Generation Interconnection
Feasibility Study Report

For

PJM Generation Interconnection Request Queue
Position AB2-096

Silver Lake—Cherry Valley

August 2016

Network Impacts

The Queue Project AB2-096 was evaluated as a 350.0 MW (Capacity 350.0 MW) injection at the Garden Prairie 345kV substation in the ComEd area. Project AB2-096 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AB2-096 was studied with a commercial probability of 53%. Potential network impacts were as follows:

Summer Peak Analysis - 2020

Generator Deliverability

(Single or N-1 contingencies for the Capacity portion only of the interconnection)

1. (CE - CE) The GARDEN PR; R-SILVER LK; R 345 kV line (from bus 270759 to bus 270883 ckt 1) loads from 97.58% to 111.01% (**DC power flow**) of its normal rating (1201 MVA) for non-contingency condition. This project contributes approximately 161.34 MW to the thermal violation.

Multiple Facility Contingency

(Double Circuit Tower Line, Fault with a Stuck Breaker, and Bus Fault contingencies for the full energy output)

1. (AEP - AEP) The X2-052 TAP-05DUMONT 345 kV line (from bus 247610 to bus 243219 ckt 2) loads from 99.79% to 100.64% (**DC power flow**) of its emergency rating (1409 MVA) for the line fault with failed breaker contingency outage of '112-65-BT4-5__'. This project contributes approximately 26.53 MW to the thermal violation.

```
CONTINGENCY '112-65-BT4-5__'
 TRIP BRANCH FROM BUS 270644 TO BUS 243206 CKT 1          / WILTO; 765 05DUMONT 765
 TRIP BRANCH FROM BUS 275233 TO BUS 270644 CKT 1          / WILTO;4M 345 WILTO; 765
 TRIP BRANCH FROM BUS 275233 TO BUS 270927 CKT 1          / WILTO;4M 345 WILTO; R 345
 TRIP BRANCH FROM BUS 275233 TO BUS 275333 CKT 1          / WILTO;4M 345 WILTO;4C 33
 END
```

2. (AEP - AEP) The X2-052 TAP-05DUMONT 345 kV line (from bus 247610 to bus 243219 ckt 2) loads from 99.78% to 100.63% (**DC power flow**) of its emergency rating (1409 MVA) for the line fault with failed breaker contingency outage of '112-65-BT3-4__'. This project contributes approximately 26.53 MW to the thermal violation.

```
CONTINGENCY '112-65-BT3-4__'
 TRIP BRANCH FROM BUS 270644 TO BUS 243206 CKT 1          / WILTO; 765 05DUMONT 765
 TRIP BRANCH FROM BUS 275232 TO BUS 270644 CKT 1          / WILTO;3M 345 WILTO; 765
 TRIP BRANCH FROM BUS 275232 TO BUS 270926 CKT 1          / WILTO;3M 345 WILTO; B 345
 TRIP BRANCH FROM BUS 275232 TO BUS 275332 CKT 1          / WILTO;3M 345 WILTO;3C 33
 END
```

Contribution to Previously Identified Overloads

(This project contributes to the following contingency overloads, i.e. "Network Impacts", identified for earlier generation or transmission interconnection projects in the PJM Queue)

1. (AEP - OVEC) The 05JEFRSO-06CLIFTY 345 kV line (from bus 242865 to bus 248000 ckt Z1) loads from 104.04% to 104.42% (**DC power flow**) of its normal rating (1756 MVA) for the single line contingency outage of '8649_B2_TOR546'. This project contributes approximately 35.61 MW to the thermal violation.

```
CONTINGENCY '8649_B2_TOR546'
 OPEN BRANCH FROM BUS 242924 TO BUS 243208 CKT 1          / 242924 05HANG R 765 243208 05JEFRSO 765 1
 END
```

2. (AEP - AEP) The X2-052 TAP-05DUMONT 345 kV line (from bus 247610 to bus 243219 ckt 2) loads from 110.69% to 111.47% (**DC power flow**) of its emergency rating (1409 MVA) for the line fault with failed breaker contingency outage of '2978_C2_05DUMONT 765-B_A'. This project contributes approximately 24.65 MW to the thermal violation.

```
CONTINGENCY '2978_C2_05DUMONT 765-B_A'
 OPEN BRANCH FROM BUS 243206 TO BUS 920251 CKT 1          / 243206 05DUMONT 765 920251 X1-020 TAP 765 1
 OPEN BRANCH FROM BUS 243206 TO BUS 270644 CKT 1          / 243206 05DUMONT 765 270644 WILTON ; 765 1
 END
```

3. (MISO NIPS - CE) The 17STJOHN-ST JOHN ; T 345 kV line (from bus 255112 to bus 270886 ckt 1) loads from 101.15% to 101.79% (**DC power flow**) of its emergency rating (1091 MVA) for the line fault with failed breaker contingency outage of '2978_C2_05DUMONT 765-B_A'. This project contributes approximately 31.78 MW to the thermal violation.

```
CONTINGENCY '2978_C2_05DUMONT 765-B_A'
 OPEN BRANCH FROM BUS 243206 TO BUS 920251 CKT 1          / 243206 05DUMONT 765 920251 X1-020 TAP 765 1
 OPEN BRANCH FROM BUS 243206 TO BUS 270644 CKT 1          / 243206 05DUMONT 765 270644 WILTON ; 765 1
 END
```

4. (MISO NIPS - CE) The 17STJOHN-ST JOHN ; T 345 kV line (from bus 255112 to bus 270886 ckt 1) loads from 100.89% to 101.53% (**DC power flow**) of its emergency rating (1091 MVA) for the line fault with failed breaker contingency outage of '112-65-BT4-5__'. This project contributes approximately 32.02 MW to the thermal violation.

```
CONTINGENCY '112-65-BT4-5__'
 TRIP BRANCH FROM BUS 270644 TO BUS 243206 CKT 1          / WILTO; 765 05DUMONT 765
 TRIP BRANCH FROM BUS 275233 TO BUS 270644 CKT 1          / WILTO;4M 345 WILTO; 765
 TRIP BRANCH FROM BUS 275233 TO BUS 270927 CKT 1          / WILTO;4M 345 WILTO; R 345
 TRIP BRANCH FROM BUS 275233 TO BUS 275333 CKT 1          / WILTO;4M 345 WILTO;4C 33
 END
```

