UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

The New PJM Companies, et al.	**)** **)**	**Docket Nos. ER03-262-001, et al.**

PJM MARKET MONITOR'S ASSESSMENT OF
AEP PROPOSAL FOR LIMITED INTEGRATION WITH PJM

I. Introduction

The Commission, at the hearing held on September 29-30, 2003, requested that the market monitors of the Midwest ISO ("MISO") and PJM Interconnection, L.L.C. ("PJM") address American Electric Power Company's ("AEP") proposal to transfer control of its transmission facilities to PJM without incorporating its system into PJM's congestion management and markets, and the impact of that proposal on the issues of gaming and manipulation at the seams among and between the PJM, MISO and AEP systems. (See Tr. 281-82) This report responds to that request.

The single best way to address the gaming and market power issues at system seams is to implement transparent, LMP-based markets as quickly and widely as possible. The best solution, from a markets perspective, would result from AEP's joining PJM on a fully integrated basis as soon as possible. The result would be to remove the gaming and market power opportunities that result from interfaces between a contract path system and an LMP market and between generation in a non-market system and generation in open, transparent markets. The remaining seam between PJM and MISO can be managed via PJM and MISO's proposed Joint Operating Agreement ("JOA") protocols for market to non-market coordination and proposed market to market protocols when MISO implements markets.

Nonetheless, it is important to comment directly on AEP's proposal. AEP's proposal, if modified in ways suggested below, could be a reasonable interim step to full market implementation, but only if a clear date for the end of that transition is specified.

Current disagreements between and among regulatory authorities are a principal reason for AEP's so-called "interim" proposal. State regulators are concerned about the impact of full market implementation on access to historical levels of generation from identified regional resources with specific cost characteristics. Both the AEP proposal, as modified by the MMU proposals below, and full market implementation can be designed to permit the efficiencies of market operation to emerge while preserving existing rights to defined generation costs for identified loads. The relevant parties should be encouraged to develop the detailed implementation rules designed to produce such results so that this issue does not continue to be a barrier to market implementation.

AEP makes clear, in its testimony and in its responses to Staff data requests in Docket No. ER03-262-004, that AEP operates a fully integrated system and that AEP operates its system using centralized, security-constrained dispatch with completely open transmission access. In other words, AEP operates its integrated system in a manner very similar to the manner that PJM operated its system prior to PJM becoming an ISO and prior to the introduction of markets. AEP manages congestion using the same fundamental techniques including operating procedures, dispatch, redispatch and TLRs. While it is important not to overstate the similarities, because the fundamental difference is that AEP does not operate an open or transparent market, it is also important to understand the common elements of the two systems.

According to AEP's testimony and responses to data requests, AEP does and would continue to run a fully integrated, security constrained economic dispatch for its entire eastern system with complete and open transmission access. If the full economic dispatch is done and PJM market monitoring and PJM operations can verify that it is done, then we have a functioning system, which can be modified to minimize the negative impacts for markets, operating over the broad AEP area between PJM and MISO.

The basic facts about the way in which AEP plans and operates its system, together with AEP's proposal to FERC, provides a basis for modifications to AEP's proposal in addressing seams issues with PJM and MISO and the associated potential gaming and market power concerns, while retaining the idea of a transition structure. The proposed modifications below would explicitly be appropriate only for a transition with a defined end date for full market integration.

II. Issues

Gaming and market power issues at the seams between market and non-market areas have been identified by both the PJM and MISO market monitors. As a general matter, the potential for gaming and market power issues exists at system seams where there are significant electrical interactions, or what have been termed loop flows. It is important to recognize that loop flows are not a new phenomenon and have been a characteristic of the Eastern Interconnection for a long time. Loop flows reflect the fact that power flows on the high voltage electric transmission system in the Eastern

Interconnection do not respect the boundaries that demarcate the system operators. The decisions to join particular RTOs by individual entities do not create these loop flows and do not make the loop flows harder to manage. Loop flows would continue to exist regardless of such elections. A variety of different control area boundaries within the Eastern Interconnection can be managed. Regardless of such boundaries, such seams are easier to manage when transparent, LMP-based markets exist on both sides of such boundaries and redispatch agreements exist to ensure efficient LMPs on both sides of the boundaries.

The seams-related market power issues identified by PJM to date have been related to the discontinuities between contract-path-based systems and LMP-based systems in the absence of detailed redispatch agreements. Potential gaming and market power issues can also exist at the seams between LMP-based systems in the absence of joint redispatch agreements that produce consistent LMPs on both sides of the seams.

