Joint MISO-PJM Planning Study

August 6th, 2014
MISO-PJM IPSAC 16th Meeting
• Welcome, Roll Call, and Review Agenda  MISO & PJM  10:00AM
• Study Scope and JOA Future Recap  MISO & PJM  10:10AM
• Stakeholder Feedback Summary  MISO & PJM  10:45AM
• Refreshed Transmission Evaluation Results  MISO & PJM  11:30AM
• Study Closeout and Next Steps  MISO & PJM  12:15AM
• Adjourn  All  1:00PM
MISO-PJM Planning Study IPSAC Meeting

Study Scope and JOA Future Recap
Purpose of Study

• To jointly evaluate cross-border transmission issues and identify opportunities for transmission expansion
  – This joint study process is consistent with each respective regional planning process
  – This joint study will seek joint stakeholder inputs through regional and interregional planning processes

• To provide a common platform for the combined RTOs’ stakeholders to participate in the evaluation and review of identified cross-border transmission plans, in an open and transparent fashion
Scenario based planning approach is applied to identify the best fit transmission solutions.

**Future 1** – MISO state RPS mandates and PJM queue based generation expansion.

**Future 2** – meeting MISO and PJM state RPS mandates with internal wind (no additional PJM imports from MISO).

**Future 3** – meeting MISO RPS mandates and goals, and PJM RPS mandates with 31% of PJM RPS targets from wind sited in MISO.
## JOA Study progress

<table>
<thead>
<tr>
<th>Work Efforts</th>
<th>Detailed Progress</th>
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<tbody>
<tr>
<td>Historical M2M Congestion Analysis</td>
<td>Historical top M2M and non M2M congested flowgates selected</td>
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<tr>
<td>Joint Future Development</td>
<td>Three Joint Futures developed</td>
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<tr>
<td>Seams Congestion Issues Assessment</td>
<td>Top congested flowgates identified and refreshed for all three joint Futures</td>
</tr>
<tr>
<td>Transmission Ideas Solicitation and Validation</td>
<td>Transmission solution ideas solicited and validated from joint stakeholders</td>
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<td>Transmission Option Evaluation</td>
<td>2nd Iteration of evaluation completed for JOA Futures</td>
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<tr>
<td>Project Referral to regional processes</td>
<td>Cross Checking and determine solutions to be referred to regional processes</td>
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**JOA Future Development**

- Need Identification
- Transmission Development
  - Project Referral to regional processes
May 16th IPSAC Recap and Follow-ups

- Reviewed refreshed transmission evaluation results, focusing on projects showing promising B/C ratios
- Walked through the detailed breakdown of JOA benefit metric calculation
- Engaged extensive discussions on lessons learned
- Since the May 16th IPSAC meeting
  - Further reviewed and cross checked on the projects with B/C greater than 1.25, with stakeholder feedback incorporated as appropriate
  - Determined appropriate project referral to regional planning processes
  - Continued discussion on study update and lessons learned at the following JCM meetings
• An iterative process to identify transmission solutions to address the congestion issues at the MISO-PJM seam
• Analyzed 75+ proposed transmission solutions against the cross border MEP
• Following the May 16th IPSAC meeting, 3 projects with B/C ratios greater than 1.25, were further reviewed and cross checked
  – Ameren 2: Big Stone – Blair 230kV (MN/SD, Future 3)
  – Ameren 16: Zion – Pl. Prairie 345kV (WI/IL, Future 1)
  – Transource A #2-2: New 345/230/161kV Canby Sub (MN/SD, Future 2)
• The goal of today’s meeting is to present the finalized joint transmission evaluation results and appropriate project referral to regional planning processes
MISO-PJM Planning Study IPSAC Meeting

Stakeholder Feedback Summary
Stakeholder Feedback Summary

• At the May 16th IPSAC meeting, feedback was requested particularly on the lesson learned and outstanding modeling issues

• Feedback was received from:
  – Transource, NIPSCO, Hunt Power, ITC

• General comments were focused on:
  – Joint future development
  – JOA Cross Border MEP criteria
  – JOA metric
  – Study scope and process
Stakeholder Comments: Definition and use of joint futures

• **General comments**
  – Support for the upfront definition of futures and their roles in evaluating transmission projects.