5. (MISO NIPS - CE) The 17STJOHN-ST JOHN ; T 345 kV line (from bus 255112 to bus 270886 ckt 1) loads from 100.86% to 101.49% (**DC power flow**) of its emergency rating (1091 MVA) for the line fault with failed breaker contingency outage of '112-65-BT3-4__'. This project contributes approximately 32.02 MW to the thermal violation.

```
CONTINGENCY '112-65-BT3-4__'
 TRIP BRANCH FROM BUS 270644 TO BUS 243206 CKT 1          / WILTO; 765 05DUMONT 765
 TRIP BRANCH FROM BUS 275232 TO BUS 270644 CKT 1          / WILTO;3M 345 WILTO; 765
 TRIP BRANCH FROM BUS 275232 TO BUS 270926 CKT 1          / WILTO;3M 345 WILTO; B 345
 TRIP BRANCH FROM BUS 275232 TO BUS 275332 CKT 1          / WILTO;3M 345 WILTO;3C 33
 END
```

6. (MISO NIPS - AEP) The 17STILLWELL-05DUMONT 345 kV line (from bus 255113 to bus 243219 ckt 1) loads from 128.66% to 130.18% (**DC power flow**) of its emergency rating (1409 MVA) for the line fault with failed breaker contingency outage of '2978_C2_05DUMONT 765-B_A'. This project contributes approximately 49.51 MW to the thermal violation.

```
CONTINGENCY '2978_C2_05DUMONT 765-B_A'
 OPEN BRANCH FROM BUS 243206 TO BUS 920251 CKT 1          / 243206 05DUMONT 765 920251 X1-020 TAP 765 1
 OPEN BRANCH FROM BUS 243206 TO BUS 270644 CKT 1          / 243206 05DUMONT 765 270644 WILTON ; 765 1
 END
```

7. (CE - MISO NIPS) The BURNHAM ;0R-17MUNSTER 345 kV line (from bus 270677 to bus 255109 ckt 1) loads from 120.18% to 121.62% (**DC power flow**) of its emergency rating (1195 MVA) for the line fault with failed breaker contingency outage of '2978_C2_05DUMONT 765-B_A'. This project contributes approximately 41.48 MW to the thermal violation.

```
CONTINGENCY '2978_C2_05DUMONT 765-B_A'
 OPEN BRANCH FROM BUS 243206 TO BUS 920251 CKT 1          / 243206 05DUMONT 765 920251 X1-020 TAP 765 1
 OPEN BRANCH FROM BUS 243206 TO BUS 270644 CKT 1          / 243206 05DUMONT 765 270644 WILTON ; 765 1
 END
```

8. (CE - CE) The GARDEN PR; R-SILVER LK; R 345 kV line (from bus 270759 to bus 270883 ckt 1) loads from 116.55% to 128.38% (**DC power flow**) of its emergency rating (1479 MVA) for the single line contingency outage of '345-L0626__B-R_B'. This project contributes approximately 174.96 MW to the thermal violation.

```
CONTINGENCY '345-L0626__B-R_B'
 TRIP BRANCH FROM BUS 923001 TO BUS 270916 CKT 1          / AB1-089 TAP WAYNE ; B 345
 END
```

9. (CE - CE) The GARDEN PR; R-SILVER LK; R 345 kV line (from bus 270759 to bus 270883 ckt 1) loads from 107.94% to 119.77% (**DC power flow**) of its emergency rating (1479 MVA) for the single line contingency outage of '345-L0626__B-R_A'. This project contributes approximately 174.96 MW to the thermal violation.

```
CONTINGENCY '345-L0626__B-R_A'
 TRIP BRANCH FROM BUS 270678 TO BUS 923001 CKT 1          / BYRON ; B 345 AB1-089 TAP
 END
```

10. (CE - MISO NIPS) The ST JOHN ; T-17GREEN_ACRE 345 kV line (from bus 270886 to bus 255104 ckt 1) loads from 101.14% to 101.78% (**DC power flow**) of its emergency rating

(1091 MVA) for the line fault with failed breaker contingency outage of '2978_C2_05DUMONT 765-B_A'. This project contributes approximately 31.78 MW to the thermal violation.

```
CONTINGENCY '2978_C2_05DUMONT 765-B_A'
 OPEN BRANCH FROM BUS 243206 TO BUS 920251 CKT 1          / 243206 05DUMONT 765 920251 X1-020 TAP 765 1
 OPEN BRANCH FROM BUS 243206 TO BUS 270644 CKT 1          / 243206 05DUMONT 765 270644 WILTON ; 765 1
 END
```

11. (CE - MISO NIPS) The ST JOHN ; T-17GREEN_ACRE 345 kV line (from bus 270886 to bus 255104 ckt 1) loads from 100.89% to 101.52% (**DC power flow**) of its emergency rating (1091 MVA) for the line fault with failed breaker contingency outage of '112-65-BT4-5__'. This project contributes approximately 32.02 MW to the thermal violation.

```
CONTINGENCY '112-65-BT4-5__'
 TRIP BRANCH FROM BUS 270644 TO BUS 243206 CKT 1          / WILTO; 765 05DUMONT 765
 TRIP BRANCH FROM BUS 275233 TO BUS 270644 CKT 1          / WILTO;4M 345 WILTO; 765
 TRIP BRANCH FROM BUS 275233 TO BUS 270927 CKT 1          / WILTO;4M 345 WILTO; R 345
 TRIP BRANCH FROM BUS 275233 TO BUS 275333 CKT 1          / WILTO;4M 345 WILTO;4C 33
 END
```

12. (CE - MISO NIPS) The ST JOHN ; T-17GREEN_ACRE 345 kV line (from bus 270886 to bus 255104 ckt 1) loads from 100.85% to 101.48% (**DC power flow**) of its emergency rating (1091 MVA) for the line fault with failed breaker contingency outage of '112-65-BT3-4__'. This project contributes approximately 32.02 MW to the thermal violation.

```
CONTINGENCY '112-65-BT3-4__'
 TRIP BRANCH FROM BUS 270644 TO BUS 243206 CKT 1          / WILTO; 765 05DUMONT 765
 TRIP BRANCH FROM BUS 275232 TO BUS 270644 CKT 1          / WILTO;3M 345 WILTO; 765
 TRIP BRANCH FROM BUS 275232 TO BUS 270926 CKT 1          / WILTO;3M 345 WILTO; B 345
 TRIP BRANCH FROM BUS 275232 TO BUS 275332 CKT 1          / WILTO;3M 345 WILTO;3C 33
 END
```

