

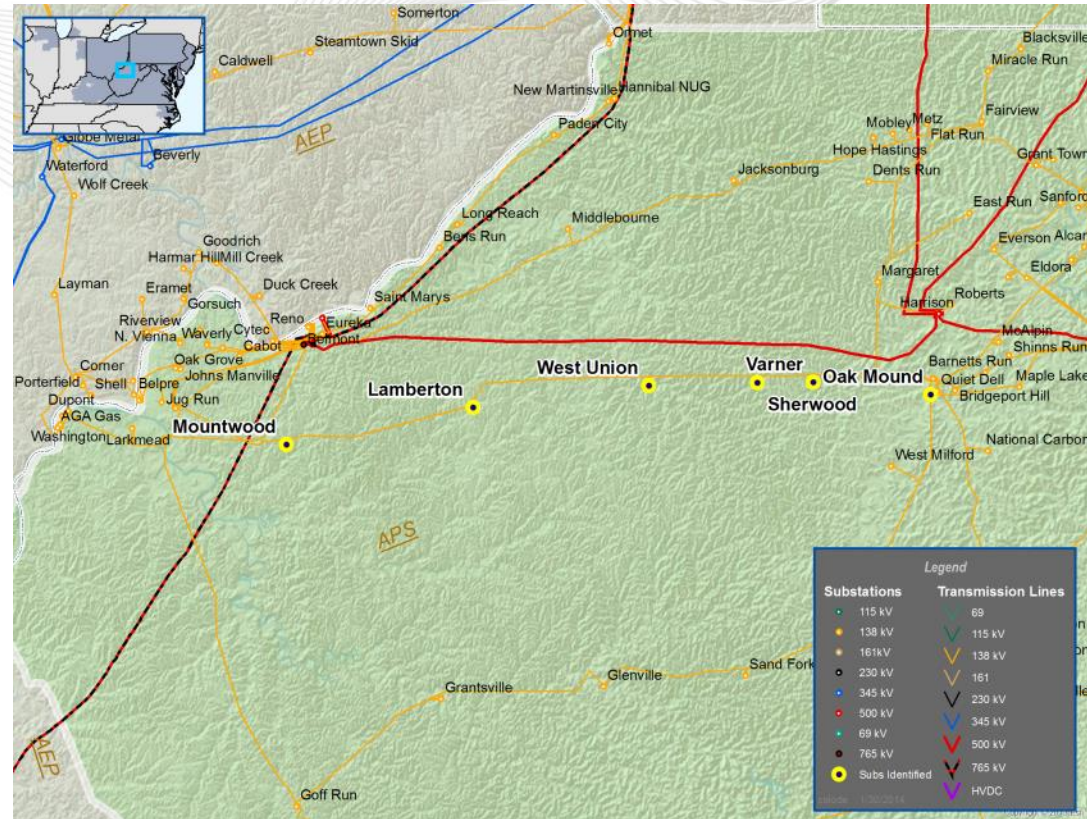


# PJM SRRTEP – West Reliability Analysis Update

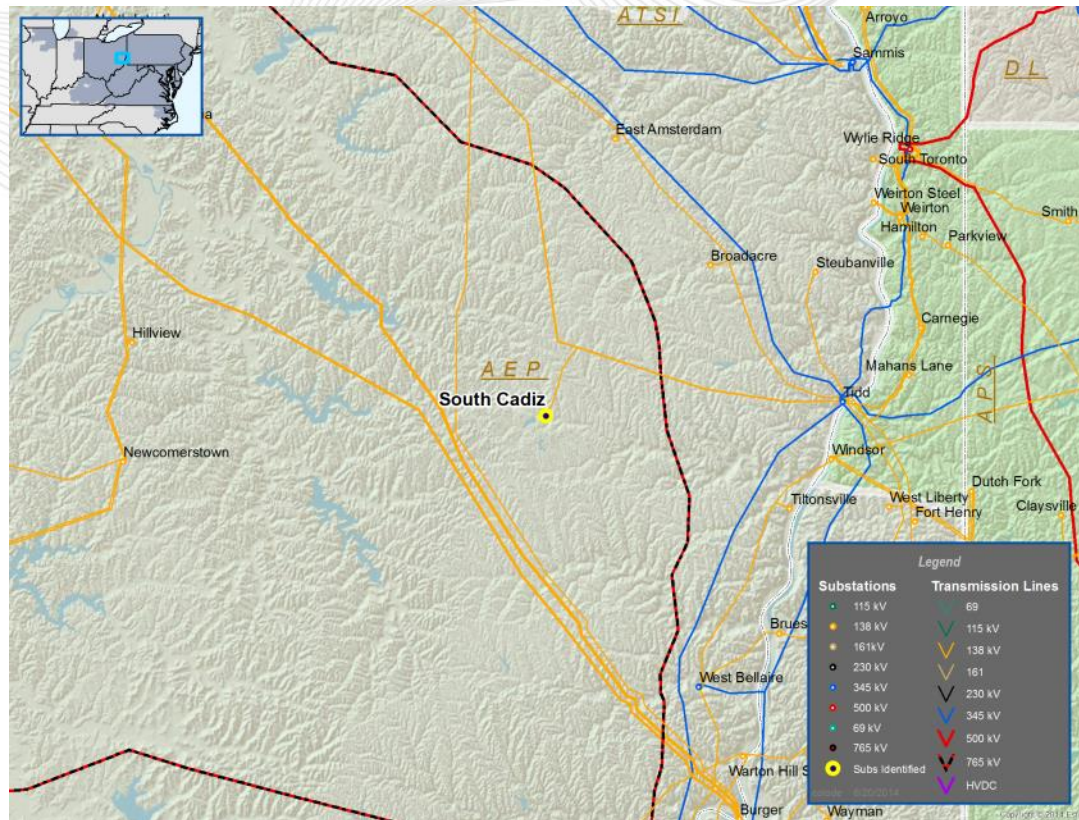
6/24/2014

- Baseline N-0 & N-1
- Generator Deliverability and Common Mode Outage
- Load Deliverability
- N-1-1
- TO Specific Criteria
- Next Steps
- Anticipated RTEP Proposal Window

- Driver: Block load addition in the APS zone
- Lead time: less than 24 months
- Low voltage and voltage drop violations at West Union, Varner, Mountwood, Lamberton, and Sherwood 138kV buses for various contingencies
- Construct a new line between Oak Mound 138kV Substation and Waldo Run 138kV Substation. (B2475)
- Estimated Project Cost: \$38M
- Projected IS Date: 12/31/2015

