

MISO PJM IPSAC

September 28, 2015

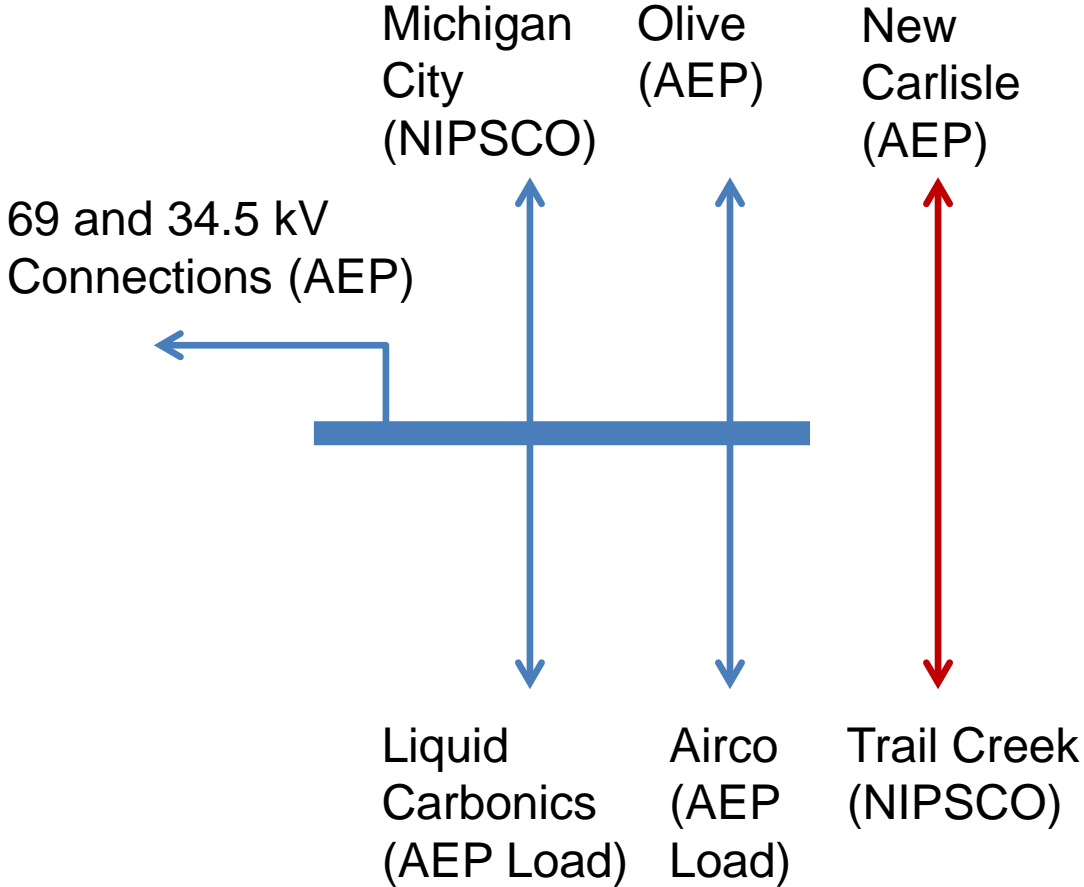
- Quick Hit Update
- Michigan Interface Study Update
- Quad Cities Study Update
- Process & Metrics