13. (CE - CE) The WAYNE ; B-TOLLWAY ; B 345 kV line (from bus 270916 to bus 270900 ckt 1) loads from 130.69% to 131.65% (**DC power flow**) of its emergency rating (1367 MVA) for the line fault with failed breaker contingency outage of '144-45-BT6-7__'. This project contributes approximately 28.98 MW to the thermal violation.

```
CONTINGENCY '144-45-BT6-7__'                    / CONTINGENCY # 554
 TRIP BRANCH FROM BUS 270730 TO BUS 270916 CKT 1          / ELEC JUNC; B 345 WAYNE ; B 345
 TRIP BRANCH FROM BUS 270916 TO BUS 270917 CKT 1          / WAYNE ; B 345 WAYNE ; R 345
 DISCONNECT BUS 275228                          / WAYNE ;1M 138
 END
```

14. (CE - CE) The WAYNE ; B-TOLLWAY ; B 345 kV line (from bus 270916 to bus 270900 ckt 1) loads from 108.67% to 109.48% (**DC power flow**) of its emergency rating (1201 MVA) for the single line contingency outage of '345-L11126_B-N'. This project contributes approximately 21.62 MW to the thermal violation.

```
CONTINGENCY '345-L11126_B-N'
 TRIP BRANCH FROM BUS 270730 TO BUS 270916 CKT 1          / ELEC JUNC; B 345 WAYNE ; B 345
 TRIP BRANCH FROM BUS 270916 TO BUS 270917 CKT 1          / WAYNE ; B 345 WAYNE ; R 345
 END
```

15. (CE - CE) The WILTON ; B-WILTON ;3M 345 kV line (from bus 270926 to bus 275232 ckt 1) loads from 129.7% to 130.21% (**DC power flow**) of its emergency rating (1601 MVA) for the line fault with failed breaker contingency outage of '112-65-BT5-6__'. This project contributes approximately 49.78 MW to the thermal violation.

```
CONTINGENCY '112-65-BT5-6__'
 TRIP BRANCH FROM BUS 270644 TO BUS 270607 CKT 1          / WILTO; 765 COLLI; 765
 TRIP BRANCH FROM BUS 275233 TO BUS 270644 CKT 1          / WILTO;4M 345 WILTO; 765
 TRIP BRANCH FROM BUS 275233 TO BUS 270927 CKT 1          / WILTO;4M 345 WILTO; R 345
 TRIP BRANCH FROM BUS 275233 TO BUS 275333 CKT 1          / WILTO;4M 345 WILTO;4C 33
 END
```

16. (CE - CE) The WILTON ; R-WILTON ;4M 345 kV line (from bus 270927 to bus 275233 ckt 1) loads from 132.51% to 133.03% (**DC power flow**) of its emergency rating (1601 MVA) for the line fault with failed breaker contingency outage of '112-65-BT2-3__'. This project contributes approximately 50.84 MW to the thermal violation.

```
CONTINGENCY '112-65-BT2-3__'
 TRIP BRANCH FROM BUS 270644 TO BUS 270607 CKT 1          / WILTO; 765 COLLI; 765
 TRIP BRANCH FROM BUS 275232 TO BUS 270644 CKT 1          / WILTO;3M 345 WILTO; 765
 TRIP BRANCH FROM BUS 275232 TO BUS 270926 CKT 1          / WILTO;3M 345 WILTO; B 345
 TRIP BRANCH FROM BUS 275232 TO BUS 275332 CKT 1          / WILTO;3M 345 WILTO;3C 33
 END
```

17. (CE - MISO NIPS) The CRETE EC ;BP-17STJOHN 345 kV line (from bus 274750 to bus 255112 ckt 1) loads from 134.53% to 135.23% (**DC power flow**) of its emergency rating (1399 MVA) for the line fault with failed breaker contingency outage of '112-65-BT4-5__'. This project contributes approximately 44.85 MW to the thermal violation.

```
CONTINGENCY '112-65-BT4-5__'
 TRIP BRANCH FROM BUS 270644 TO BUS 243206 CKT 1          / WILTO; 765 05DUMONT 765
 TRIP BRANCH FROM BUS 275233 TO BUS 270644 CKT 1          / WILTO;4M 345 WILTO; 765
 TRIP BRANCH FROM BUS 275233 TO BUS 270927 CKT 1          / WILTO;4M 345 WILTO; R 345
 TRIP BRANCH FROM BUS 275233 TO BUS 275333 CKT 1          / WILTO;4M 345 WILTO;4C 33
 END
```

18. (CE - MISO NIPS) The CRETE EC ;BP-17STJOHN 345 kV line (from bus 274750 to bus 255112 ckt 1) loads from 134.47% to 135.16% (**DC power flow**) of its emergency rating (1399 MVA) for the line fault with failed breaker contingency outage of '112-65-BT3-4__'. This project contributes approximately 44.83 MW to the thermal violation.

```
CONTINGENCY '112-65-BT3-4__'
 TRIP BRANCH FROM BUS 270644 TO BUS 243206 CKT 1          / WILTO; 765 05DUMONT 765
 TRIP BRANCH FROM BUS 275232 TO BUS 270644 CKT 1          / WILTO;3M 345 WILTO; 765
 TRIP BRANCH FROM BUS 275232 TO BUS 270926 CKT 1          / WILTO;3M 345 WILTO; B 345
 TRIP BRANCH FROM BUS 275232 TO BUS 275332 CKT 1          / WILTO;3M 345 WILTO;3C 33
 END
```

19. (CE - MISO NIPS) The CRETE EC ;BP-17STJOHN 345 kV line (from bus 274750 to bus 255112 ckt 1) loads from 134.24% to 134.93% (**DC power flow**) of its emergency rating (1399 MVA) for the line fault with failed breaker contingency outage of '2978_C2_05DUMONT 765-B_A'. This project contributes approximately 44.56 MW to the thermal violation.

```
CONTINGENCY '2978_C2_05DUMONT 765-B_A'
 OPEN BRANCH FROM BUS 243206 TO BUS 920251 CKT 1          / 243206 05DUMONT 765 920251 X1-020 TAP 765 1
 OPEN BRANCH FROM BUS 243206 TO BUS 270644 CKT 1          / 243206 05DUMONT 765 270644 WILTON ; 765 1
 END
```

20. (CE - MISO NIPS) The CRETE EC ;BP-17STJOHN 345 kV line (from bus 274750 to bus 255112 ckt 1) loads from 109.88% to 111.32% (**DC power flow**) of its emergency rating (1399 MVA) for the single line contingency outage of '695_B2'. This project contributes approximately 44.72 MW to the thermal violation.

```
CONTINGENCY '695_B2'
 OPEN BRANCH FROM BUS 243206 TO BUS 270644 CKT 1          / 243206 05DUMONT 765 270644 WILTO; 765 1
 END
```