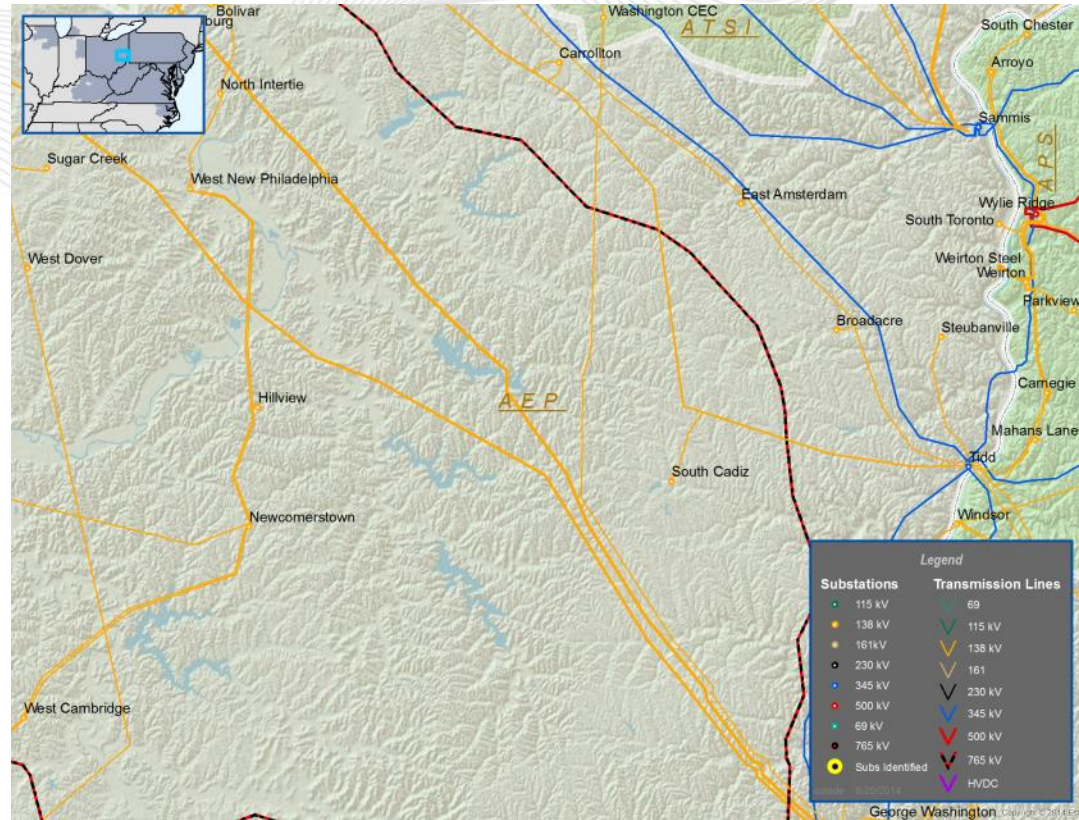


- **AEP Criteria Violation**
- Block load addition in the AEP zone
- The Stone Plant – South Cadiz 69KV line, the South Cadiz 138/69KV transformer and Gable – Tidd 138Kv circuit are overloaded in base case, plus there are numerous N-1 thermal violations
- Low Voltage violations at Freebyrd, South Cadiz and nearby 69KV vicinities for normal and N-1 conditions
- Construct a new 138 kV switching station Nottingham tapping 6-138 kV First Energy circuits (Holloway-Brookside, Holloway –Harmon (#1&#2), Holloway-Reeds, Holloway-New Stacy, Holloway-Cloverdale). Exit a 138 kV circuit from new station to Freebyrd station. Convert Freebyrd 69 kV to 138 kV. Rebuild/Convert Freebyrd-South Cadiz 69 kV circuit to 138 kV. Upgrade South Cadiz to 138 kV breaker and a half. (B2502)
- Estimated Project Cost: \$90M
- Required IS Date: 6/1/2014
- Projected IS Date: 12/1/2016



- **AEP Criteria Violation**

- Block load addition in the AEP zone
- The Desert – Bowerston 69KV line is overloaded in the basecase; The Leesville – Bowerston 69KV line and the E. Amsterdam – Miller 69KV line is overloaded for the loss of the Desert – Petersburg 69KV line; Low voltage violation at Azalee, Leesville and nearby 69Kv vicinity for the loss of the Desert – Petersburg 69KV line
- Construct a new 138/69 kV Yager station by tapping 2-138 kV First Energy circuits (Nottingham – Cloverdale, Nottingham -Harmon)
- Build a new 138 kV line to Azalea station.
- Close the 138 kV loop back into Yager 138KV by converting part of the local 69 kV facilities to 138 kV.
- Build 2 new 69 kV exits to reinforce area 69 kV facilities and upgrade conductor between Irish Run 69KV Switch and Bowerston 69kV Switch. (B2501)
- Estimated Project Cost: \$55M
- Required IS Date: 6/1/2014
- Projected IS Date: 12/1/2015



- Remediation from sag study includes:
  - Add / modify / replace structures
  - Conductor or line hardware
  - Grading of land
  - Third party clearance issue



# AEP Transmission Zone – Sag study

Baseline ID for original Sag study	New Sub-ID Number	Circuit	Line	Total Mitigation Costs	Projected In-Service Date	PJM Need Date	Adding / Modifying / Replacing Structures	Conductor or Line Hardware	Grading	Third Party Clearance Issues
B1037	B1037.1	Cloverdale - Reusens	Roanoke - Reusens	\$832,260	10/31/2014	6/1/2014	3	2	2	2
B1038	B1038.1	Crooksville - Muskingum River	Philo - Muskingum River	\$104,214	7/31/2014	6/1/2014	0	0	2	0
B1039	B1039.1	Hogan - Madison	Delaware - Madison	\$394,445	8/29/2014	6/1/2015	1	0	1	9
B1053	B1053.1	Claytor-Matt Funk	Roanoke - Claytor	\$423,121	5/29/2014	6/1/2014	1	2	3	2
B1053	B1053.2	Claytor-Matt Funk	Funk Loop	\$17,365	6/1/2014	6/1/2014	0	0	2	0
B1416	B1416.1	Deer Creek - Desoto	Deer Creek - Delaware	\$309,025	6/1/2015	6/1/2015	3	0	0	4
B1416	B1416.2	Deer Creek - Desoto	Desoto - Deer Creek - Delaware	\$1,537,370	6/1/2015	6/1/2015	13	4	0	0
B1424	B1424.1	Benton Harbor - Riverside	Riverside - Hartford	\$157,125	12/31/2014	6/1/2015	0	0	1	2
B1428	B1428.2	Beatty Road - Harrison (CSP)	Harrison - Beatty Road	\$155,032	12/31/2014	6/1/2015	7	3	1	2
B1434	B1434.1	Desoto - Madison	Medford - Desoto	\$103,625	6/1/2014	6/1/2014	0	3	0	0
B1434	B1434.2	Desoto - Madison	Medford Extension	\$53,277	5/30/2014	6/1/2014	0	0	0	1
B1434	B1434.3	Desoto - Madison	Delaware - Madison	\$146,000	6/30/2014	6/1/2014	1	0	0	3



