

JCM Initiatives Overview

Draft



Joint and Common Market

Carmel, IN
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JCM Overarching Objectives



COMMERCIAL

Deliver the lowest cost energy and ancillary services to load across the combined MISO and PJM regions.


RELIABILITY

Provide for enhanced inter-regional reliability.

PLANNING

Plan for and operate the combined MISO and PJM transmission facilities for maximum joint benefit across the region.

Joint and Common Market



Elimination of Business Rules – Both MISO and PJM believe that this is a means to an end, not an end unto itself. As both markets evolve, best practices will be determined and implemented. It is the elimination of inefficiency that will ultimately result in which business practices are eliminated, those that remain, and those that the MISO and PJM markets evolve to.

JCM Candidate Initiatives – Both MISO and PJM believe that we are considering all the stakeholder ideas that have been submitted. For these initiatives, we have assessed possible implementation costs and developed reasonable implementation timeframes.

JCM Benefits Determination – Both MISO and PJM believe that we have attempted to assess benefits, but are finding it difficult to assess true stakeholder benefits as most of these are of an intangible nature (i.e. – increased market opportunities; broader competitive markets; increased market efficiencies; etc.). Also, the Joint Operating Agreement between PJM and MISO has already obtained many JCM reliability related benefits (improved congestion management; better information flow; and greater operational coordination).

JCM Costs Determination – Both PJM and MISO believe we have attempted to assess costs accurately. Those items that are presently proposed to be in the FERC filing are the most accurate. We are less confident in those that are still being considered for inclusion in the filing. We have the least confidence in those that are not presently being considered for the filing. They may be magnitudes of orders different than depicted in this document (possibly low estimates at this time).

Individual Stakeholder Reviews – At this time, all the proposals contained in this document must be considered preliminary. It needs to be recognized that all JCM initiatives will require stakeholder review and approval from the committee's responsible for each of the particular initiatives at MISO and PJM, and ultimately may require board level approval before any efforts can commence.

JOA Elements to Support Joint and Common Market

Market to Non-Market (Reliability Coordination)

- 1) **Congestion Management Process** – This process enhanced the existing IDC TLR process by coordinating transmission service on flowgates as well as coordinating market flow on flowgates to manage congestion in real time.
- 2) **Exchange and integration of EMS models** - MISO and PJM have enhanced their EMS models by incorporating details from the other entities EMS model.
- 3) **Improved coordination of SCADA data** - Established a redundant network until NERCnet could be redundant to share real-time data. Significantly enhanced the number of data point being exchanged between MISO and PJM.
- 4) **Outage Coordination** – Established policies and procedures to improve coordination of planned and unplanned generation and transmission outages.
- 5) **Enhanced Emergency Operating Procedures between MISO and PJM.**
- 6) **Improved Scheduling Checkout Procedures by automating processes to approve schedule and perform electronic checkouts.**
- 7) **Improved/Enhanced/Standardized Data exchanges for:**
 - Unit Commitment/Merit Order
 - Models (EMS and Planning Models)
 - Outages (Planned and Unplanned)
 - Congestion Management Data (Allocations, Flowgates, DNRs, Load Forecast, Allocation Sharing, JOUs)
 - AFC/ATC data
 - Transmission Reservations
 - SCADA Data
- 8) **Established standard protocols for other seams agreements (JRCA, SOA, etc.)**

JOA Elements to Support Joint and Common Market

Market to Market

- 1) **Enhanced Real Time Congestion Management Process** – These procedures provide for efficient security constrained economic dispatch across the MISO and PJM systems for constraints on which both systems' dispatches have an impact.
- 2) **Coordinated Day-Ahead Market Operations** - MISO and PJM have developed procedures by which unused flowgate capability may be transferred between the RTOs in the operation of their day-ahead markets such that the combined system is more effectively utilized.
- 3) **Improved Real Time Data Exchange** - MISO and PJM have significantly increased the data exchanged both in real time for transmission constraint control and after-the-fact to support Market-to-Market settlement for coordinated flowgates, including:
 - Real time constraint shadow prices
 - Real time constraint market flows
 - Hourly integrated constraint shadow prices
 - Hourly integrated constraint market flows
 - Hourly integrated firm flow entitlements
- 4) **Calculation of interface (proxy) bus prices for pricing interchange transactions has been coordinated between the RTOs.**
- 5) **Settlement procedures have been implemented between MISO and PJM such that each RTO compensates the other appropriately for redispatch provided as a result of coordinated real time security constrained economic dispatch operations and coordinated day-ahead market operations.**
- 6) **Coordinated allocation of transmission rights** - The allocation and auction of Financial Transmission Rights in both MISO and PJM have been enhanced to respect transmission limitations on each others' systems.