21. (CE - CE) The LEE CO EC;BP-NELSON ; B 345 kV line (from bus 274768 to bus 270828 ckt 1) loads from 118.51% to 123.81% (**DC power flow**) of its emergency rating (1479 MVA) for the single line contingency outage of '345-L0626__B-R_B'. This project contributes approximately 78.28 MW to the thermal violation.

```
CONTINGENCY '345-L0626__B-R_B'
 TRIP BRANCH FROM BUS 923001 TO BUS 270916 CKT 1          / AB1-089 TAP WAYNE ; B 345
 END
```

22. (CE - AEP) The UNIV PK N;RP-05OLIVE 345 kV line (from bus 274804 to bus 243229 ckt 1) loads from 119.35% to 120.96% (**DC power flow**) of its emergency rating (971 MVA) for the line fault with failed breaker contingency outage of '2978_C2_05DUMONT 765-B_A'. This project contributes approximately 34.82 MW to the thermal violation.

```
CONTINGENCY '2978_C2_05DUMONT 765-B_A'
 OPEN BRANCH FROM BUS 243206 TO BUS 920251 CKT 1          / 243206 05DUMONT 765 920251 X1-020 TAP 765 1
 OPEN BRANCH FROM BUS 243206 TO BUS 270644 CKT 1          / 243206 05DUMONT 765 270644 WILTON ; 765 1
 END
```

23. (CE - AEP) The UNIV PK N;RP-05OLIVE 345 kV line (from bus 274804 to bus 243229 ckt 1) loads from 118.58% to 120.2% (**DC power flow**) of its emergency rating (971 MVA) for the line fault with failed breaker contingency outage of '112-65-BT4-5__'. This project contributes approximately 35.09 MW to the thermal violation.

```
CONTINGENCY '112-65-BT4-5__'
 TRIP BRANCH FROM BUS 270644 TO BUS 243206 CKT 1          / WILTO; 765 05DUMONT 765
 TRIP BRANCH FROM BUS 275233 TO BUS 270644 CKT 1          / WILTO;4M 345 WILTO; 765
 TRIP BRANCH FROM BUS 275233 TO BUS 270927 CKT 1          / WILTO;4M 345 WILTO; R 345
 TRIP BRANCH FROM BUS 275233 TO BUS 275333 CKT 1          / WILTO;4M 345 WILTO;4C 33
```

```
END
```

24. (CE - AEP) The UNIV PK N;RP-05OLIVE 345 kV line (from bus 274804 to bus 243229 ckt 1) loads from 118.55% to 120.18% (**DC power flow**) of its emergency rating (971 MVA) for the line fault with failed breaker contingency outage of '112-65-BT3-4__'. This project contributes approximately 35.09 MW to the thermal violation.

```
CONTINGENCY '112-65-BT3-4__'
 TRIP BRANCH FROM BUS 270644 TO BUS 243206 CKT 1          / WILTO; 765 05DUMONT 765
 TRIP BRANCH FROM BUS 275232 TO BUS 270644 CKT 1          / WILTO;3M 345 WILTO; 765
 TRIP BRANCH FROM BUS 275232 TO BUS 270926 CKT 1          / WILTO;3M 345 WILTO; B 345
 TRIP BRANCH FROM BUS 275232 TO BUS 275332 CKT 1          / WILTO;3M 345 WILTO;3C 33
 END
```

25. (CE - AEP) The UNIV PK N;RP-05OLIVE 345 kV line (from bus 274804 to bus 243229 ckt 1) loads from 104.84% to 106.47% (**DC power flow**) of its normal rating (971 MVA) for the single line contingency outage of '695_B2'. This project contributes approximately 35.04 MW to the thermal violation.

```
CONTINGENCY '695_B2'
 OPEN BRANCH FROM BUS 243206 TO BUS 270644 CKT 1          / 243206 05DUMONT 765 270644 WILTO; 765 1
 END
```

26. (CE - CE) The WILTON ; 765/345 kV transformer (from bus 275232 to bus 270644 ckt 1) loads from 107.65% to 108.16% (**DC power flow**) of its emergency rating (1601 MVA) for the line fault with failed breaker contingency outage of '112-65-BT5-6__'. This project contributes approximately 49.78 MW to the thermal violation.

```
CONTINGENCY '112-65-BT5-6__'
 TRIP BRANCH FROM BUS 270644 TO BUS 270607 CKT 1          / WILTO; 765 COLLI; 765
 TRIP BRANCH FROM BUS 275233 TO BUS 270644 CKT 1          / WILTO;4M 345 WILTO; 765
 TRIP BRANCH FROM BUS 275233 TO BUS 270927 CKT 1          / WILTO;4M 345 WILTO; R 345
 TRIP BRANCH FROM BUS 275233 TO BUS 275333 CKT 1          / WILTO;4M 345 WILTO;4C 33
 END
```

27. (CE - CE) The WILTON ; 765/345 kV transformer (from bus 275233 to bus 270644 ckt 1) loads from 109.9% to 110.42% (**DC power flow**) of its emergency rating (1601 MVA) for the line fault with failed breaker contingency outage of '112-65-BT2-3__'. This project contributes approximately 50.84 MW to the thermal violation.

```
CONTINGENCY '112-65-BT2-3__'
 TRIP BRANCH FROM BUS 270644 TO BUS 270607 CKT 1          / WILTO; 765 COLLI; 765
 TRIP BRANCH FROM BUS 275232 TO BUS 270644 CKT 1          / WILTO;3M 345 WILTO; 765
 TRIP BRANCH FROM BUS 275232 TO BUS 270926 CKT 1          / WILTO;3M 345 WILTO; B 345
 TRIP BRANCH FROM BUS 275232 TO BUS 275332 CKT 1          / WILTO;3M 345 WILTO;3C 33
 END
```

28. (MISO AMIL - AEP) The 7CASEY-05SULLIVAN 345 kV line (from bus 346809 to bus 247712 ckt 1) loads from 111.32% to 111.99% (**DC power flow**) of its emergency rating (1466