# AEP Transmission Zone – Sag study

Baseline ID for original Sag study	New Sub-ID Number	Circuit	Line	Total Mitigation Costs	Projected In-Service Date	PJM Need Date	Adding / Modifying / Replacing Structures	Conductor or Line Hardware	Grading	Third Party Clearance Issues
B1448	B1448.1	Dexter Switch - Rutland	Philo - Rutland	\$484,566	5/30/2014	6/1/2014	1	2	1	0
B1451	B1451.1	North Newark - West Mount Vernon	North Newark - West Mount Vernon	\$1,239,778	6/1/2014	6/1/2015	9	0	2	5
B1454	B1454.1	Circleville -Scippo	Scioto Trail - Circleville	\$210,884	12/31/2014	6/1/2015	2	0	0	4
B1454	B1454.2	Delano - Kenworth - Ross	Clayburne - Kenworth	\$23,380	12/31/2014	6/1/2015	0	0	0	1
B1454	B1454.3	Delano - Kenworth - Ross	Ross-Delano	\$191,522	9/22/2014	6/1/2015	5	2	0	1
B1454	B1454.4	Scioto Trail - Scippo	Scioto Trail - Circleville	\$177,000	12/31/2014	6/1/2015	2	0	0	0
B1454	B1454.5	Delano - Scioto Trail	Delano - Scioto Trail	\$75,700	12/31/2015	6/1/2015	14	1	0	5
B1456	B1456.1	Kammer - Tidd	Muskingum River - Tidd	\$2,943,737	5/30/2014	12/31/2012*	3	5	0	2
B1477	B1477.1	Natrium - Paden City	Natrium - Monongahela	\$146,000	12/31/2014	12/31/2013*	1	0	0	0
B1480	B1480.1	Corner - Muskingum River	Wolf Creek - Corner	\$1,298,888	12/31/2014	6/1/2014	7	0	6	11
B1483	B1483.1	Clinch River - Garden Creek	Clinch River - Garden Creek	\$1,256,000	5/30/2014	6/1/2014	7	4	0	0





# AEP Transmission Zone – Sag study

Baseline ID for original Sag study	New Sub-ID Number	Circuit	Line	Total Mitigation Costs	Projected In-Service Date	PJM Need Date	Adding / Modifying / Replacing Structures	Conductor or Line Hardware	Grading	Third Party Clearance Issues
B1501	B1501.1	Moseley - Reusens	Roanoke - Reusens	Included in B1037.1	10/31/2014	6/1/2014	3	4	1	8
B1735	B1735.1	Adams - Allen	Jay - Lincoln	\$121,799	12/31/2014	6/1/2016	0	0	0	1
B1859	B1859.1	Hancock - Matt Funk No. 2	Hancock - Roanoke	\$50,283	6/30/2014	6/1/2016	0	0	0	3
B1863	B1863.1	Brues-Kammer - Tidd	Tidd - Weirton No. 1 (OP)	5/10/3263	12/31/2014	6/1/2015	1	0	3	1
B1863	B1863.2	Brues - Kammer - Tidd	Tidd - Natrium (WP)	Included in B1863.1	12/31/2014	6/1/2015	0	0	4	1
B1865	B1865.1	Gilboa - Kanawha	Carbondale - Kanawha River	\$814,725	7/10/2014	6/1/2014	4	0	1	0
B1866	B1866.1	Beaver Creek - Clinch River	Beaver Creek - Clinch River (KP)	\$1,148,431	9/30/2014	6/1/2015	3	1	1	0
B1866	B1866.2	Beaver Creek - Clinch River	Dorton Loop	\$893,000	6/5/2014	6/1/2015	5	2	0	0
B1866	B1866.3	Beaver Creek - Clinch River	Dorton - Fleming	\$515,800	6/30/2014	6/1/2015	3	0	0	0
B1866	B1866.4	Beaver Creek - Clinch River	Beaver Creek - Clinch River (AP)	\$865,155	6/30/2014	6/1/2015	2	0	0	1
B1866	B1866.5	Beaver Creek - Fremont	Beaver Creek - Clinch River (KP)	Included in B1866.1	9/30/2014	6/1/2016	3	1	1	0



# AEP Transmission Zone – Sag study

Baseline ID for original Sag study	New Sub-ID Number	Circuit	Line	Total Mitigation Costs	Projected In-Service Date	PJM Need Date	Adding / Modifying / Replacing Structures	Conductor or Line Hardware	Grading	Third Party Clearance Issues
B1866	B1866.6	Beaver Creek - Fremont	Beaver Creek - Clinch River (AP)	Included in B1866.4	6/30/2014	6/1/2016	1	0	0	1
B1866	B1866.7	Clinch River - Fremont	Beaver Creek - Clinch River (AP)	Included in B1866.4	6/30/2014	6/1/2016	1	0	0	1
B1867	B1867.1	Newcomerstown - South Coshocton	Newcomerstown - South Coshocton	\$976,300	12/1/2014	6/1/2016	7	0	3	0
B1871	B1871.2	Ohio Central - West Millersburg	South Coshocton - Wooster	\$519,633	7/31/2014	6/1/2015	0	0	2	2
B1879	B1879.1	Clinch River-Saltville No. 2	Clinch River - Abingdon	\$666,600	12/31/2014	6/1/2016	1	2	0	1
B1882	B1882.1	College Corner - Jay	College Corner - Randolph	\$362,025	12/31/2014	6/1/2016	6	0	4	7
B1882	B1882.2	College Corner - Jay	Randolph - Jay	Included in B1882.1	12/31/2014	6/1/2016	1	0	0	11
B1884	B1884.1	Deer Creek - Fisher Body - Mullin	Grant Extension	Included in B1949.3	6/30/2014	6/1/2016	0	0	0	0
B1901	B1901.1	Academia - Ohio Central	Philo - Howard	\$187,225	12/31/2014	6/1/2015	0	4	0	0
B1949	B1949.3	Deer Creek - Fisher Body - Mullin	Deer Creek - Grant - Kokomo	\$372,934	6/30/2014	6/1/2016	1	7	0	0
B1973	B1973.1	Sunnyside - Tidd	Windsor - Canton	\$433,608	12/31/2014	12/1/2014	1	0	2	9

Baseline ID for original Sag study	New Sub-ID Number	Circuit	Line	Total Mitigation Costs	Projected In-Service Date	PJM Need Date	Adding / Modifying / Replacing Structures	Conductor or Line Hardware	Grading	Third Party Clearance Issues
B1974	B1974.1	Philo Switch - South Canton	Bridgeville Extension	Included in B1974.2	12/1/2014	6/1/2015	0	0	0	1
B1974	B1974.2	Philo Switch - South Canton	Philo - Torrey	\$1,464,000	12/1/2014	6/1/2015	7	8	7	9
B2018	B2018.1	Bixby - Conesville	Conesville - Bixby	\$5,249,656	12/31/2014	6/1/2015	16	9	2	8
B2018	B2018.2	Bixby - Conesville	Bixby Corridor	Included in B2018.1	12/31/2014	6/1/2015	0	2	0	2
B2027	B2027.1	Collier - Tidd	Tidd - Collier (OP)	\$586,852	6/1/2015	6/1/2015	0	1	0	0
B2027	B2027.2	Collier - Tidd	Tidd - Collier (WP)	\$4,482,929	5/29/2014	6/1/2015	7	0	3	0
B2054	B2054.1	Rutland - Sporn	Rutland - Sporn	\$865,953	12/3/2014	6/1/2014	0	3	0	1
B2122	B2122.1	Howard - Brookside	Howard - Ashland	\$243,002	6/30/2014	6/1/2015	1	0	0	2
B1445	B1445.1	Gavin - North Proctorville	Thivener - Buckeye Co-Op	\$168,860	6/1/2015	6/1/2015	20	0	0	0