The prior joint report of the market monitors to FERC on the management of these issues by PJM and MISO concluded that we are optimistic about the progress that has been made in developing detailed protocols for handling both market to non-market and market to market coordination. If these protocols are fully implemented, we are optimistic that they will minimize the potential for inefficient locational prices and will, therefore, minimize the potential to game the differences between locational prices that do not reflect the underlying electrical reality.

We also concluded that the two RTOs need to commit to establish a process for quickly finalizing the JOA, including developing the market to market protocols to a level of detail comparable to the detail on the market to non-market protocols.

Relevant to the current inquiry, we concluded that similar coordination is needed with AEP and that either the development of agreements similar to the PJM-MISO agreements between the RTOs and AEP, or AEP participation in an RTO of its choice, is required.

There are currently significant loop flows at the PJM-AEP seam that could be better managed if AEP fully integrates with PJM's markets. These loop flows could also be better managed, for an interim period, if a modified AEP proposal is adopted, as described below.

For example, the following are facilities in PJM and AEP on which congestion results from flows that cannot be managed by internal redispatch under the current configuration and that are frequently managed by TLRs rather than redispatch. (These flowgates are in the top ten facilities, by frequency of occurrence, for which TLRs have been called in 2003 to date.) As an illustration of the significant loop flows between PJM and AEP, the volume of TLRs in PJM and AEP used to manage constraints has constituted 19 percent of all TLRs implemented in the U.S. since 1998. A Joint Operating Agreement, with the characteristics outlined below, would result in more effective management of such congestion via redispatch as part of a transition to a single market.

Jointly Impacted Facilities Frequently Managed By TLRs	
Flowgate	**Area**
Wylie Ridge Transformer	PJM
Cloverdale-Lexington	AEP
Kammer Transformer	PJM
Kanawha - Matt Funk	AEP
Erie West -Erie South	PJM
Bedington-Black Oak	PJM
Doubs Transformer	PJM

The following AEP facilities are impacted by Northern Illinois Control Area ("NICA" or "Com Ed") generation serving NICA load. (These reflect NICA generation shift factors greater than 5 percent.) These impacts occur today, regardless of RTO configuration and could be better managed if NICA generation and the AEP facilities were in a single RTO and, for an interim period, via the modified AEP proposal described below.

AEP Flowgates Impacted (+/- 5%) by NICA Generation Serving NICA Load	
Flowgate	**Area**
DUMONT 765 -345 TRANSFORMER	AEP
OLIVE 345	AEP, CE
CAYSUB-EUGENE 345	CIN, AEP
COOK 765-345 TRANSFORMER	AEP
BREED-CASEY 345 KV	AMRN, AEP
DUMONT-WILTON 765 KV	CE, AEP
BUNSONVILLE-EUGENE	IP, AEP

The following AEP flowgates are impacted by PJM generation serving PJM load. (These reflect PJM generation shift factors greater than 5 percent.) Again, these impacts occur today, regardless of RTO configuration and could be better managed if PJM generation and the AEP facilities were in a single RTO and, for an interim period, via the modified AEP proposal described below.

AEP Flowgates Impacted (+/- 5%) by PJM Generation Serving PJM Load	
Flowgate	**Area**
WOLFCK – MUSKINGUM	PJM, AEP
KANAWHA-MATT FUNK 345	AEP
S. CANTON 765/345 TRANSFORMER	AEP

III. <u>AEP's Planning and Operations</u>

The following statements from AEP's testimony and data responses support the statements above that AEP is planned and operated as a single integrated system with security-constrained redispatch.

AEP, in the June 25, 2003 responses to data requests from FERC Staff, cites the Commission Order in AEP Generating Co. and Kentucky Power Co, 38 FERC ¶ 61,243 (1987):

> "AEP is a centrally planned, interconnected, fully integrated system." (Response to data requests, transmittal letter at 1.)

> "The AEP System was developed as a coordinated unit to provide full service and provide economy in capital outlay and to achieve economy in operation by using the lowest cost sources of power based on the needs of the entire system and these objectives have been carried forward to present day operations. In effect, all of the electric energy generated by the generating units is delivered from the seven state AEP transmission system from which all of the customers in the pool are supplied." (Response to data requests, transmittal letter at 1-2.)

AEP adds:

> "AEP's East Zone has been planned and operated as an integrated unit for more than fifty years." (Response to data requests, transmittal letter at 2.)

> "The AEP System, as presently configured, planned and operated allows transmission service over a large area on a one-stop shopping basis, at non-pancaked rates, with all loop flows and congestion management internalized." (Response to data requests, transmittal letter at 6.)

> "The AEP Pool Agreement provides for integrated operation, including centralized generation dispatch and free-flowing ties." (Response to data requests, transmittal letter at 6.)

> "Congestion in the AEP East zone is managed through control devices, dispatch and redispatch, and TLRs, on an integrated basis." (Response to data requests, Question 3d.)