Joint and Common Market Initiatives

		Totals	2006		2007		2008	
		\$171,540,000	Short Term (by end of next year)	\$26,890,000	Medium Term (by end of year two)	\$69,150,000	Long Term (third year and beyond)	\$75,500,000
		\$3,340,000	In filing	\$3,340,000		\$0		\$0
		\$26,450,000	Maybe in filing	\$8,550,000		\$17,150,000		\$750,000
		\$141,750,000	Not in filing	\$15,000,000		\$52,000,000		\$74,750,000
Commercial	1	FTR Market Convergence	Alignment of FTR Products (Note: All MISO cost)	\$600,000	Cross Border FTRs in the allocations	\$4,000,000	Cross border FTRs in auctions	\$8,000,000
	2	Price Rationalization and Convergence at the Border	PJM move to marginal losses (Note: All PJM costs)	\$600,000	Alternative Border Pricing Point Calculation	\$200,000		
	3	Reduce Hurdle Rate	Alignment of PJM Operating Reserves and MISO Revenue Sufficiency Guarantee (Note: All MISO cost)	\$600,000	Depancaking of ancillary services	\$400,000		
	4	Broader Price Transparency and Common Reporting	Existing MISO & PJM Websites Linking of sites Common Search Capabilities Data Available at Both Sites (LMPs, Tie Flows, Loads)	\$700,000	Standard Data Exchange (Web Services) LMPs, Contingencies, Loads, Dispatch Signals, Outages, Emergency Event/Notifications	\$3,000,000	Implementation of single MISO & PJM Website (Websites for individual RTOs go away)	\$750,000
			New Joint Website to Host Joint meeting and Events Calendar, Joint Documents and Reports	\$600,000			Standard Data Visualization and Reporting Portal Create a single MISO & PJM Data and Report Portal	\$8,000,000
	5	Increased Market Opportunities	Moving JOUs between markets	\$100,000	Shared Regulation Market	\$8,000,000		
	6	Operational Consistency	Common Long Term Transmission Queue	\$200,000	Common Time Zones (Note: All PJM cost)	\$5,000,000	Common Resource Adequacy Solution	\$8,000,000
			MISO Ramp Viewer Completed (under way)		Central location to view both ramp viewers	\$100,000	Common Ramp Portal	\$750,000
			Single OASIS	\$8,000,000	Reserve Sharing	\$8,000,000		
					Common Treatment of Dynamic Schedules/Pseudo-Ties	\$200,000		
7	Single Market	Year 1 - Rule Alignment & Market Portal Design	\$15,000,000	Year 2 - Initial Market Portal Implementation	\$40,000,000	Year 3 - Final Market Portal Implementation	\$50,000,000	
Reliability	1	Emergency Energy Agreement	Alignment of Agreements and Practices	\$100,000				
	2	Black Start	Alignment of Agreements and Practices	\$250,000				
	3	Restoration			Alignment of Agreements and Practices	\$250,000		
Plan	1	Common Deliverability Studies	Alignment of Agreements and Practices	\$100,000				
	2	Joint Transmission Projects	Alignment of Agreements and Practices	\$40,000				