MVA) for the line fault with failed breaker contingency outage of '3128_C2_05EUGENE 345-A2'. This project contributes approximately 21.98 MW to the thermal violation.

```
CONTINGENCY '3128_C2_05EUGENE 345-A2'
 OPEN BRANCH FROM BUS 243221 TO BUS 249504 CKT 1          / 243221 05EUGENE 345 249504 08CAYSUB 345 1
 OPEN BRANCH FROM BUS 243221 TO BUS 348885 CKT 1          / 243221 05EUGENE 345 348885 7BUNSONVILLE 345 1
 END
```

29. (CE - CE) The AB1-089 TAP-WAYNE ; B 345 kV line (from bus 923001 to bus 270916 ckt 1) loads from 124.09% to 128.6% (**DC power flow**) of its emergency rating (2058 MVA) for the single line contingency outage of '345-L97116__-R'. This project contributes approximately 92.73 MW to the thermal violation.

```
CONTINGENCY '345-L97116__-R'
 TRIP BRANCH FROM BUS 270759 TO BUS 270883 CKT 1          / U3-021 SILVE; R 345
 END
```

30. (CE - CE) The AB1-089 TAP-WAYNE ; B 345 kV line (from bus 923001 to bus 270916 ckt 1) loads from 125.04% to 126.19% (**DC power flow**) of its normal rating (1679 MVA) for non-contingency condition. This project contributes approximately 42.68 MW to the thermal violation.

31. (CE - CE) The AB1-089 TAP-WAYNE ; B 345 kV line (from bus 923001 to bus 270916 ckt 1) loads from 118.95% to 119.96% (**DC power flow**) of its emergency rating (2058 MVA) for the single line contingency outage of '345-L18402_B-R'. This project contributes approximately 46.19 MW to the thermal violation.

```
CONTINGENCY '345-L18402_B-R'
 TRIP BRANCH FROM BUS 270932 TO BUS 270730 CKT 1          / WALTO; B 345 ELECT; B 345
 END
```

Steady-State Voltage Requirements
(Results of the steady-state voltage studies should be inserted here)

To be determined

Short Circuit
(Summary of impacted circuit breakers)

No issues identified.

Affected System Analysis & Mitigation

MISO Impacts:

MISO Impacts to be determined during later study phases (as applicable).

Delivery of Energy Portion of Interconnection Request
PJM also studied the delivery of the energy portion of this interconnection request. Any problems identified below are likely to result in operational restrictions to the project under study. The developer can proceed with network upgrades to eliminate the operational restriction at their discretion by submitting a Merchant Transmission Interconnection request.
Only the most severely overloaded conditions are listed. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed, which will study all overload conditions associated with the overloaded element(s) identified.

Not Applicable

Light Load Analysis - 2020

Light Load Studies to be conducted during later study phases (as required by PJM Manual 14B).

System Reinforcements

Short Circuit
(Summary form of Cost allocation for breakers will be inserted here if any)

None.

Stability and Reactive Power Requirement
(Results of the dynamic studies should be inserted here)

To be determined

Summer Peak Load Flow Analysis Reinforcements

New System Reinforcements
(Upgrades required to mitigate reliability criteria violations, i.e. Network Impacts, initially caused by the addition of this project generation)

Generator Deliverability
(Single or N-1 contingencies for the Capacity portion only of the interconnection)

1. (CE - CE) The GARDEN PR; R-SILVER LK; R 345 kV line (from bus 270759 to bus 270883 ckt 1) loads from 97.58% to 111.01% (**DC power flow**) of its normal rating (1201 MVA) for non-contingency condition. This project contributes approximately 161.34 MW to the thermal violation.

Reinforcement: ComEd 345kV L SN rating is 1201 MVA. An upgrade is required. The upgrade will be to re-conductor approx. 40 miles of overhead conductor. The new ratings limit for the line upon field completion of the upgrade will be 1461/1656/1912 MVA, SN/SE/SLD.
Cost: $44.6M
Time: 24-30 months.

Multiple Facility Contingency
(Double Circuit Tower Line, Fault with a Stuck Breaker, and Bus Fault contingencies for the full energy output)

1. (AEP - AEP) The X2-052 TAP-05DUMONT 345 kV line (from bus 247610 to bus 243219 ckt 2) loads from 99.79% to 100.64% (**DC power flow**) of its emergency rating (1409 MVA) for the line fault with failed breaker contingency outage of '112-65-BT4-5__'. This project contributes approximately 26.53 MW to the thermal violation.

Reinforcement: A sag check was conducted for the ACSR ~ 954 ~ 45/7 ~ RAIL Conductor Section 1 to determine if the line section can be operated above its emergency rating of 1409 MVA. The study results indicated that the following upgrades are required: Replacement of tower 20 with a custom steel pole, and the removal of swing angle brackets on 2 structures. New ratings will be 1409/1868 MVA (SN/SE)
Cost: $1,077,451
Time: 6-12 months, sag study: 36-48 months, line rebuild.

2. (AEP - AEP) The X2-052 TAP-05DUMONT 345 kV line (from bus 247610 to bus 243219 ckt 2) loads from 99.78% to 100.63% (**DC power flow**) of its emergency rating (1409 MVA) for the line fault with failed breaker contingency outage of '112-65-BT3-4__'. This project contributes approximately 26.53 MW to the thermal violation.

Same as Multiple Facility #1

Contribution to Previously Identified System Reinforcements
(Overloads initially caused by prior Queue positions with additional contribution to overloading by this project. This project may have a % allocation cost responsibility which will be calculated and reported for the Impact Study)
(Summary form of Cost allocation for transmission lines and transformers will be inserted here if any)

1. (AEP - OVEC) The 05JEFRSO-06CLIFTY 345 kV line (from bus 242865 to bus 248000 ckt Z1) loads from 104.04% to 104.42% (**DC power flow**) of its normal rating (1756 MVA) for the single line contingency outage of '8649_B2_TOR546'. This project contributes approximately 35.61 MW to the thermal violation.

Reinforcement: Replace line riser at Clifty Creek. New ratings will be 2354/2354 MVA (SN/SE)
Cost: $100,000
Time: 12 months

OVEC will have to evaluate this violation during the SIS phase.

2. (AEP - AEP) The X2-052 TAP-05DUMONT 345 kV line (from bus 247610 to bus 243219 ckt 2) loads from 110.69% to 111.47% (**DC power flow**) of its emergency rating (1409 MVA) for the line fault with failed breaker contingency outage of '2978_C2_05DUMONT 765-B_A'. This project contributes approximately 24.65 MW to the thermal violation.