Quick Hit Update

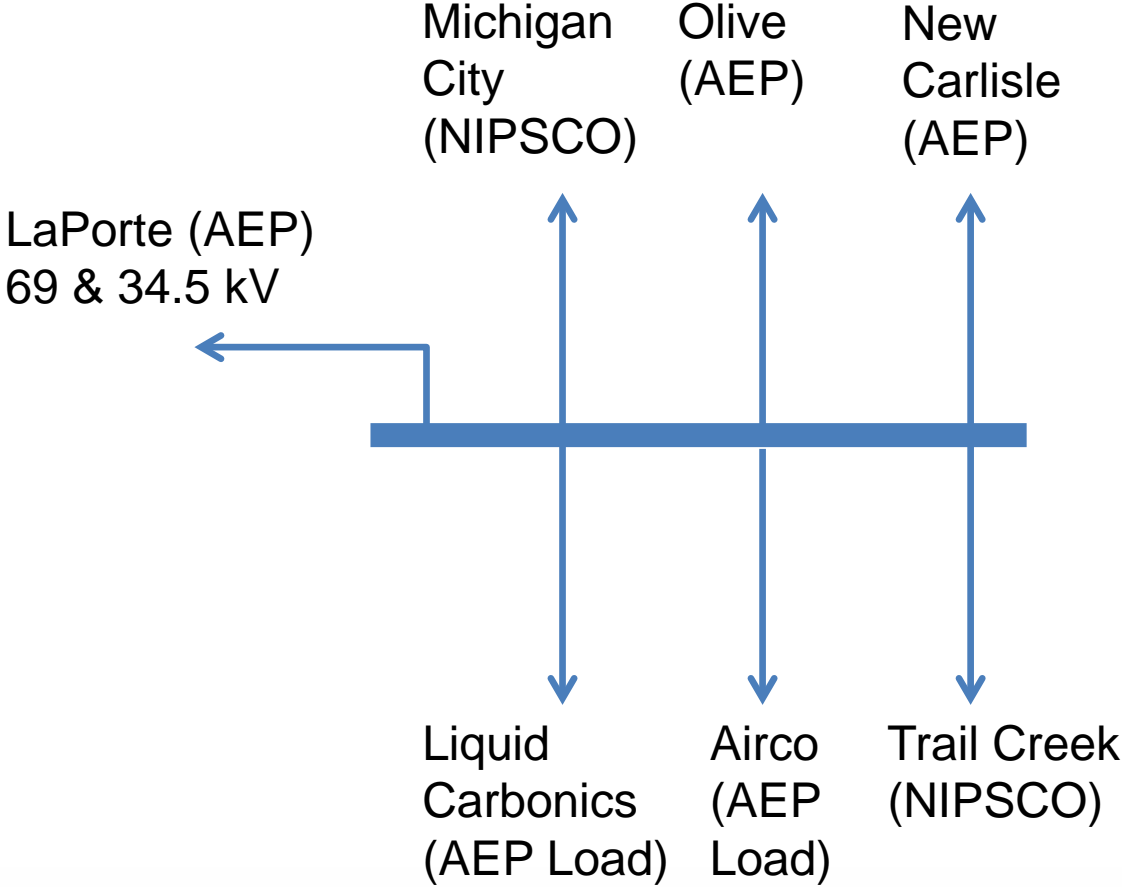
- SCADA upgrade complete; rating has increased to 223 MVA
- New limiting element is CT and wave trap
- No congestion since upgrade completed
- Will continue to monitor; candidate for additional quick hit upgrades if element starts binding again

- 138kV switchyard owned by AEP
- Went in service this spring
- Immediately next to LaPorte substation
- Ties in New Carlisle – Trail Creek 238kV (see diagram on next slide)
- What is the impact on Michigan City – LaPorte congestion?

Original LaPorte (AEP) Configuration



New Bosserman (AEP) Station



	Base prior to Bosserman Upgrade	Base w/ Bosserman Upgrade	Upgrade Michigan City - Trail Creek	Upgrade Michigan City - Trail Creek and MI City - Bosserman
Michigan City – LaPorte 138 kV	\$ 62,522,584			
Dune Acres - Michigan City 138 kV	\$ 19,468,556	\$ 33,434,431	\$ 38,622,498	\$ 50,874,357
Michigan City - Trail Creek 138 kV		\$ 46,644,260		
Michigan City – Bosserman 138 kV		\$ 4,398,799	\$ 31,188,060	
Bosserman - Trail Creek 138 kV				\$ 11,309,677
Total Congestion	\$ 81,991,140	\$ 84,477,490	\$ 69,810,558	\$ 62,184,033

- Bosserman upgrade
 - Shifts congestion from MI City – LaPorte to MI City – Trail Creek
- MI City – Trail Creek upgraded
 - shifts congestion back to MI City - Bosserman
- Shift in congestion to Trail Creek – Bosserman matches observed conditions this summer
- No DA or RT congestion has been observed on Dune Acres – Michigan City this year.
- Continue to consider role for quick hit type upgrades on both:
 - Michigan City – Bosserman
 - this is the same line that used to connect at LaPorte. A re-sag project has previously been identified
 - Michigan City - Trail Creek

Michigan Interface Study Update

- Study Objectives
 - Evaluate how future configuration & interconnection changes impact congestion (Covert, etc.)
 - Identify potential retirement impacts
 - Develop and evaluate solutions as required
- Study Approach similar to Quick Hit Analysis
- Study timeline: second half of 2015
- Models
 - Joint reliability model – Shoulder Light Load 2015
 - Regional models for market efficiency - 2015



Power flow

- 2015 light load model has been developed by PJM and MISO
- Light load powerflows have been merged
- Working on specific dispatch required for PJM generation deliverability analysis