Supporting Material



Commercial Initiatives

Commercial: FTR Market Convergence



	Short-term	Mid-term	Long-term
<i>Deliverable</i>	Alignment of FTR Timeframes Alignment of FTR Products and Processes	Cross-Border FTRs in Allocations	Cross-Border FTRs in Auctions
<i>Overview</i>	To the greatest extent possible, provide a single data entry point and results distribution capability for MISO and PJM FTR allocations and auctions.		
<i>Description</i>	Align Timeframe over which the FTR annual allocations/auctions are accomplished	Align the process by which FTRs/ARRs are allocated in the two markets.	Align the process by which FTRs/ARRs are auctioned in the two markets.
<i>Value Proposition</i>	. Alignment of the timeframes, products and processes between the MISO and PJM FTR allocations/auctions will provide participants with greater certainty with regard to hedging congestion costs when transferring energy between the two markets. Inclusion of cross-border products in the allocations and auctions would allow participants the ability to complete an entire path with one request, and could eliminate the uncertainty associated with partial-path awards.		
<i>Cost</i>	<i>Implement</i>	\$600K (Note: All MISO Cost)	\$4M
	<i>Ongoing (annual)</i>	\$0	\$250K
<i>Obstacles</i>	1) Current FTR processes are significantly different. 2) Stakeholder agreement is required prior to changing the existing processes to be better aligned. 3) Addition of cross-border products in the allocations cannot move forward until the products and processes are aligned. 4) Addition of cross-border products in the auctions may not be technically feasible at this time due to the size of the combined model and the complexity of the optimization required.		
<i>Action Plan to address obstacles</i>	Identify the differences and develop ways to work around or at least communicate these differences to the stakeholders and gain agreement on best practices.		



Commercial: Price Rationalization and Convergence at the Border

	Short-Term	
<i>Deliverable</i>	PJM Move to Marginal Losses	
<i>Description</i>	The fact that MISO includes the impact of marginal losses in its dispatch and LMPs while PJM does not, can only increase the level of price separation at the RTO borders. PJM implementation of marginal losses will eliminate this component of price discrepancy.	
<i>Value Proposition</i>	PJM implementation of marginal losses will achieve a greater level of price convergence and rationalization at the RTO border.	
<i>Cost</i>	<i>Implementation</i>	\$500-600K (All PJM Costs)
	<i>Ongoing</i>	\$0
<i>Obstacles</i>	PJM stakeholders have yet to approve marginal loss implementation.	
<i>Action Plan (to address obstacles)</i>	A stakeholder go/no-go vote on the subject is scheduled for October. Following that vote, assuming it is in the affirmative, the most significant issue to be resolved is the allocation of the over-collection that will result from this implementation.	



Commercial: Price Rationalization and Convergence at the Border

		Mid-Term
Deliverable		Alternative Border Pricing Point Calculation
Description		Participants have suggested that multiple pricing points for transactions between PJM and MISO would provide greater ability to trade between the two RTOs by allowing participants to submit transactions based on physical flow effects on localized transactions.
Value Proposition		Participants feel additional price point options would provide greater flexibility and opportunity to trade between PJM and MISO than only one proxy for each RTO.
Cost	Implementation	\$100-200K
	Ongoing	
Obstacles		PJM and MISO need to be careful that gaming opportunities are not created by implementation of this concept. Verification that the physical MW associated with a particular transaction are actually sourcing/sinking in the physical location represented by more specific pricing points would be extremely difficult, if not impossible. One alternative would be to weight the individual nodes that are combined to constitute the single interface pricing point currently used by each RTO. Such a more sophisticated, real time weighting of the proxy bus components would provide a better indication of the impact of transmission constraints on trade between the two RTOs, and achieve the greatest level of price transparency possible with regard to trade between the two markets.
Action Plan (to address obstacles)		<ol style="list-style-type: none"> 1. Determine a joint approach (best practices) 2. Obtain Stakeholder agreement/ support for best practices

Commercial: Reduce Hurdle Rate



		Mid-term
<i>Deliverable</i>		Alignment of Operating Reserves/RSG Products
<i>Description</i>		Allocate Operating Reserves and Revenue Sufficiency Guarantee charges similarly to reduce the hourly volatility of these charges in the MISO market.
<i>Value Proposition</i>		<ul style="list-style-type: none"> • Reduce the hurdle rate associated with MISO-PJM cross-border Transactions • RTO Price convergence
<i>Cost</i>	<i>Implementation</i>	\$600K (Note: All MISO cost)
	<i>Ongoing</i>	
<i>Obstacles</i>		Quantification of benefits of reduced hurdle rates and correlation to RTO border prices
<i>Action Plan (to address obstacles)</i>		<ol style="list-style-type: none"> 1. MISO to propose allocation changes to stakeholders 2. If approve, will implement changes in settlements



Commercial: Reduce Hurdle Rate

		Mid-term
<i>Deliverable</i>		<i>Depancake Pt-to-Pt Ancillary Services</i>
<i>Description</i>		Eliminate black start, reactive, control area, FERC and TO services pancaked charges for through and out point-to-point transactions between MISO and PJM.
<i>Value Proposition</i>		<ul style="list-style-type: none"> • Reduce the hurdle rate associated with MISO-PJM cross-border transactions. • RTO Price convergence
<i>Cost</i>	<i>Implementation</i>	\$400K
	<i>Ongoing</i>	Minimal
<i>Obstacles</i>		<ol style="list-style-type: none"> 1. TOs must absorb 1A costs or re-file. 2. Complex stakeholder process. 3. Quantification of benefits of reduced hurdle rates and correlation to RTO border prices.
<i>Action Plan</i>		<ol style="list-style-type: none"> 1. Further investigation required 2. Number of transactions may be an indicator. Work with markets to develop quantitative measures success.