# AEP Transmission Zone – Sag study

Baseline ID for original Sag study	New Sub-ID Number	Circuit	Line	Total Mitigation Costs	Projected In-Service Date	Adding / Modifying / Replacing Structures	Conductor or Line Hardware	Grading	Third Party Clearance Issues
B1040	B1040.1	New Carlisle - Olive	Jackson Rd. - New Carlisle	\$99,658	IS	0	1	0	0
B1044	B1044.1	South Point - Tri State	Turner - South Point (AP)	\$256,171	IS	0	1	0	3
B1045	B1045.1	Darrah - TriState	Darrah Tap	\$262,802	IS	0	1	0	0
B1045	B1045.2	Darrah - TriState	Turner - Southpoint	\$23,903	IS	0	0	0	1
B1418	B1418.1	Findlay Center - Fostoria Central - New Liberty	Fostoria - East Lima	\$635,973	IS	0	1	0	4
B1420	B1420.1	Keystone - Sorenson	Tanners Creek - Desoto - Sorenson	\$664,581	IS	2	3	0	0
B1427	B1427.1	Altavista - New London	Altavista - Lynchburg	\$1,988,535	IS	31	0	1	0
B1427	B1427.2	Opossum Creek - Smith Mountain	Leesville-Smith Mountain	\$122,346	IS	0	1	0	0
B1428	B1428.1	Opossum Creek - Smith Mountain	Opossum Creek - Smith Mountain	\$663,348	IS	4	0	1	3
B1452	B1452.1	Ohio Central - Zanesville	Zanesville - Ohio Central	\$348,934	IS	4	0	1	6
B1455	B1455.1	Canton Central - Wagenhals #1	Central Canton - Wagenhals	\$107,486	IS	0	4	0	0



# AEP Transmission Zone – Sag study

Baseline ID for original Sag study	New Sub-ID Number	Circuit	Line	Total Mitigation Costs	Projected In-Service Date	Adding / Modifying / Replacing Structures	Conductor or Line Hardware	Grading	Third Party Clearance Issues
B1457	B1457.1	West Bellaire - Windsor	Tiltonville - Windsor Jct	\$222,263	IS	0	4	0	0
B1458	B1458.1	Circleville - Harrison	Harrison - Circleville	\$104,998	IS	0	1	0	0
B1491	B1491.1	Big Sandy - Thelma	Big Sandy - Thelma	\$109,171	IS	1	0	0	1
B1491	B1491.2	Big Sandy - Thelma	Big Sandy - Thelma	\$49,526	IS	0	0	0	1
B1492	B1492.1	Bellefonte - North Proctorville	Bellefonte Extension (KPCo)	\$51,474	IS	0	0	0	1
B1494	B1494.1	Bellefonte - North Proctorville	South Point-Portsmouth	\$82,413	IS	0	0	0	1
B1859	B1859.2	New London - Reusens	Reusens - Altavista	\$268,905	IS	3	0	0	3
B1869	B1869.1	Ohio Central - South Coshocton	Ohio Central - Coshocton Junction	\$627,797	IS	1	0	4	4
B1871	B1871.1	Ohio Central - South Coshocton	South Coshocton - Wooster	\$401,240	IS	0	1	0	2
B1951	B1951.1	East Lima - Maddox Creek	East Lima - Sorenson (OP)	\$506,117	IS	0	21	0	0
B1951	B1951.2	Maddox Creek - RP Mone	East Lima - Sorenson (OP)	\$118,739	IS	0	2	0	0



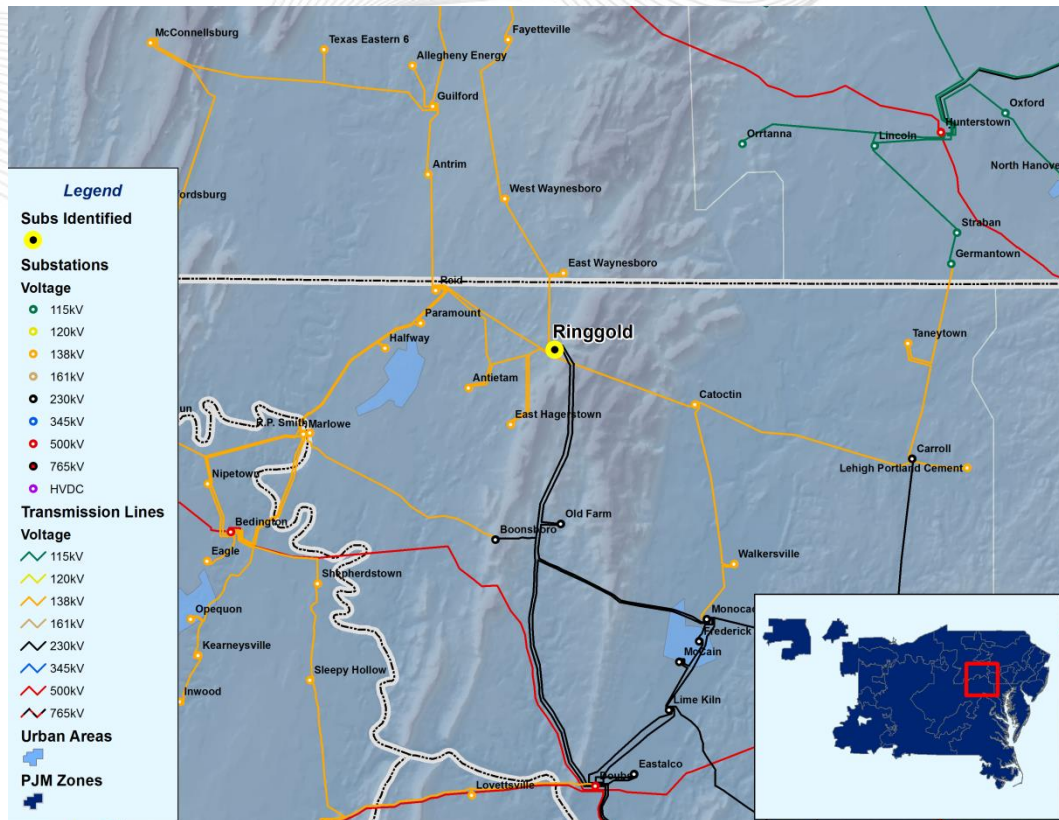
# AEP Transmission Zone – Sag study

Baseline ID for original Sag study	New Sub-ID Number	Circuit	Line	Total Mitigation Costs	Projected In-Service Date	Adding / Modifying / Replacing Structures	Conductor or Line Hardware	Grading	Third Party Clearance Issues
B2028	B2028.1	East Lima - North Findlay	Fostoria - East Lima	\$845,581	IS	5	2	0	16
S0639	S0639.1	Danville - East Danville	Roanoke - Carolina	\$431,518	IS	3	2	0	0
B1423	B1423.1	Capitol Hill - Chemical	Chemical - Capitol Hill	\$66,540	IS	0	1	0	0