Market Efficiency

- PJM has updated the 2014 quick hit study model, moved it to 2015
- PJM & MISO are coordinating on base case changes to the model based on past benchmarking experience

- September – development of powerflow & PROMOD models
- October – Generation Deliverability and baseline reliability analysis, benchmarking and comparison of ProMod models
- November – Identification of issues, drivers, and potential solutions
- December – Evaluation of potential solutions

Quad Cities Study Update

- Main driver: 345 kV outages near Quad Cities, IA
 - Summer Peak and high South to North flows across Eastern IA
 - N-1-1 contingencies can overload 345 and 161 kV lines
 - 10 year out models show overloads for N-1
- Study Objectives:
 - Jointly evaluate reliability drivers
 - Limiting elements and affected generators shared between MISO and PJM
 - Determine whether projects can economically complement or replace proposed projects
 - 3 projects in Quad Cities targeted for Appendix B in MTEP15 (P8842-4)
 - Consider potential for interregional solutions
- Schedule: second half of 2015, time permitting
- Models, Analysis, IPSAC process parallels Michigan Interface analysis
- Reliability and Market Efficiency analysis as appropriate

- 2020 summer peak powerflow with updated data from PJM and MISO has been merged
- Next steps
 - Verify high Summer Peak South to North flows in Eastern Iowa
 - Perform joint reliability analysis to look for issues
 - Replicate issues seen in MTEP that have proposed, not approved solutions

Process, Metrics, & Timeline

- Outline a plan for next 2-year JOA planning cycle
- Key Activities
 - Exchange modeling information
 - Review identified transmission issues and plans
 - Determine need for Coordinated System Plan study
 - Determine scope and schedule of planning activities
- Determine process and metric changes needed to implement 2-year plan

- **November 2015 – January 2016:** Annual evaluation of transmission issues (includes reliability and congestion) and plans with stakeholder input
- **March 1, 2016:** Exchange as-is and 5-year power flows (2016, 2021)
- **May 2016:** Review 2014, 2015 M2M issues, limiting elements and quick hit upgrades
- **June 15, 2016:** Exchange initial regional economic PROMOD models
- **June 2016 – August 2016:** Stakeholder review of models and issues
- **October 31, 2016:** Final regional economic models & regional issues update

- **November 2016 – February 2017:** Solicitation for regional and interregional projects
 - PJM: long term reliability and market efficiency project proposal window open Nov. – Feb.
 - MISO: reliability project submission Sept. – Dec., economic project submission Jan.
- This schedule overlays both the RTEP and MTEP regional cycles (see meeting materials)
- **November 2016 – March 2017:** Joint model development and stakeholder input
- **April 1, 2017:** Regional Economic models refresh
- **2nd & 3rd Quarters 2017:** As needed: project evaluations
- **December 2017:** Potential Regional Board approvals

- 'Quick Hit', determine the approval process and cost splitting methods
- Consider potential revisions to joint interregional economic evaluations (*non-exclusive list of options for discussion*)
- Guideline: consistency with approved Order 1000 enhancements
- Consider purpose of the interregional economic evaluations
 - Interregional analysis only to split cost; regional approvals needed for interregional projects
 - Will eliminating \$20M and voltage thresholds sufficiently mitigate unnecessary hurdles to interregional projects?

- Other economic assumption to consider
 - Number and scope of analyses
 - Single reference future/scenario only
 - Evaluate project benefits in a year 0, 5 and 10 simulation; no extrapolation or interpolation
 - New/Revised evaluation metrics
 - Limit B/C screening use to recommend projects for further study in regional process
 - Or, replace B/C with project costs roughly commensurate with combined RTO congestion relief

- New/Revised evaluation metrics (continued)
 - Identify specific interregional binding constraints eligible for upgrade proposals
 - Require proposals to specify specific binding constraint relief
 - Add evaluation metrics
 - such as split of PJM and MISO net relief of binding constraint congestion, directly attributable to the transmission upgrade.
 - Project Costs roughly commensurate with combined RTO congestion relief

Metric and Model Testing

- PJM is working inform the discussion by investigating the current metric calculations
- Some questions that may be beneficial to explore include:
 - How do multi-party transactions (both between PJM & MISO, and with other pools) impact the benefit metric?
 - How do APC and NLP work together? Is 70/30 a reasonable split?
 - How does the process for interpolating between and extrapolating beyond the three modeled years impact the benefit calculations?

Open Discussion

- Please provide written comments and responses regarding today's discussion by October 9.
- Feedback will be posted with meeting materials for the next IPSAC meeting and RTO responses will be provided

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