Commercial: Broader Price Transparency



		Short-term			Mid-term	Long-term	
<i>Deliverable</i>		Common Search Capability	Link Existing eData / PTP sites	Joint Website Development	Standard Data Exchange	Standard Data Visualization, Reporting	Joint and Common Website
<i>Description</i>		Implement one search engine that searches both the PJM and MISO public websites.	Link the existing PJM eData and MISO PTP sites together. Exchange a subset of data between the two sites (e.g. LMP, Instantaneous Load, Tie Flows) and make it available for display and download.	Create one new joint website that hosts PJM and MISO common information (e.g. joint meeting and event calendars).	Develop standard architecture (e.g. Broker engine) and data exchange mechanisms (e.g. Web Services (APIs)) that exchange data between PJM and MISO and make available the data to stakeholders.	Implementation of a single, redundant, data and report portal and supporting architecture that has backup capability shared between PJM and MISO; transparent participant joint access; and personalization capability.	Migrate PJM and MISO websites to one joint and common website. Individual websites for each RTO go away.
<i>Value Proposition</i>		<ul style="list-style-type: none"> Reduce stakeholder time spent searching two sites More coordination and collaboration between the two entities 	<ul style="list-style-type: none"> Reduce stakeholder time spent logging into and analyzing both sites to get common information Potential reduction in stakeholders' costs (less development time required to interface with one system instead of two) More coordination and collaboration between the two entities 	<ul style="list-style-type: none"> Less overlapping meetings between the two entities / better coordination which may enable more participation Reduced stakeholder time spent searching for meetings / events on individual websites and coordinating calendars / activities themselves 	<ul style="list-style-type: none"> Reduced stakeholders' costs to design, develop, test, and implement to one standard versus two Quicker rollout of new functionality for stakeholders due to reduced time to implement Potential savings in HW and SW licenses required by stakeholders 	<ul style="list-style-type: none"> Reduced stakeholders' costs to design, develop, test, and implement to one standard versus two Quicker rollout of new functionality for stakeholders Potential savings in HW and SW licenses required by stakeholders and RTOs Reduced time spent training stakeholders on new systems, reports, information 	<ul style="list-style-type: none"> Less overlapping meetings between the two entities / better coordination which may enable more participation Reduced stakeholder time spent searching for meetings / events on individual websites and coordinating calendars / activities themselves Potential savings in HW and SW licenses and development costs by stakeholders to access two different
<i>Cost</i>	<i>Implement</i>	\$100k – \$200k	\$400k – \$ 500k	\$500k – 600k	\$2.5mm – \$ 3mm	\$7mm – \$8.5mm	\$500k - \$750k
	<i>Ongoing (annual)</i>	\$25k - \$50k	\$75k - \$100k	\$75k - \$100k	\$100k - \$200k	\$250k – \$500k	\$100k - \$200k
<i>Obstacles</i>		Difference in terminology and business rules between the two entities will not be addressed, but could impact search results.	<ul style="list-style-type: none"> Synchronization of data delivery timeframes Differences in the way data is calculated and used (business definition) 	<ul style="list-style-type: none"> Developing the process to maintain the website, keep it current, and determine what to post. Determining the best way to jointly, technically, support the website. 	<ul style="list-style-type: none"> Synchronization of data delivery timeframes Differences in the way data is calculated and used (business definition) 	<ul style="list-style-type: none"> Synchronization of data delivery timeframes Alignment of business reporting and data retention practices Differences in the way data is calculated and used (business definition) 	Difference in terminology and business rules between the two entities.
<i>Action Plan to address obstacles</i>		Develop more consistency in business rules, practices, and terminology through the other JCM initiatives.	Identify the differences and develop ways to work around or at least communicate these differences to the stakeholder.	Develop a governance that addresses how to maintain and support the site between the two entities.	Identify the differences and develop ways to work around the differences.	Identify the differences and develop ways to work around the differences.	Develop more consistency in business rules, practices, and terminology through the other JCM initiatives.