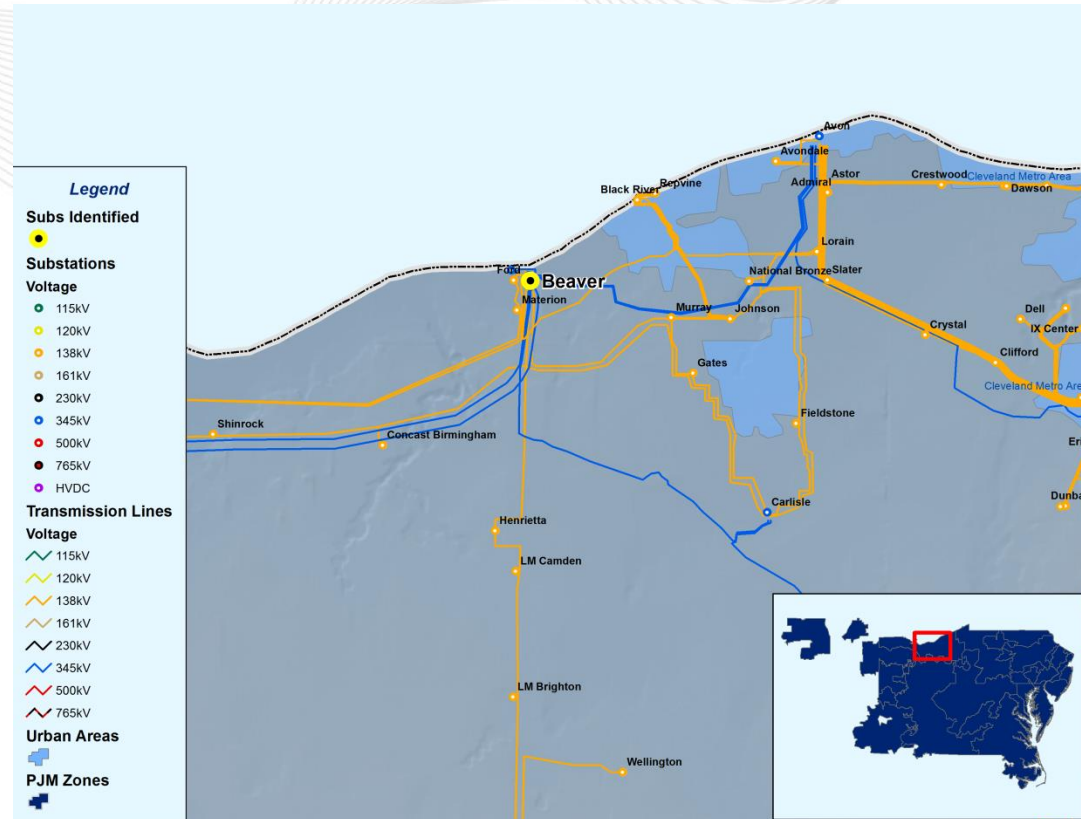
# Short Circuit Projects

- The Ringgold 138kV breakers 'RCM-1' and '#4XFMR' are overstressed
- Proposed Solution: Replace the Ringgold 138kV breakers 'RCM-1' and '#4XFMR' with 40kA (b2472 & b2473)
- Estimated Project Cost: \$250 K
- Required IS Date: 6/1/2018