Reinforcement: A sag check was conducted for the ACSR ~ 954 ~ 45/7 ~ RAIL Conductor Section 1 to determine if the line section can be operated above its emergency rating of 1409 MVA. The study results indicated that the following upgrades are required: Replacement of tower 20 with a custom steel pole, and the removal of swing angle brackets on 2 structures. New ratings will be 1409/1868 MVA (SN/SE)
Cost: $1,077,451.
Time: 6-12 months, sag study: 36-48 months, line rebuild.

3. (MISO NIPS - CE) The 17STJOHN-ST JOHN ; T 345 kV line (from bus 255112 to bus 270886 ckt 1) loads from 101.15% to 101.79% (**DC power flow**) of its emergency rating (1091 MVA) for the line fault with failed breaker contingency outage of '2978_C2_05DUMONT 765-B_A'. This project contributes approximately 31.78 MW to the thermal violation.

NIPSCO (MISO) will have to evaluate this violation during the SIS phase

Comed: ComEd 345kV L6617 SLD rating is 1237MVA. No upgrade required.

4. (MISO NIPS - CE) The 17STJOHN-ST JOHN ; T 345 kV line (from bus 255112 to bus 270886 ckt 1) loads from 100.89% to 101.53% (**DC power flow**) of its emergency rating (1091 MVA) for the line fault with failed breaker contingency outage of '112-65-BT4-5__'. This project contributes approximately 32.02 MW to the thermal violation.

Same as Contribution to Previously Identified Overload #3

5. (MISO NIPS - CE) The 17STJOHN-ST JOHN ; T 345 kV line (from bus 255112 to bus 270886 ckt 1) loads from 100.86% to 101.49% (**DC power flow**) of its emergency rating (1091 MVA) for the line fault with failed breaker contingency outage of '112-65-BT3-4__'. This project contributes approximately 32.02 MW to the thermal violation.

Same as Contribution to Previously Identified Overload #3

6. (MISO NIPS - AEP) The 17STILLWELL-05DUMONT 345 kV line (from bus 255113 to bus 243219 ckt 1) loads from 128.66% to 130.18% (**DC power flow**) of its emergency rating (1409 MVA) for the line fault with failed breaker contingency outage of '2978_C2_05DUMONT 765-B_A'. This project contributes approximately 49.51 MW to the thermal violation.

NIPSCO (MISO) will have to evaluate this violation during the SIS phase.

AEP
Reinforcement: A sag check was conducted for the ACSR ~ 954 ~ 45/7 ~ RAIL Conductor Section 1 to determine if the line section can be operated above its emergency rating of 1409 MVA. The study results indicated that the following upgrades are required: Replacement of tower 20 with a custom steel pole, replacement of tower 24 with a custom H-frame and the removal of swing angle brackets on 2 structures. Estimated Cost: $1,613,008. Replace the Dumont Wavetrap (2500 A): Estimated cost: $300,000.

This is an AEP-NIPSCO tie line therefore, PJM is going to have to coordinate this upgrade with NIPSCO as well to make sure that their equipment will not set a limit lower than what is specified here. New ratings will be 1409/2045 MVA (SN/SE)
Cost: $1,913,008
Time: 12-24 months

7. (CE - MISO NIPS) The BURNHAM ;0R-17MUNSTER 345 kV line (from bus 270677 to bus 255109 ckt 1) loads from 120.18% to 121.62% (**DC power flow**) of its emergency rating (1195 MVA) for the line fault with failed breaker contingency outage of '2978_C2_05DUMONT 765-B_A'. This project contributes approximately 41.48 MW to the thermal violation.

Comed: ComEd 765kV L7703 SLD is 1768 MVA with an ALDR rating of 2033 MVA. No upgrade required. Note, the limit above is a NIPSCO tie line rating.

NIPSCO (MISO) will have to evaluate this violation during the SIS phase.

8. (CE - CE) The GARDEN PR; R-SILVER LK; R 345 kV line (from bus 270759 to bus 270883 ckt 1) loads from 116.55% to 128.38% (**DC power flow**) of its emergency rating (1479 MVA) for the single line contingency outage of '345-L0626__B-R_B'. This project contributes approximately 174.96 MW to the thermal violation.

Reinforcement: ComEd 345kV L15616 SSTE rating is 1568 MVA. Upgrades include re-conductor of L15616 and L15616 station conductor upgrades at both station terminals. Upon completion of upgrade, the ratings will be 1448/1863/1975/2232 MVA, SN/SE/SSTE/SLD.
Cost: $45.2M
Time: 24-30 months

9. (CE - CE) The GARDEN PR; R-SILVER LK; R 345 kV line (from bus 270759 to bus 270883 ckt 1) loads from 107.94% to 119.77% (**DC power flow**) of its emergency rating (1479 MVA) for the single line contingency outage of '345-L0626__B-R_A'. This project contributes approximately 174.96 MW to the thermal violation.

Same as Contribution to Previously Identified Overload #8

10. (CE - MISO NIPS) The ST JOHN ; T-17GREEN_ACRE 345 kV line (from bus 270886 to bus 255104 ckt 1) loads from 101.14% to 101.78% (**DC power flow**) of its emergency rating (1091 MVA) for the line fault with failed breaker contingency outage of '2978_C2_05DUMONT 765-B_A'. This project contributes approximately 31.78 MW to the thermal violation.

Comed: ComEd 345kV L6617 SLD & ALDR ratings are 1237 & 1423 MVA respectively. No upgrade required.

NIPSCO (MISO) will have to evaluate this violation during the SIS phase.

11. (CE - MISO NIPS) The ST JOHN ; T-17GREEN_ACRE 345 kV line (from bus 270886 to bus 255104 ckt 1) loads from 100.89% to 101.52% (**DC power flow**) of its emergency rating (1091 MVA) for the line fault with failed breaker contingency outage of '112-65-BT4-5__'. This project contributes approximately 32.02 MW to the thermal violation.

Same as Contribution to Previously Identified Overload #10

12. (CE - MISO NIPS) The ST JOHN ; T-17GREEN_ACRE 345 kV line (from bus 270886 to bus 255104 ckt 1) loads from 100.85% to 101.48% (**DC power flow**) of its emergency rating (1091 MVA) for the line fault with failed breaker contingency outage of '112-65-BT3-4__'. This project contributes approximately 32.02 MW to the thermal violation.

Same as Contribution to Previously Identified Overload #10

13. (CE - CE) The WAYNE ; B-TOLLWAY ; B 345 kV line (from bus 270916 to bus 270900 ckt 1) loads from 130.69% to 131.65% (**DC power flow**) of its emergency rating (1367 MVA) for the line fault with failed breaker contingency outage of '144-45-BT6-7__'. This project contributes approximately 28.98 MW to the thermal violation.