Commercial: Increased Market Opportunities

		Short-Term
<i>Deliverable</i>		Moving Joint-Owned Units (JOUs) Between Markets
<i>Description</i>		PJM and MISO market participants jointly own generating assets and, as a result, pseudo-tie portions of the output of those units into the PJM and MISO markets. These participants have indicated a desire to be able to choose which market into which they sell their share of the output of these JOUs in both Day-Ahead and Real-Time.
<i>Value Proposition</i>		The ability for participants to choose into which markets the output of their units is sold and take advantage of any price differentials that may exist at these units' buses will benefit both the participants and the markets as a whole. The benefit to the participants would be their ability to receive greater revenue from their assets. Since differentials between the prices the RTOs calculate at identical buses indicates the relative value of the energy to each RTO at that location, the benefit to the markets would be for the owners of these assets to the RTO to which the energy at that location is more valuable. Should the prices at the RTO borders converge, this value to the participants and the markets may be minimal.
<i>Cost</i>	<i>Implementation</i>	\$80 - \$100K
	<i>Ongoing</i>	
<i>Obstacles</i>		PJM, MISO and the owners of these assets have resolved the majority of the issues associated with changing the pseudo-tie values in real time. There may be further issues that need to be resolved to provide the ultimate flexibility eventually requested by the participants.
<i>Action Plan (to address obstacles)</i>		<ol style="list-style-type: none"> 1. Determine a joint approach (best practices) 2. Obtain Stakeholder agreement/ support for best practices

Commercial: Increased Market Opportunities

		Mid-Term
<i>Deliverable</i>	Shared Regulation Market	
<i>Description</i>	In general, the larger the area over which a market is operated, the more efficient the market becomes. That is, the more resources available to be selected in the market, the lower the resulting price of the product becomes.	
<i>Value Proposition</i>	A larger market operated over both RTO footprints would result in more efficient procurement of the Regulation service by the RTOs.	
<i>Cost</i>	<i>Implementation</i>	\$5-8M
	<i>Ongoing</i>	\$500k / yr
<i>Obstacles</i>	Implementation of a shared Regulation market between PJM and MISO would require the real time, 2-second exchange of energy between the two markets. Since generators in MISO could be providing Regulation to PJM or vice versa, when the output of the regulating units is raised or lowered in response to ACE deviations in either market, the energy must actually be transferred to that market in order to impact the appropriate control error. This evaluation can not be made until the control area consolidation issue in MISO is resolved.	
<i>Action Plan (to address obstacles)</i>	<ol style="list-style-type: none"> 1. Determine a joint approach (best practices) 2. Obtain Stakeholder agreement/ support for best practices 	



Commercial: Operational Consistency



		Short-term
<i>Deliverable</i>		Common Long Term Transmission Queue
<i>Description</i>		Creation of a MISO and PJM common long-term transmission service queue. The service queue impacts only annual, cross-border, firm transmission service requests.
<i>Value Proposition</i>		<ul style="list-style-type: none"> Eliminates uncertainty. Currently, timing requirements combined with independent study by each RTO sometimes results in customers being awarded service in only one of the two RTOs. This may result in a cost for “useless” transmission service while preventing other customers from obtaining service.
<i>Cost</i>	<i>Implementation</i>	\$100-200k
	<i>Ongoing</i>	\$300-400 per study + benefits that vary by customer
<i>Obstacles</i>		Agreement changes
<i>Action Plan</i>		Filings and committee process



Commercial: Operational Consistency

	Short-Term	
<i>Deliverable</i>	Single OASIS	
<i>Description</i>	A customer facing front-end that masks the existence of the individual OASIS systems.	
<i>Value Proposition</i>	<ul style="list-style-type: none"> • Eliminate partial path problems • Converge business practices • Reduced customer costs (train for 1 system and rules, one service request) • Integration with Common Portal 	
<i>Cost</i>	<i>Implementation</i>	\$5-8M
	<i>Ongoing</i>	\$500k / yr
<i>Obstacles</i>	<ol style="list-style-type: none"> 1. Business practice alignment 2. Service agreements with 3rd parties 3. Legacy systems 4. Agreement changes 5. Implementation costs 	
<i>Action Plan (to address obstacles)</i>	<ol style="list-style-type: none"> 1. Obtain agreement on best practices 2. Filings and committee process 3. Cost justification 	

