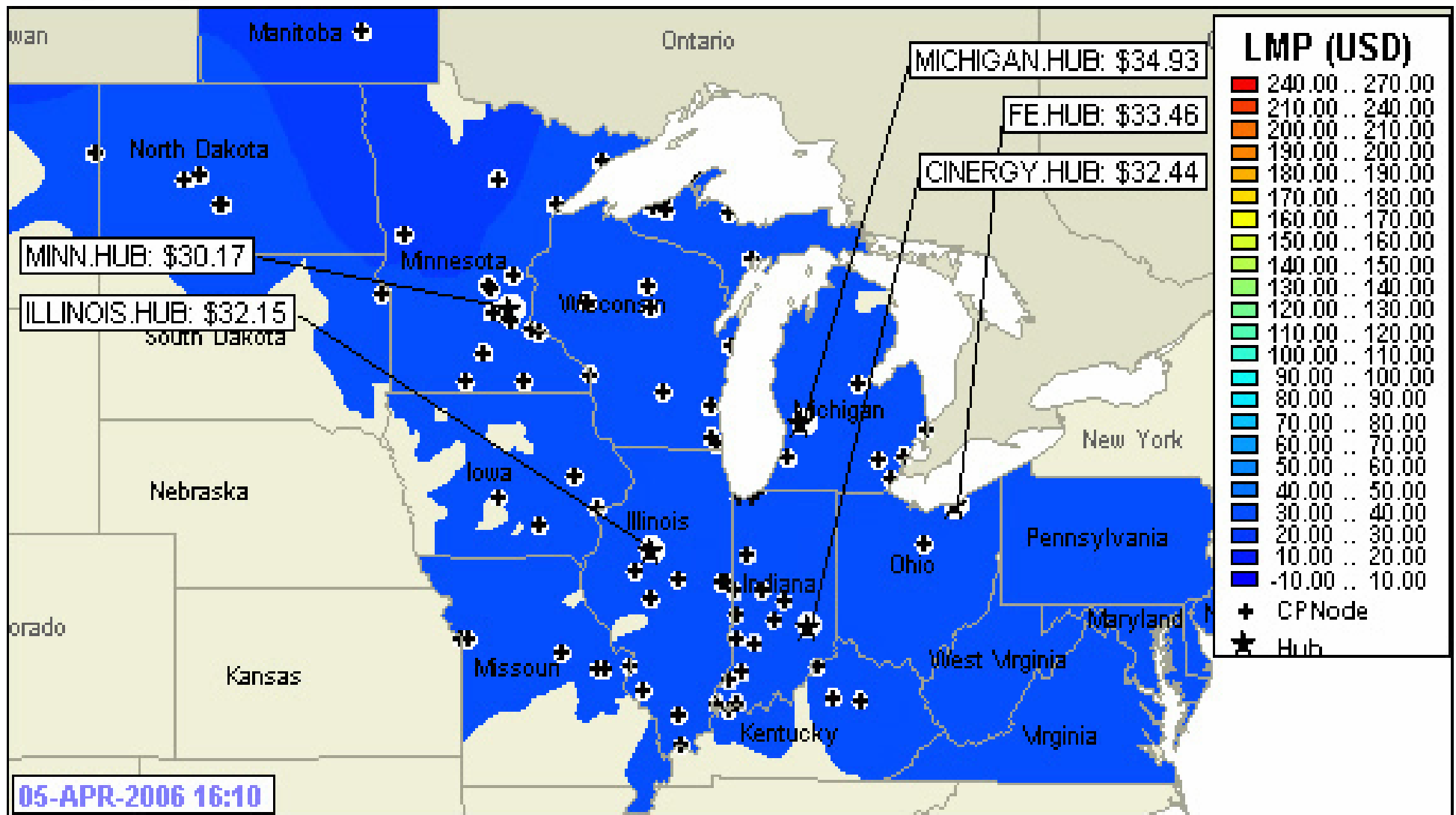
Release 1: Load Information



Release 1: Tie Flow Information



Release 1: LMP Contour Map



Release N: Enhancements

Group - Category	Notes	Update Frequency
Constraints	<ul style="list-style-type: none">▶ Active Constraints▶ Review of Constraints that occurred over the last week.	Realtime Historical
Area Control Errors (ACE)	<ul style="list-style-type: none">▶ Graph over time	45 secs
LMP Settlement Prices	<ul style="list-style-type: none">▶ Graph over time▶ XML Files	Hourly and Daily
Stakeholder Requests	<ul style="list-style-type: none">▶ TBD	tbd

Milestone Schedule

- Common search engine - July 1, 2006
- Common events calendar - July 15, 2006
- Link eData & PTP - November 1, 2006
(Display real-time data)
- Enhancements - TBD

Request for Information



- Comments
- Suggestions
- Questions