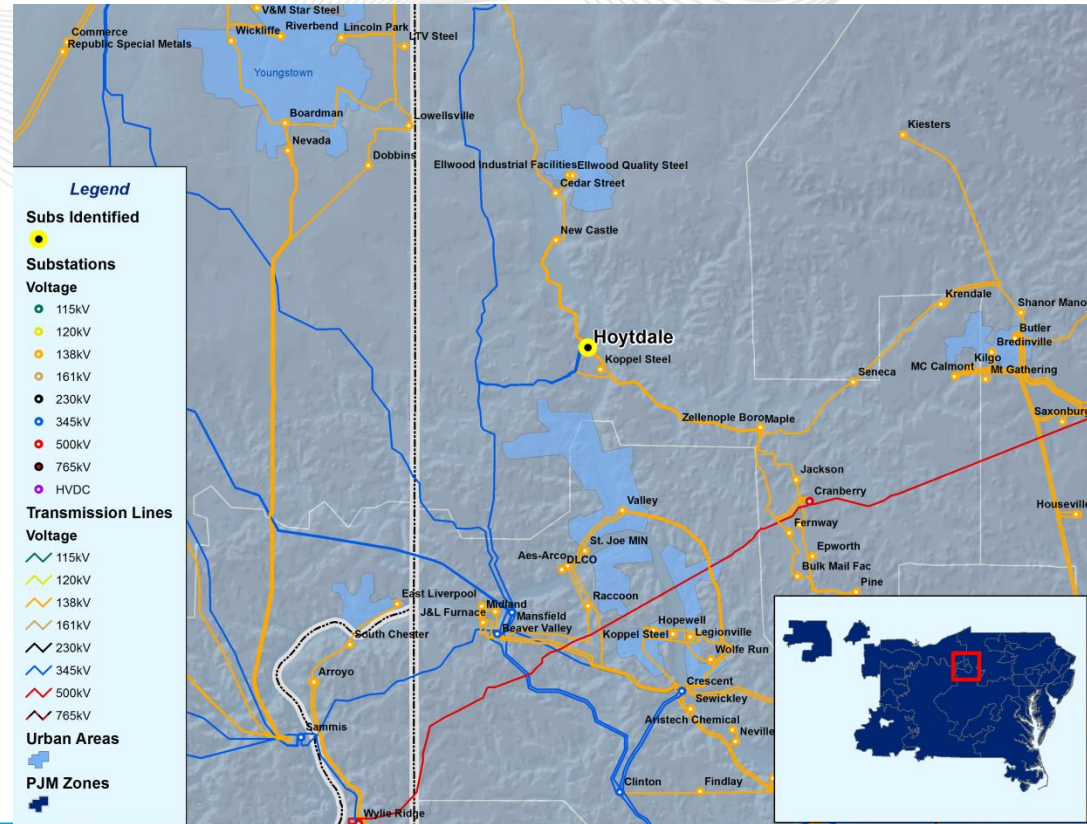




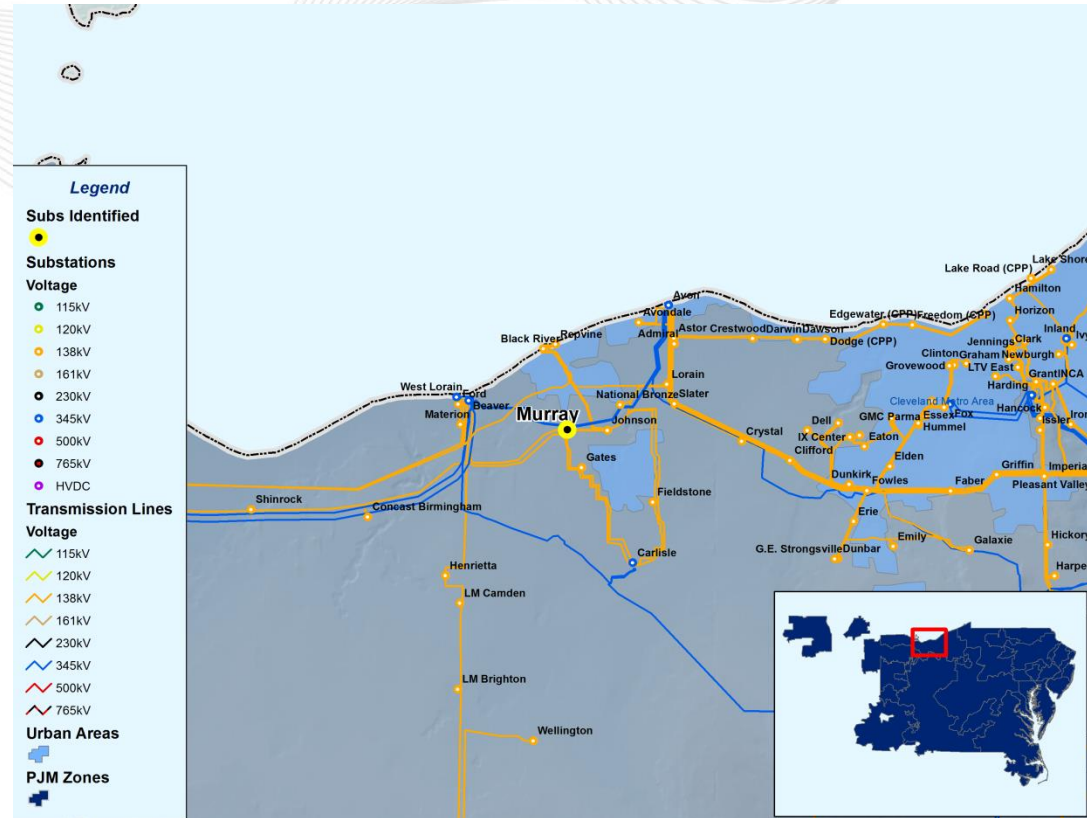
- The Beaver 138kV breaker '426-B-2' is overstressed
- Proposed Solution: Replace the Beaver 138kV breaker '426-B-2' with 63kA (b2492)
- Estimated Project Cost: \$350 K
- Required IS Date: 6/1/2016



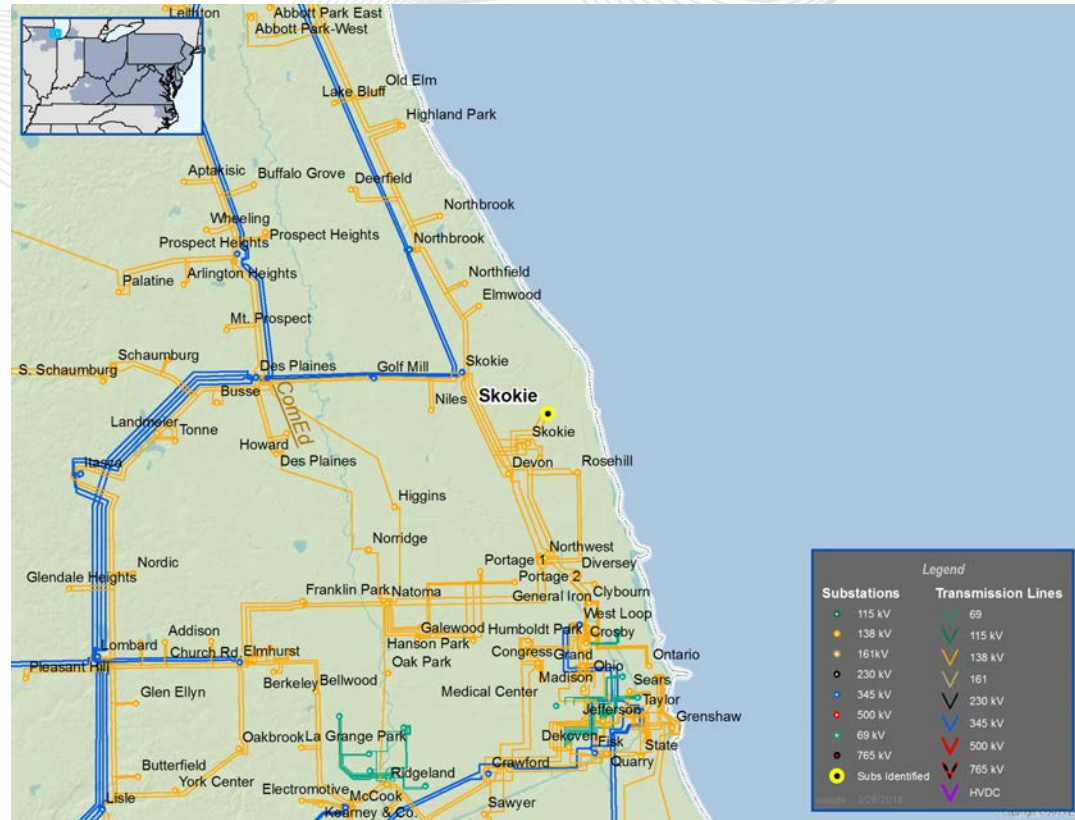
- The Hoytdale 138kV breaker '83-B-30' is overstressed
- Proposed Solution: Replace the Hoytdale 138kV breaker '83-B-30' with 63kA (b2493)
- Estimated Project Cost: \$350 K
- Required IS Date: 6/1/2016



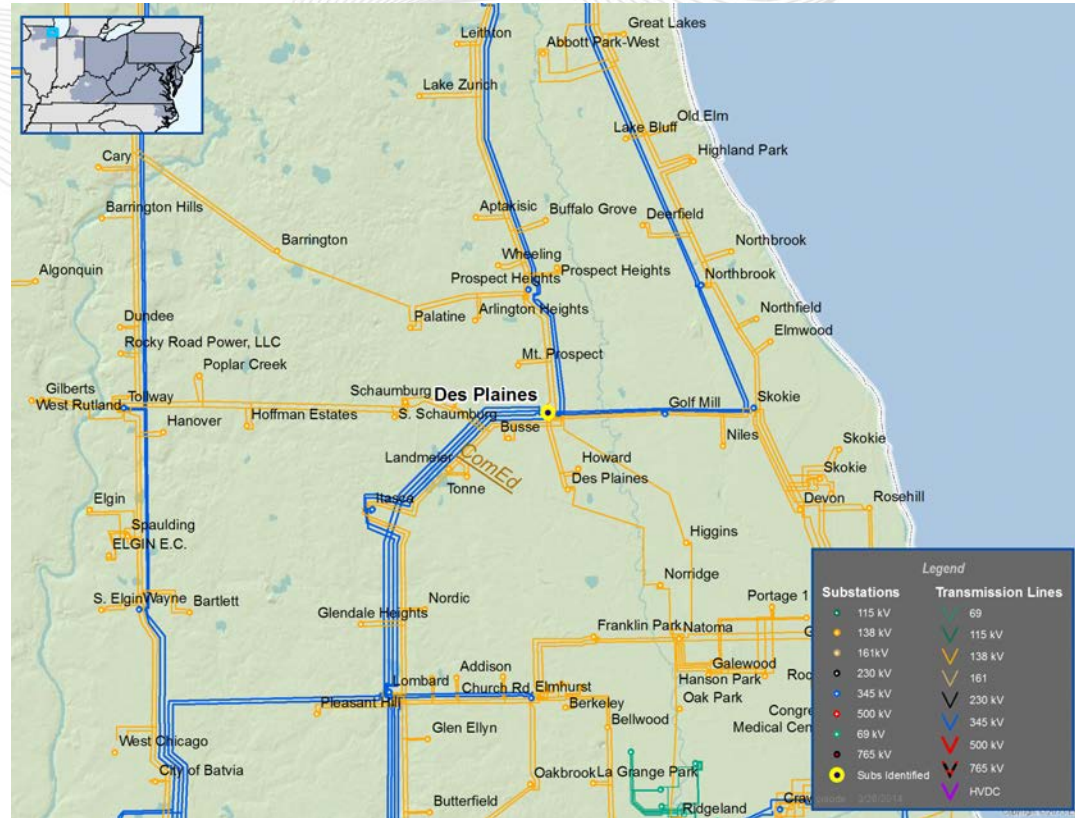
- The Murray 138kV breaker '453-B-4' is overstressed
- Significant Driver: Build new 345/138 kV Lake Avenue substation (s0663)
- Proposed Solution: Replace the Murray 138kV breaker '453-B-4' (s0663.1)
- Estimated Project Cost: \$280 K
- Projected IS Date: 6/1/2016