• **Other comments**
  – Futures vastly differed one another presenting a high hurdle for a project to pass through all futures.
  – It is unclear how the futures would be used to determine cost allocation
    • A weighting mechanism would provide better clarity
Stakeholder Comments: JOA CBMEP Criteria revisit

• General Comments
  – To incorporate lesson learned, a review of the criteria is in order

• Other comments
  – The JOA criteria were agreed upon several years before a full study was started and completed. A revisit of the CBMEP is due prior to the commencement of a new study.
  – The $20M threshold should be reconsidered given the regional MEP cost criteria.
  – CBMEP selection should not be further limited by regional criteria e.g. MISOs voltage criteria
Stakeholder Comments: JOA Metrics and Calculation (1/2)

• General Consensus
  – Support for reconsidering the current metrics prior to a new study

• Other comments
  – APC adjustments for purchases and sales should be valued at the market LMP’s and not the production cost
  – Consider adding M2M payments which would, among other things, capture relief of intra-regional congestion
• **Other comments**
  
  – Metrics should appropriately reflect projects’ mitigation of congestion
  
  – Re-evaluate the 100% congestion hedging assumptions.
  
  – The number of years used for the NPV calculation should be consistent with the regional processes
  
  – The 70% APC 30% NLP split discussion should be held only after reconsidering the metrics
Stakeholder Comments: Study Scope and process

• Better alignment and coordination between RTOs and their regional processes
• Consider a different process for identifying interregional transmission needs through regional processes.
• Please explain how competitive proposals will be solicited and how this will align with regional processes
• Will MISO/PJM perform additional cross border projects through the JCM?
Addressing Lessons Learned Items from Study

• MISO and PJM staff support continuing discussion with stakeholders on the lesson learned items identified in the CBM EP study
  – NIPSCO’s request for action presented at the March JCM, in part, included items similar to those identified in the lessons learned from the CBM EP study
  – Open to creating a separate work group (or IPSAC) to focus on the CBM EP improvement items
  – Evaluation could result in process, JOA, or Tariff changes

• Staff has provided additional information and a more detailed work plan at the July 24th JCM meeting
MISO-PJM Planning Study IPSAC Meeting

Refreshed Transmission Evaluation Results
• Models were updated based on stakeholder feedback:
  – Updated modeling of Reynolds to Hiple
  – Updated ratings of Pleasant Prairie – Zion Energy Center
• MISO and PJM staff conducted extensive review and cross checking on the three projects, AMRN16, AMRN2, and Transource A 2-2
• 2 projects, one in Future 2 and one in Future 3, have cost greater than $20M and B/C ratios greater than 1.25
  • MISO and PJM independent evaluations yield similar results
• Model updates aforementioned primarily impact AMERN16
  – Future 1 B/C ratio changed from 1.68 to 0.44
  – Drop in benefits primarily due to a decrease in congestion as a result of the topology update
PJM and MISO compared ProMod input files (PFF, LIB, DAT, EVE) to ensure that each was running the exact same cases.

PJM and MISO then compared results on a component by component basis, including:

- Gross load payments ($)
- Total demand (MWH)
- Total generation (MWH)
- Gross Production Cost ($)
- Generator Revenue ($)
- Transactions (MWH)
- Transactions ($)
• Most components were a near perfect match (matched to 6 significant digits or better)
• Components that did not match as well were tracked back to rounding issues or other small discrepancies in reporting technique.
• The difference in final B/C ratio is small and does not change any project from passing to not passing or vice versa.
Some of the components compared for the AMRN 16 project:

### PJM Calculation

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### MISO Calculation

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*Costs and benefits in table are 10 yr NPV values
**Lines are for illustrative purposes only, actual line routing may differ
Ameren 16: Zion – Pl. Prairie 345kV