> "At present, the AEP system is operated as an integrated system under the AEP Interconnection Agreement; AEP dispatches its generating units in real time on a single system economic basis to ensure that the System's energy and ancillary service requirements are met at the lowest possible cost in a reliable manner. An AEP Operating Company that has excess energy or ancillary services automatically provides this surplus to an Operating Company that may be deficient." (Response to data requests, Question 6.)

> "PJM currently operates on a centralized security constrained economic dispatch [h]as (sic) does AEP for its own integrated system." (Response to data requests, Question 6.)

IV. <u>AEP's Proposal</u>

AEP's proposal has the following salient elements:

1. AEP transfers functional control of its east zone transmission facilities to PJM;
2. PJM would administer PJM's Open Access Transmission Tariff for the AEP east zone;
3. PJM would control transmission access;
4. PJM would act as AEP's Reliability Coordinator;
5. PJM's market monitor would monitor AEP;

6. PJM would administer regional transmission planning pursuant to PJM Regional Planning Protocol;
7. Seams coordination with MISO per the PJM/MISO Joint Operating Agreement;
8. Non-pancaked transmission rates for PJM, including AEP, and MISO with associated revenue neutrality mechanism;
9. No central dispatch;
10. No energy, capacity or ancillary services markets;
11. No LMP-based congestion management or FTRs.

V. MMU Proposed Modifications to the AEP Proposal

The PJM Market Monitoring Unit ("MMU") proposes the following modifications to the AEP proposal. These modifications are intended to reduce the potential for gaming and market power, address seams issues and result in more efficient markets in the context of an interim period without fully integrated RTO markets. This interim period must be a limited, defined period.

Minimum Requirements

The minimum requirements to implement a modified AEP interim solution include:

1. Detailed market monitoring implemented by the PJM MMU with full access to all required transmission and generation data as determined by the MMU. The required data includes all data necessary for transmission system and transmission access monitoring and all data required for real time generation dispatch monitoring.

   The purpose of detailed market monitoring with the scope and data requirements determined by the PJM MMU is to ensure that the terms of the Open Access

Transmission Tariff are implemented and that AEP jointly operates its generation and transmission assets so as to provide equal and open access to its transmission system. This recommendation goes beyond the data access provided to the current external market monitor by AEP.

2. Detailed monitoring of the transmission system operations by PJM operations including operation of the OASIS, management of requests for transmission service, management of transmission outage requests and management of transmission facility ratings and ratings changes, with full access to all required data as determined by PJM operations.

   While management of the OASIS and requests for transmission service are part of the AEP proposal, management of transmission outage requests and transmission facility ratings are not part of the proposal. These elements are currently an essential part of transmission system monitoring by system operations in PJM to ensure that the markets operate competitively and should be part of the monitoring in AEP.

3. Detailed market to market Joint Operating Agreement ("JOA") between PJM and AEP and MISO and AEP providing for the redispatch of AEP units for PJM/MISO constraints and the redispatch of PJM units and MISO units (when MISO markets are operational) for AEP constraints. The JOA must also address the assignment of congestion costs to all parties in a manner equivalent to that in the current draft PJM-MISO market to market white paper including determination of flow entitlements on facilities in coordinated areas. The JOA must also include provisions for required data exchange, emergency procedures and joint transmission planning consistent with those in the current draft PJM-MISO JOA.

While general reference is made to a JOA between the adjacent RTOs and AEP, the JOA must have very specific characteristics. While AEP will not formally be a market, the fact that the AEP system operates a centralized security constrained economic dispatch makes it appropriate to implement a market to market JOA rather than a market to non-market JOA. The nature of AEP system operations means that the system can be efficiently redispatched when appropriate to control its impacts on PJM and MISO systems and that the PJM and MISO systems (when MISO markets are operational) can be efficiently redispatched when appropriate to control their impacts on the AEP system. A market to non-market JOA between PJM and AEP would not be optimal or necessary because AEP is capable of economic redispatch. Such redispatch is clearly preferable to management of transmission system congestion via TLRs. (The market to non-market provisions in the PJM-MISO JOA rely upon the use of TLRs by MISO to control MISO flows on external flowgates until MISO has markets.) In order for this market to market process to work, the extensive data exchanges delineated in the PJM-MISO JOA must also be implemented via the PJM-AEP JOA.

As in the PJM-MISO market to market protocols, compensation for redispatch would come from internal "market" signals. In PJM the market signals would be the LMP that reflects the desired output from relevant generators and in AEP the relevant signal would be the local dispatch signal that reflects the desired output from relevant generators. Both PJM and AEP systems benefit from the reciprocal obligation to redispatch when required.