- Several of the Skokie 138kV breakers are overstressed when the Skokie 345 kV bus-tie closes for the loss of 345 kV line 8823 (Skokie88 B3 – Golfmil B) (SPOG 3-23).
- Proposed solution: Replace the Skokie 138 kV breakers '88 L8809', '88 L8810', '88 L11416', '88 L8803' with 63kA breakers (b2465-b2468)
- Estimated Project Cost: \$1.789 M (per breaker)
- Required In-Service Date: 6/1/2016



- The Des Plaines 138kV breakers '46 11702' and '46 11701' are overstressed.
- Proposed solution: Replace the Des Plaines 138 kV breakers '46 11702' & '46 11701' with 63kA breakers (b2469 & s0692)
- Estimated Project Cost: \$1.875 M (per breaker)
- Projected In-Service Date: 6/1/2016



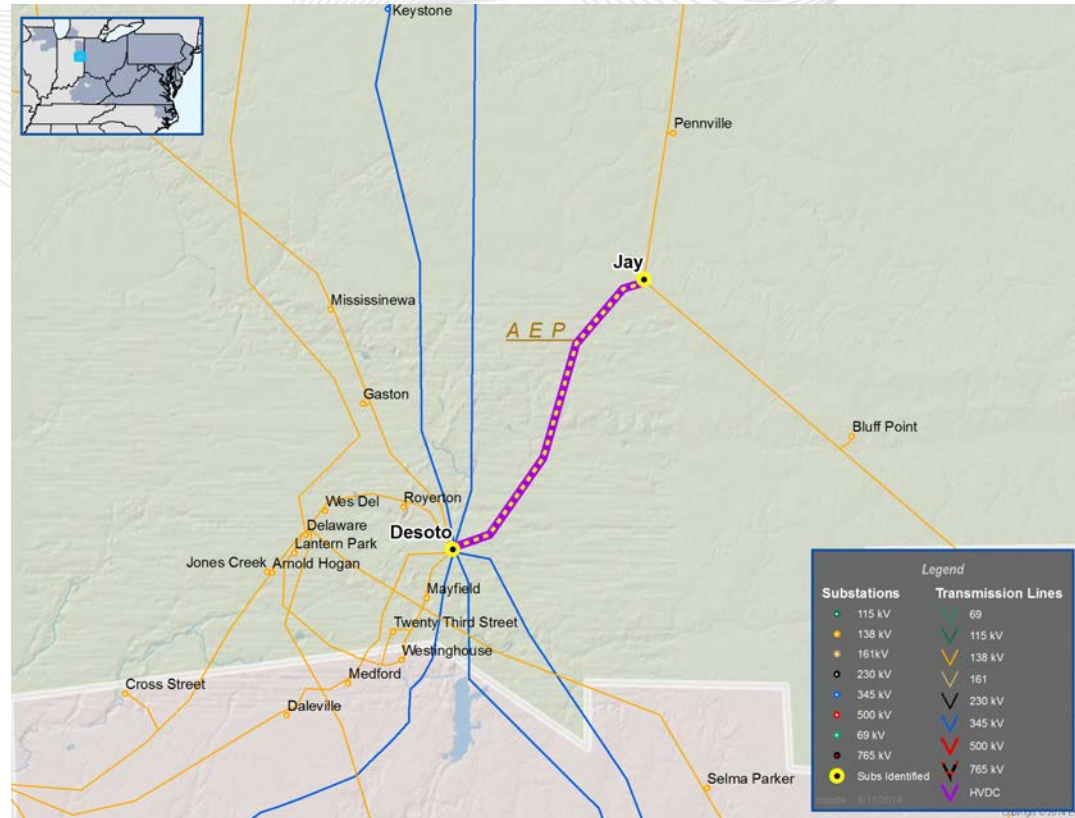


# Supplemental Projects



# AEP Transmission Zone

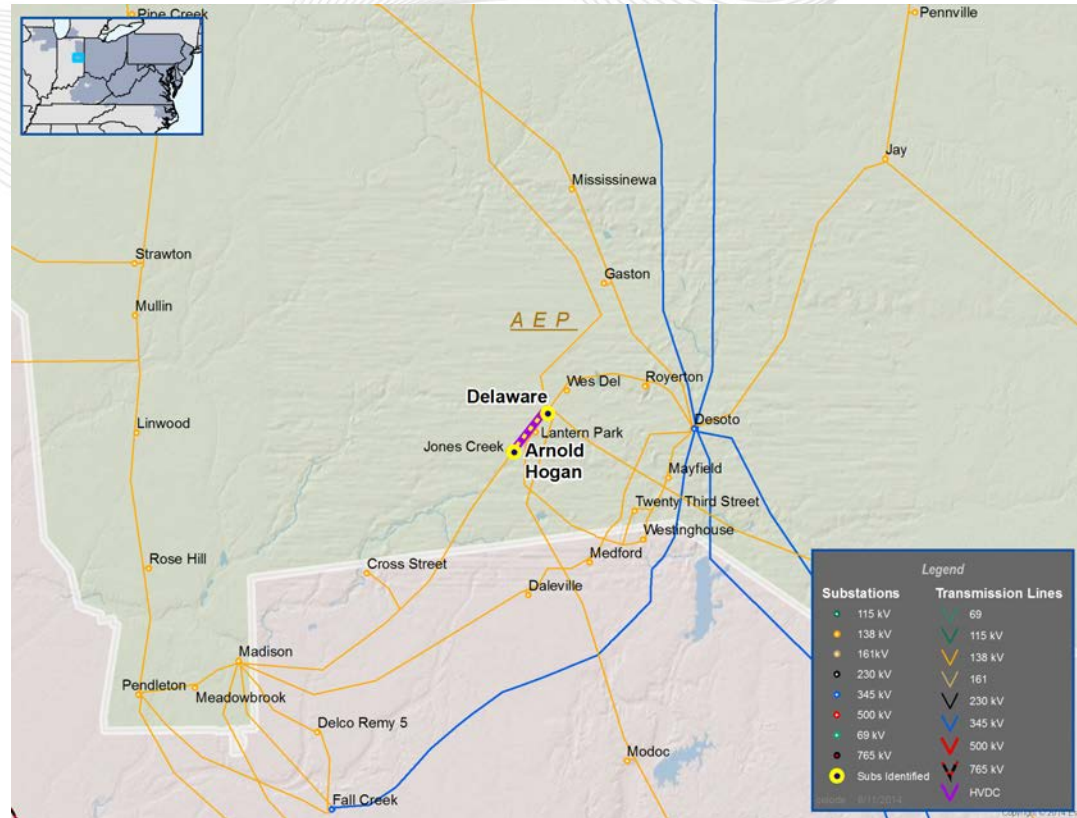
- Supplemental Project
- Replace the Desoto – Jay 138 kV wavetrapped and breaker (S0737)
- Estimated Project Cost: \$1.0M
- Projected IS Date: 12/31/2018