- **Description:**
  - New Zion – Pleasant Prairie 345 kV line
  - Wisconsin/Illinois Border

- **Project Details:**
  - Proposed by: AMEREN
  - Expected ISD: 12/31/2018
  - Estimated Project Cost: $66M
  - Mileage: 12 miles

- **Summary of economic analysis:**
  - Reduced congestion on:
    - Zion Energy Center – Pl. Prairie
  - Increased congestion on:
    - Butler – Granville

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**Costs and benefits in table are 10 yr NPV values**
**Lines are for illustrative purposes only, actual line routing may differ**
Transource A #2-2: New Canby 345/230/161kV Substation

**Description:**
- New 345/230/161 station near Canby. Connect to new taps on: Big Stone – White 345 kV, Watertown – Granite Falls 230 kV
- Minnesota / S. Dakota Border

**Project Details:**
- Proposed by: Transource
- Expected ISD: 2024
- Estimated Project Cost: $25M

**Summary of economic analysis:**
- Reduced congestion on:
  - Hankinson – Wahpeton 230kV

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<th>COST ($M)*</th>
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Ameren 2: Big Stone – Blair 230kV

- **Description:**
  - New 230 kV line from Big Stone to Blair
  - Minnesota / S. Dakota Border

- **Project Details:**
  - Proposed by: AMEREN
  - Expected ISD: 12/31/2018
  - Estimated Project Cost: $65M
  - Mileage: 33 miles

- **Summary of economic analysis:**
  - Reduced congestion on:
    - Johnson Jct. – Ortonville
    - Blue Earth – Winnebago
    - Hankinson – Wahpeton
  - Increased congestion on:
    - Adams 161/69kv xfrmr.
    - Hazleton - Dundee

**Table: Economic Analysis**

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**Abbreviations:**

- APC: Alternative Project Cost
- NLP: No Load Project Cost
- JOA: Joint Ownership Analysis
- B/C: Benefit to Cost Ratio
Study Close-out and Next Steps
• Transmission Project Recommendations
  – Two projects, AMRN2 and TRSC2-2, met JOA CBMEP cost and B/C criteria and will be referred to the regional processes
    • Ameren 2: Big Stone – Blair 230kV (MN/SD, Future 3)
    • Transource A #2-2: New Canby 345/230/161kV (MN/SD, Future 2)
  – Both projects fail to meet the voltage threshold under MISO tariff for MEP and will not be considered as CBMEP under current JOA

• Implementation of lessons learned
  – Preliminary discussions have been undertaken at the JCM
  – A time line has been proposed to consider issues raised and possible enhancements
• July 24th JCM meeting highlights on cross border planning
  – Continued discussion on process and metric issues identified through the current study
    • Appropriateness of CBMEP criteria including project cost and requirement to meet three sets of metrics
    • Reassessment of JOA metric and possible alternative
  – Reaffirmed the need for better alignment of planning assumptions, timelines and models in general
  – Proposed an estimated timeline to address these issues through the IPSAC
Next Steps - Estimated Time Line

• **September / October**
  – Conduct issues and RTEP/MTEP plan reviews
  – Metrics, models/coordination, retirements, outage coordination and interconnections
  – Conducted consistent with JOA process

• **January**
  – Present process issues and potential enhancements

• **March**
  – Solicit stakeholder feedback on proposals and discuss next steps

• **May - June**
  – Propose timeline to finalize and implement any potential changes
Indicative Coordinated Study Timeline

Sept 2012, Began CSP Scope Development

Sept/Oct 2014: Annual joint issues review

Jan 2013-Today: Conducted CSP analysis

Nov/Dec 2014: Determine next steps and joint study scope as needed

Jan 2015: Present process Issues and Potential enhancement

May/Jun 2015: finalize and implement potential changes

Mar 2015: Stakeholder feedback on proposal
Additional Questions? Please Contact:

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