Commercial: Operational Consistency

		Short-term	Mid-term	Long-term
Deliverable		MISO Ramp Viewer Completed	Central location to view both ramp viewers	Common Ramp Portal
Description		Market Participants have the ability to view ramp in MISO	Develop a central location where both ramp viewers can be seen.	Develop a common portal to allow market participants to view and reserve ramp in both RTO's simultaneously.
Value Proposition		Market Participants have the ability to view ramp in both PJM and MISO separately	<ul style="list-style-type: none"> Avoids the need to bounce from website to website to view both RTO ramps. Cost effective solution. 	<ul style="list-style-type: none"> Avoids the need to access both market systems to reserve ramp. Creates a single point of entry for reserving ramp in both systems.
Cost	Implementation	Current MISO project	~ 100K	~ 750K
	Ongoing		~ 10K / Year	~ 50K / Year
Obstacles		None	There may be security issues with posting dynamic information to a common site.	<ul style="list-style-type: none"> May be very expensive to develop, and may not provide the expected benefits to make it worth the cost of implementation. Security may be a concern with transferring information from a central spot.
Action Plan <i>(to address obstacles)</i>			Meet with security teams to develop strategy.	<ul style="list-style-type: none"> For a moderately expensive tool, acquiring ramp reservations may not be in the best interest. This is a stakeholder decision. Meet with security teams to develop strategy.

Commercial: Operational Consistency

		Mid-Term
Deliverable		Modify PJM systems to EST
Description		MISO's systems are currently on EST. PJM currently operates on EPT. The recommendation would be to move PJM's system to EST to align with the MISO system.
Value Proposition		<ul style="list-style-type: none"> • Ongoing IT costs would be reduce due to simplification of system requirements between PJM and MISO (both RTO and Participants) • Reduced confusion when scheduling and interacting in both RTOs • Potentially elimination of costly mistakes by participants if they misinterpret or incorrectly covert time from one RTO to the other. • Increased efficiency between Mkt and Sys Operators.
Cost	Implementation	Estimated \$3-5M. Due to the newly passed energy bill PJM is already performing an impact assessment of moving the DST dates. Moving the DST dates has the potential to be on the order 50-100% more costly than switching to EST.
	Ongoing	No ongoing costs for this initiative. There would actually be a cost savings when developing new systems due to less dependencies around DST switch and less support necessary on DST days
Obstacles		<ol style="list-style-type: none"> 1. Gaining PJM stakeholder support and commitment to make necessary changes to their IT systems to only send/receive data in EST with PJM. 2. PJM participants on EPT would be impacted. 3. Wall clock versus system time for operators
Action Plan <i>(to address obstacles)</i>		<ol style="list-style-type: none"> 1. Obtain stakeholder buy-in through committee process along with road show to convince stakeholders of long term benefits 2. Advanced/ongoing communication of changes 3. Training or make wall clock same as system at PJM.

Commercial: Operational Consistency

		Mid-Term
<i>Deliverable</i>		Common Treatment of Dynamic Schedules/Pseudo-ties
<i>Description</i>		In general, participants desire the flexibility to allow their generating units to participate directly in the RTO of their primary interest, even if those units are not physically located in that RTO. Providing this flexibility means implementing dynamic schedules or pseudo-ties to electrically move those units into the RTO of choice for the participant.
<i>Value Proposition</i>		Consistent treatment of dynamic schedules/pseudo-ties will provide participants with the certainty of knowing the impact to their assets of taking advantage of this flexibility.
<i>Cost</i>	<i>Implementation</i>	\$100-200K
	<i>Ongoing</i>	
<i>Obstacles</i>		It is uncertain at this point as to what differences exist between the PJM and MISO handling of dynamic schedules/pseudo-ties. Once these specific differences are identified, PJM and MISO staffs can work on potential resolutions to those differences and present alternatives to stakeholders.
<i>Action Plan (to address obstacles)</i>		<ol style="list-style-type: none"> 1. Determine a joint approach (best practices) 2. Obtain Stakeholder agreement/ support for best practices