Reinforcement: ComEd 345kV L14402 SLD & ALDR ratings of 1367 MVA & 1572 MVA respectively apply. The post contingency flow for this event exceeds the ALDR requiring an upgrade. Mitigation of line sag for ~5.6 miles will be required. Upon completion the SLD and ALDR ratings will be 1768 MVA & 2033 MVA respectively.
Cost: $2.4M
Time: 18-24 months.

14. (CE - CE) The WAYNE ; B-TOLLWAY ; B 345 kV line (from bus 270916 to bus 270900 ckt 1) loads from 108.67% to 109.48% (**DC power flow**) of its emergency rating (1201 MVA) for the single line contingency outage of '345-L11126_B-N'. This project contributes approximately 21.62 MW to the thermal violation.

Reinforcement: ComEd 345kV L14402 SSTE rating of 1251 applies. The post contingency flow for this event exceeds the rating. The rating limit is due to a sag limitation. To mitigate the sag

limit, re-tension ~ 5.5 miles of overhead conductor. Upon completion of this upgrade the new SSTE rating will be 1391 MVA.
Cost: $2.4M
Time: 18-24 months.

15. (CE - CE) The WILTON ; B-WILTON ;3M 345 kV line (from bus 270926 to bus 275232 ckt 1) loads from 129.7% to 130.21% (**DC power flow**) of its emergency rating (1601 MVA) for the line fault with failed breaker contingency outage of '112-65-BT5-6__'. This project contributes approximately 49.78 MW to the thermal violation.

Reinforcement: ComEd Tr. 93 SLD is 1601 MVA with an ALDR rating of 1841 MVA. The post contingency flow for this event is exceeds the ALDR rating. The upgrade will be to build out the 765kV ring bus at Wilton Center, installation of two 765 kV Bus Tie Circuit Breakers (BT 6-8 & 8-2) along with a relocation of 765kV L11216 from bus 6 to bus 8. Preliminary estimate for upgrade is $8M with an estimated construction time line of 24 months. Note, the rating for Tr. 93 at Wilton Center will remain current however with this upgrade the 112-65-BT5-6 contingency file will no longer include the Wilton Center Tr. 94 and will allow both transformers to remain in service eliminating the overload.
Cost: $8M
Time: 24 months.

16. (CE - CE) The WILTON ; R-WILTON ;4M 345 kV line (from bus 270927 to bus 275233 ckt 1) loads from 132.51% to 133.03% (**DC power flow**) of its emergency rating (1601 MVA) for the line fault with failed breaker contingency outage of '112-65-BT2-3__'. This project contributes approximately 50.84 MW to the thermal violation.

Reinforcement: - ComEd Tr. 94 SLD is 1601 MVA with an ALDR rating of 1841 MVA. The post contingency flow for this event is exceeds the ALDR rating. The proposed upgrade will be to install a third transformer at Wilton Center. Upgrades include expansion on the 765kV & 345kV buses at Wilton Center. Upon completion of this upgrade the third transformer will have the proposed ratings, 1200/1379/1601 MVA, SN/SE/SLD respectively.
Cost: $15.2M.
Time: 24-30 months

17. (CE - MISO NIPS) The CRETE EC ;BP-17STJOHN 345 kV line (from bus 274750 to bus 255112 ckt 1) loads from 134.53% to 135.23% (**DC power flow**) of its emergency rating (1399 MVA) for the line fault with failed breaker contingency outage of '112-65-BT4-5__'. This project contributes approximately 44.85 MW to the thermal violation.

Comed: ComEd 345kV L94507 SLD is 1674 MVA and the ALDR is 1925 MVA. The post contingency flow for this event is less than the ALDR rating. No upgrade is required.

NIPSCO (MISO) will have to evaluate this violation during the SIS phase.

18. (CE - MISO NIPS) The CRETE EC ;BP-17STJOHN 345 kV line (from bus 274750 to bus 255112 ckt 1) loads from 134.47% to 135.16% (**DC power flow**) of its emergency rating (1399 MVA) for the line fault with failed breaker contingency outage of '112-65-BT3-4__'. This project contributes approximately 44.83 MW to the thermal violation.

Comed: ComEd 345kV L94507 SLD is 1674 MVA and the ALDR is 1925 MVA. The post contingency flow for this event is less than the ALDR rating. No upgrade is required.

NIPSCO (MISO) will have to evaluate this violation during the SIS phase.

19. (CE - MISO NIPS) The CRETE EC ;BP-17STJOHN 345 kV line (from bus 274750 to bus 255112 ckt 1) loads from 134.24% to 134.93% (**DC power flow**) of its emergency rating (1399 MVA) for the line fault with failed breaker contingency outage of '2978_C2_05DUMONT 765-B_A'. This project contributes approximately 44.56 MW to the thermal violation.

Same as Contribution to Previously Identified Overload #18

20. (CE - MISO NIPS) The CRETE EC ;BP-17STJOHN 345 kV line (from bus 274750 to bus 255112 ckt 1) loads from 109.88% to 111.32% (**DC power flow**) of its emergency rating (1399 MVA) for the single line contingency outage of '695_B2'. This project contributes approximately 44.72 MW to the thermal violation.

Same as Contribution to Previously Identified Overload #18

21. (CE - CE) The LEE CO EC;BP-NELSON ; B 345 kV line (from bus 274768 to bus 270828 ckt 1) loads from 118.51% to 123.81% (**DC power flow**) of its emergency rating (1479 MVA) for the single line contingency outage of '345-L0626__B-R_B'. This project contributes approximately 78.28 MW to the thermal violation.

Reinforcement: ComEd 345kV L15501 SSTE is 1568 MVA. Post contingency flow for this event exceeds the SSTE rating. The upgrade will be to re-conductor ~ 12.0 miles of overhead conductor and upgrade an existing bus tie disconnect switch at Lee County. Upon completion of this upgrade the new SSTE rating will be 1837 MVA.
Cost: $13.4M
Time: 24-30 months

22. (CE - AEP) The UNIV PK N;RP-05OLIVE 345 kV line (from bus 274804 to bus 243229 ckt 1) loads from 119.35% to 120.96% (**DC power flow**) of its emergency rating (971 MVA) for the line fault with failed breaker contingency outage of '2978_C2_05DUMONT 765-B_A'. This project contributes approximately 34.82 MW to the thermal violation.

Comed: ComEd 345kV L97008 ALDR is 1423 MVA. No upgrades required.

