

Impact of MISO DPP-2014-February

Generators on PJM Facilities

1. MISO generators studied:

| Project Number | POI | Max Output | Fuel Type |
|----------------|---|------------|-----------|
| J246 | Nelson Road - Goss 345 kV | 7 | Wind |
| J293 | Fox River 345 kV substation | 475 | Gas |
| J303 | NSP's 69kV Hadley Substation | 20 | Solar |
| J309 | NSP's 69kV Minnesota Valley-Yellow Medicine | 20 | Solar |

2. Summer Peak analysis

- Model used – PJM Z1 2017SP with the above MISO generators and previous MISO DPP generators added
- Contingencies used – All PJM category B and C contingencies
- Monitored areas – All PJM areas
- Analysis type – Generation Deliverability
- All generators were scaled to their respective capacity portions for base case and category B events
- All generators were scaled to their respective total capabilities for category C events
- Results :

| Overloaded Element | Area | Rating | Cont Label | Cont Type | Initial AC % | J293 | Impact (MW) |
|---------------------------|------|--------|------------------|-----------|--------------|--------|-------------|
| ZIONE;RP - ZION ; R 345kV | 222 | 1341 | '345-L2221__R-N' | single | 99.76 | 104.23 | 62.55 |

The Zion;RP – Zion;R 345kV overload is driven by MISO project J293 which contributes approximately 62.55MW. J293 will be responsible for the full cost of the upgrade as there were no other contributors to the overload.

Proposed upgrade:

Zion;RP – Zion;R upgrade: Mitigate the sag limitations on the conductor and upgrade 345kV CB 1-2 at TSS 974 Zion EC. Estimated Cost (2014 Dollars): **\$3.2M**. Estimated time to complete 18-24 months

3. Light Load analysis

- a. Model used – PJM Z1 2016LL with the J246, J303, J309 generators and higher queued MISO DPP generators (wind, coal, and nuclear) added to the model
- b. Contingencies used – All PJM category B and C contingencies
- c. Monitored areas – All PJM areas
- d. Analysis type – Generation Deliverability
 - a. All wind generators were scaled to 80% of their respective total capabilities for base case, category B, and category C events
 - b. The coal generator was scaled to 45% of its respective total capabilities for base case, category B, and category C events
- e. Results – **No overloads were identified**