Commercial: Operational Consistency

		Mid-Term
<i>Deliverable</i>		Automatic Reserve Sharing
<i>Description</i>		As Large Regional Reliability Organizations (LRROs) such as the ReliabilityFirst Corporation (RFC) are created, the potential for reserve sharing agreements that cross RTO borders will continue to exist. Consistent treatment and administration of these agreements by PJM and MISO will better enable their development, thereby allowing market participants an additional mechanism by which to control their costs.
<i>Value Proposition</i>		Additional mechanisms enabling market participants to control and minimize their cost of maintaining system reliability.
<i>Cost</i>	<i>Implementation</i>	\$5-8M
	<i>Ongoing</i>	\$500k / yr
<i>Obstacles</i>		The interface of these mechanisms with existing and developing market mechanisms for the Synchronized Reserve ancillary service will need to be determined. For example, while large markets for these services are desirable in order to maximize their efficiency, PJM currently operates four separate Synchronized Reserve markets due to the existence of three distinct reserve sharing agreements within the market footprint.
<i>Action Plan (to address obstacles)</i>		<ol style="list-style-type: none"> 1. Determine a joint approach (best practices) 2. Obtain Stakeholder agreement/ support for best practices



Commercial: Operational Consistency

		Long-Term
Deliverable		Common Resource Adequacy Solution
Description		PJM has proposed the Reliability Pricing Model as its future resource adequacy construct. MISO stakeholders are still discussing potential implementation of a resource adequacy construct for the MISO footprint. Differences between the adopted resource adequacy constructs of the two RTOs could have implications in other areas, such as operations during scarcity conditions, reserve sharing, etc.
Value Proposition		A resource adequacy approach would lead to greater possible coordination in other areas, as mentioned above.
Cost	Implementation	\$5 - \$8M
	Ongoing	\$500K
Obstacles		Resource adequacy is still an issue in both PJM and MISO, and resolution in the individual RTOs is still some ways off, making adoption of a common construct a very long-term objective.
Action Plan (to address obstacles)		To be determined



Commercial: Single Market

	Short-term	Mid-term	Long-term
<i>Deliverable</i>	Business Rule and Technical Feasibility Assessment	Business Process Specifications and Initial Implementation	Construction Testing and Implementation of Single Market
<i>Overview</i>	To the greatest extent possible, provide a single data entry point and results distribution capability for MISO and PJM market and ancillary services application systems to virtually emulate a "one-stop-shopping" paradigm for: 1) Day-Ahead Market 2) Real-Time Market 3) Ancillary Services Market (Single Control Area; Single Unit Commitment; Joint Clearing for Day-Ahead; Single Real-Time; Single Network Transmission Service; Common Backup Facility; Single FTR Allocation; Single FTR Auction)		
<i>Description</i>	Business Rule Assessment 1) Define Business Processes to be implemented 2) Identify Process Differences 3) Create Coordinated Business Process Flows 4) Obtain Stakeholder/Regulatory Approvals Business Process Feasibility Assessment 1) Define Conceptual Functional Requirments 2) Define Conceptual Technical Specifications 3) Evaluate Technical Feasability of Functional Requirements 3) Obtain Stakeholder/Regulatory Approvals Coordination Engine: 1) Create Functional Requirements 2) Define Standard Security Services 3) Define Standard Error, Messaging, and Event handling Services 4) Create Functional Architecture Specifications	Business Process Functional Specifications: 1) Define Functional Business Rules to be Implemented 2) Create Functional Business Process Flows 3) Create Functional Business Examples 4) Obtain Stakeholder/Regulatory Approvals Business Process Technical Specifications: 1) Create Detailed Technical Specifications of Business Rules to be Implemented 2) Create Detailed Technical Business Process Flows 3) Create Detailed Technical Business Examples 4) Obtain Stakeholder/Regulatory Approvals Coordination Engine: 1) Create Detailed Technical Architecture Specifications 2) Created Detailed Technical Specifications	Business Process Implementation 1) Construct, Test & Implement Single Market Detailed Technical Specifications Coordination Engine: 1) Procure Hardware & Software 2) Construct, Implement, and Test Final System Components
<i>Value Proposition</i>	<ul style="list-style-type: none"> . Better Coordination . Common Practices . Identical Rules . Single Market Note: There is no current defensible business case to justify expense		
<i>Cost</i>	<i>Implement</i>	\$15M	\$40M
<i>Cost</i>	<i>Ongoing (annual)</i>	\$7M	
<i>Obstacles</i>	Potential Hurdles 1) Differences in Business Rules. 2) Differences in Market Timings (opening and closing times). 3) Granularity of information and market operations (Daily versus hourly offers/bids; 5-min versus 15-min LMP; etc). 4) Technical Feasibility of operating combined footprint		
<i>Action Plan</i>	To be determined		