A key benefit of this approach is that it would also substantially reduce the uncompensated loop flows through PJM and reduce the ability to exercise market power or game the rules at the interfaces between PJM and AEP.

4. For each of these requirements, AEP must implement the appropriate information technology solutions to facilitate this data exchange as well as those referenced below. AEP must be willing to provide more data to the PJM MMU and to PJM operations than it currently supplies to its external market monitor or its external transmission access manager. In addition, AEP must be willing to make this data available in real time and in formats that work seamlessly with the data requirements of PJM and MISO systems. The components of the proposal cannot be implemented without the associated data access.

Additional Requirements

The addition of the following requirements to the modified AEP interim solution would ensure characteristics that could enable a more seamless interface with contiguous market systems:

1. Detailed monitoring of generation unit status by PJM operations to verify that full security-constrained economic dispatch is implemented. PJM operations would monitor AEP generator status in the same way that PJM operations now monitors PJM generator status.
2. Inclusion of AEP-area generation resources not owned by AEP or its affiliates and imports and exports in the system dispatch, if such resources wish to participate. While the AEP system operates a centralized security constrained economic dispatch, this dispatch does not include resources not owned by AEP and does not include

external resources. In order to ensure that the AEP system operates as seamlessly as possible with the contiguous markets and that competitive forces are allowed to operate across contiguous markets and AEP, resources not owned by AEP must be allowed to compete with AEP resources. Such non-AEP resources would have the opportunity to make offers into AEP and they would be dispatched in merit order in the same way that internal AEP resources are dispatched.

Such competition will not harm AEP loads and can, in fact, only make such loads better off if non-AEP resources can meet loads for lower prices than AEP resources. AEP's current agreements with its operating companies and relevant state regulators regarding accounting for generation costs would remain in effect.

3. Full visibility of AEP redispatch. The price of marginal generation would be visible (system lambda), although the unit would not be identified, as would the multiple marginal generation prices in the event that redispatch for congestion occurs. This would ensure that non-AEP generation could be confident that it has the information necessary to compete with AEP-owned generation.
4. Operation, or direct oversight, by PJM of AEP's internal centralized security-constrained dispatch. An independent entity would operate the dispatch and relieve concerns that AEP could exercise market power via the combined operation of the transmission system and generation dispatch and/or gaming other contiguous markets. This does not mean that PJM would dispatch AEP and PJM as a single system or that LMP-based markets would be implemented in AEP. It does mean that the existing system of centralized, security constrained dispatch in AEP would be operated by an independent system operator in the manner that AEP indicates it currently operates

the dispatch with the modifications specified above. AEP, per its testimony, runs a fully integrated, security constrained economic dispatch for its entire eastern system with complete and open transmission access. If the full economic dispatch is done by PJM operations and PJM market monitoring can verify that it is done, then the result would be as close to a single efficient market as can be achieved, short of joint dispatch. The result preserves internal AEP resources for AEP loads as there would be no change to AEP's current dispatch procedures as described in the AEP testimony but for inclusion of non-AEP resources in the dispatch. Such inclusion can only make AEP loads better off. This should cover state concerns regarding protection of local loads. This approach also provides a natural bridge to a fully integrated RTO with a single dispatch, operated by PJM.

VI. <u>Conclusion</u>

I recommend that both the above-identified "Minimum Requirements" and the "Additional Requirements" be implemented if the Commission decides that an interim period leading to a defined date for market implementation is appropriate. These requirements will contribute significantly to ensuring that the results of an interim period will approximate the results of fully integrated markets as closely as possible as well as serving as a reasonable transition to full markets. If the Commission determines that markets should be implemented as quickly as possible, there will still be a transition period and these requirements should be part of any such transition period.

The result of implementing the AEP proposal, modified by the proposed requirements above, will be significantly improved market operations across a broad area extending from the NICA to PJM. These improved market operations will not, however, create the conditions about which some of the states in the AEP footprint are concerned. AEP's current system of security-constrained, central dispatch preserves a defined set of state jurisdictional access to specific generation costs via an after the fact system of accounting. The modified AEP proposal would preserve such a system. The modified AEP proposal could also serve as a transition to a full LMP-based market designed to preserve such state jurisdictional access to specific generation costs on behalf of identified loads via a similar after the fact accounting or via a pre-defined set of FTR allocations. While the details must be carefully specified, both methods of operation can be designed to permit the efficiencies of market operation to emerge while preserving existing rights to defined generation costs for identified loads.

Respectfully submitted,

/s/________________________
Joseph E. Bowring
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October 10, 2003

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated at Washington, D.C., this 10th day of October 2003.

/s/________________
Barry Spector

Pjm/final pjm mmu comments on aep proposal