AEP

Reinforcement: A sag check will be required for the ACSR/PE ~ 1414 ~ 62/19 ~ Conductor Section 1 to determine if the line section can be operated above its emergency rating of 971 MVA. The result could prove that no additional upgrades are necessary, that some upgrades on the circuit are necessary, or that the entire 40.61 mile section of line would need to be rebuilt. Estimated Cost for the Sag Study: $162,440. If deemed necessary to rebuild section of line, Estimated Cost: $81.2 Million. New ratings will be 1016/1304 MVA (SN/SE)

This is an AEP-ComEd tie line therefore, PJM is going to have to coordinate this upgrade with CE as well to make sure that their equipment will not set a limit lower than what is specified here.

This is an AEP-ComEd tie line therefore, PJM is going to have to coordinate this upgrade with CE as well to make sure that their equipment will not set a limit lower than what is specified here.
Cost: $83,362,440
Time: 6-12 months, sag study; 24-36 months, line rebuild

23. (CE - AEP) The UNIV PK N;RP-05OLIVE 345 kV line (from bus 274804 to bus 243229 ckt 1) loads from 118.58% to 120.2% (**DC power flow**) of its emergency rating (971 MVA) for the line fault with failed breaker contingency outage of '112-65-BT4-5__'. This project contributes approximately 35.09 MW to the thermal violation.

Same as Contribution to Previously Identified Overload #22

24. (CE - AEP) The UNIV PK N;RP-05OLIVE 345 kV line (from bus 274804 to bus 243229 ckt 1) loads from 118.55% to 120.18% (**DC power flow**) of its emergency rating (971 MVA) for the line fault with failed breaker contingency outage of '112-65-BT3-4__'. This project contributes approximately 35.09 MW to the thermal violation.

Same as Contribution to Previously Identified Overload #22

25. (CE - AEP) The UNIV PK N;RP-05OLIVE 345 kV line (from bus 274804 to bus 243229 ckt 1) loads from 104.84% to 106.47% (**DC power flow**) of its normal rating (971 MVA) for the single line contingency outage of '695_B2'. This project contributes approximately 35.04 MW to the thermal violation.

Same as Contribution to Previously Identified Overload #22

26. (CE - CE) The WILTON ; 765/345 kV transformer (from bus 275232 to bus 270644 ckt 1) loads from 107.65% to 108.16% (**DC power flow**) of its emergency rating (1601 MVA) for the line fault with failed breaker contingency outage of '112-65-BT5-6__'. This project contributes approximately 49.78 MW to the thermal violation.

Reinforcement: ComEd Tr. 93 SLD is 1601 MVA with an ALDR rating of 1841 MVA. The post contingency flow for this event is exceeds the ALDR rating. The proposed upgrade will be to

construct the 765kV bus at Wilton Center to the ultimate layout. Install 2-345kV Bus Tie Circuit Breakers (BT7-8 & 1-8). Relocate 765kV L11216 from 765kV Bus 6 to Bus 8..
Cost: $15.5M
Time: 30 months

27. (CE - CE) The WILTON ; 765/345 kV transformer (from bus 275233 to bus 270644 ckt 1) loads from 109.9% to 110.42% (**DC power flow**) of its emergency rating (1601 MVA) for the line fault with failed breaker contingency outage of '112-65-BT2-3__'. This project contributes approximately 50.84 MW to the thermal violation.

Reinforcement: ComEd Tr. 94 SLD is 1601 MVA with an ALDR rating of 1841 MVA. The post contingency flow for this event is exceeds the ALDR rating. The proposed upgrade will be to install a third transformer at Wilton Center. Upgrades include expansion on the 765kV & 345kV buses at Wilton Center.
Cost: $15.2M
Time: 24-30 months.

28. (MISO AMIL - AEP) The 7CASEY-05SULLIVAN 345 kV line (from bus 346809 to bus 247712 ckt 1) loads from 111.32% to 111.99% (**DC power flow**) of its emergency rating (1466 MVA) for the line fault with failed breaker contingency outage of '3128_C2_05EUGENE 345-A2'. This project contributes approximately 21.98 MW to the thermal violation.

AMIL (MISO) will have to evaluate this violation during the SIS phase.

AEP
No upgrades required.

29. (CE - CE) The AB1-089 TAP-WAYNE ; B 345 kV line (from bus 923001 to bus 270916 ckt 1) loads from 124.09% to 128.6% (**DC power flow**) of its emergency rating (2058 MVA) for the single line contingency outage of '345-L97116__-R'. This project contributes approximately 92.73 MW to the thermal violation.

Reinforcement: ComEd 345kV L0626 SSTE rating is 2107 MVA. The post contingency flow for this event exceeds the rating thereby requiring an upgrade. The upgrade will be to install a second 345kV line from Byron to Wayne. The new circuit will be built on the tower structures for L0626. A preliminary cost for this project will exceed $87M and will require engineering detailed studies for the impact at both terminals (Byron Station and Wayne Station). Upon completion of the upgrade the new line will have the following proposed ratings, 1679/2058//2107/2280 MVA, SN/SE/SSTE/SLD respectively.
Cost: $87M
Time: 30 months

30. (CE - CE) The AB1-089 TAP-WAYNE ; B 345 kV line (from bus 923001 to bus 270916 ckt 1) loads from 125.04% to 126.19% (**DC power flow**) of its normal rating (1679 MVA) for non-contingency condition. This project contributes approximately 42.68 MW to the thermal violation.

Reinforcement: ComEd 345kV L0626 SN rating is 1679 MVA. The post contingency flow for this event exceeds the rating thereby requiring an upgrade. The upgrade will be to install a second 345kV line from Byron to Wayne. The new circuit will be built on the tower structures for L0626. A preliminary cost for this project will exceed $87M and will require engineering detailed studies for the impact at both terminals (Byron Station and Wayne Station). The preliminary construction time line will be in excess of 30 months and subject to a detailed engineering review. Upon completion of the upgrade the new line will have the following proposed ratings, 1679/2058/2280 MVA, SN/SE/SLD respectively.
Cost: $87M
Time: 30 months

31. (CE - CE) The AB1-089 TAP-WAYNE ; B 345 kV line (from bus 923001 to bus 270916 ckt 1) loads from 118.95% to 119.96% (**DC power flow**) of its emergency rating (2058 MVA) for the single line contingency outage of '345-L18402_B-R'. This project contributes approximately 46.19 MW to the thermal violation.

Same as Contribution to Previously Identified Overload #30