Supporting Material



Reliability Initiatives

JCM Initiatives in Support of *Reliability* Objective



		Short-term
<i>Deliverable</i>		Emergency Energy Agreement
<i>Description</i>		Former Control Area Operators of PJM and MISO had emergency energy agreements in place to facilitate the sale of energy during emergency conditions. While these agreements existed prior to RTO development, MISO and PJM may not be a legal party to the agreement. MISO and PJM would need to replace these existing agreements with emergency energy agreements between the RTOs.
<i>Value Proposition</i>		Emergency energy agreements between the RTOs would provide additional reliability value if the markets were unable to respond quickly enough during system emergencies.
<i>Cost</i>	<i>Implementation</i>	Low cost to put the agreements in place (coordination and legal fees).
	<i>Ongoing</i>	Implementation (actual emergency energy sale) costs would only occur during reliability emergencies
<i>Obstacles</i>		Legal coordination and corporate structure limitations may be an obstacle to complete the agreements in the short term.
<i>Action Plan (to address obstacles)</i>		Establish emergency energy agreements closely aligned with existing (PJM) agreements and former control area to control area agreements



JCM Initiatives in Support of *Reliability* Objective

		Short-term
<i>Deliverable</i>		Black Start and Restoration
<i>Description</i>		<p>PJM currently has a cost-based black start procurement process included as Schedule 6A of its Tariff. Midwest ISO is developing a very similar cost based structure to be added to its Tariff.</p> <p>Future coordination could potentially include joint restoration plans, leading to joint evaluation of critical black start resources.</p>
<i>Value Proposition</i>		Future coordination could include joint restoration plans, leading to joint evaluation of critical black start resources. Value may be achieved by some black start units being regionally available for both RTOs.
<i>Cost</i>	<i>Implementation</i>	\$500k – Regulatory filings; tariff changes; review of black start plans across both RTOs to identify units; process for qualification and testing
	<i>Ongoing</i>	\$50k per RTO for annual testing of qualified units
<i>Obstacles</i>		Number of actual many units which reasonably qualify for black start in both regions; tariff and regulatory changes; reliability concerns
<i>Action Plan (to address obstacles)</i>		Need to determine the actual number of units which reasonably qualify for black start in both regions; address tariff and regulatory changes and reliability concerns

Supporting Material



Planning Initiatives

JCM Initiatives in Support of *Planning* Objective

		Short-term
<i>Deliverable</i>		Joint expansion planning Common deliverability studies
<i>Description</i>		<ul style="list-style-type: none"> • Joint expansion planning – regional expansion plans will include coordinated planning to include evaluation of impacts on other RTO facilities and required facility upgrades. • Common deliverability studies – generation deliverability studies will include common criteria and study to obtain results which demonstrate if units are deliverable in both RTOs.
<i>Value Proposition</i>		<ul style="list-style-type: none"> • Joint expansion planning - Eliminates uncertainty. Planning for facilities upgrades and regional planning done on a coordinated basis between RTOs for reliability. • Common Deliverability studies – generation deliverability studies based on a single criteria / single study with study results detailing deliverability in both RTOs.
<i>Cost</i>	<i>Implementation</i>	<ul style="list-style-type: none"> • Joint expansion planning - \$10k / RTO • Common Deliverability studies – \$50k / RTO
	<i>Ongoing</i>	<ul style="list-style-type: none"> • Joint expansion planning - \$50k annual – queue and study coordination / RTO • Common Deliverability studies – \$25k annual - study coordination / RTO
<i>Obstacles</i>		<ul style="list-style-type: none"> • Joint expansion planning – study criteria and coordination • Common Deliverability studies – Regulatory filings, tariff changes, study criteria and coordination
<i>Action Plan (to address obstacles)</i>		<ul style="list-style-type: none"> • Joint expansion planning – Initial stakeholder meeting – October 2005 • Common Deliverability studies – Detailed definition, regulatory filings