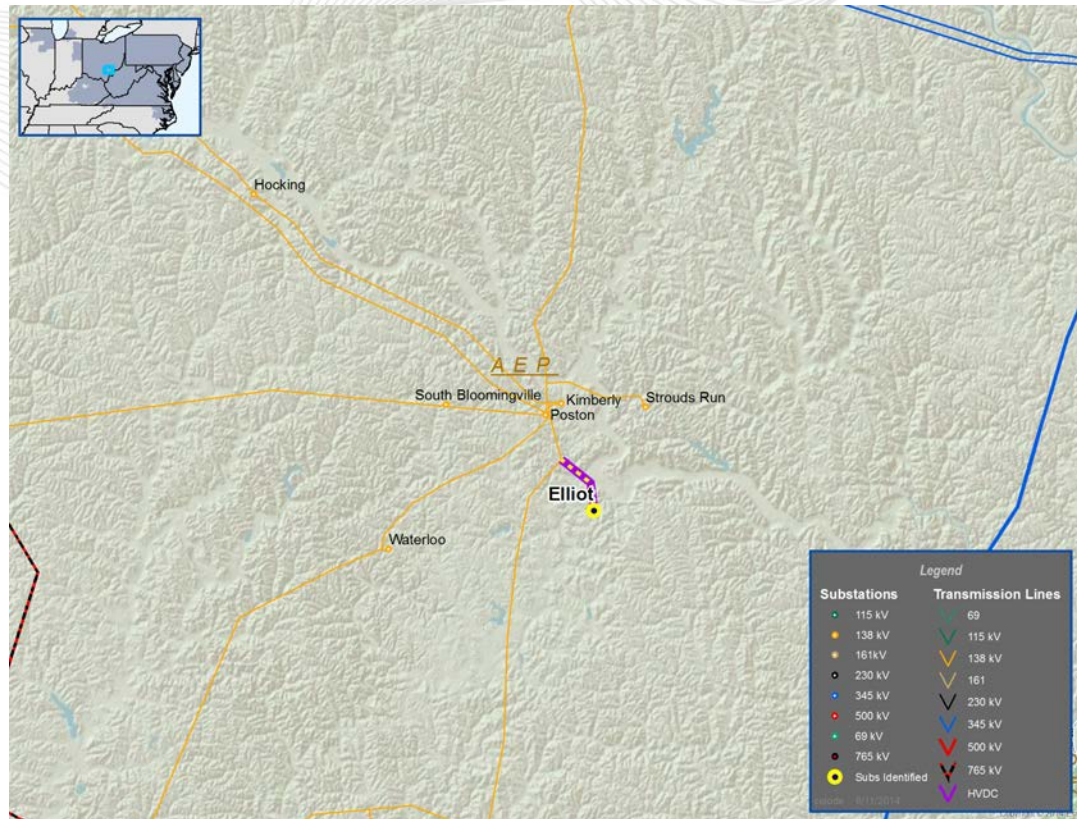
# AEP Transmission Zone

- Supplemental Project
- Upgrade the Delaware – Hogan 138 kV risers (S0738)
- Estimated Project Cost: \$0.3M
- Projected IS Date: 12/31/2018



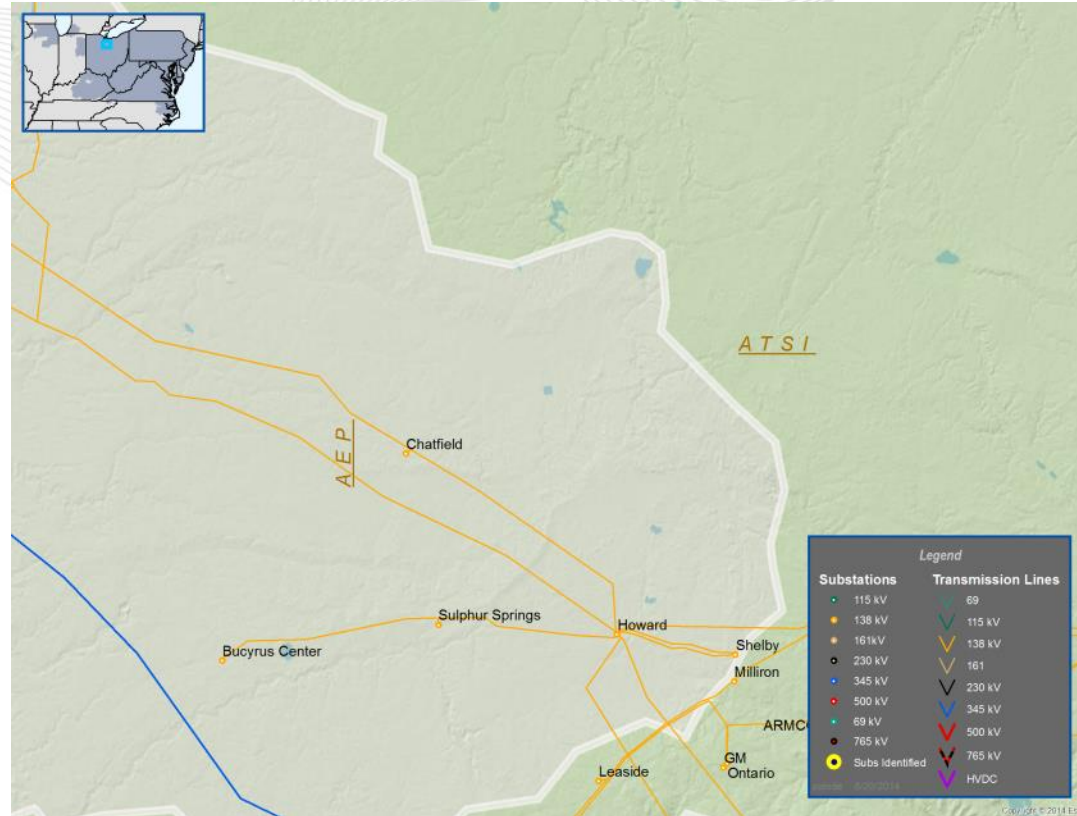


- Supplemental Project
- Upgrade the Eliot – Eliot Tap Relay (S0739)
- Estimated Project Cost: \$0.5M
- Projected IS Date: 12/31/2018

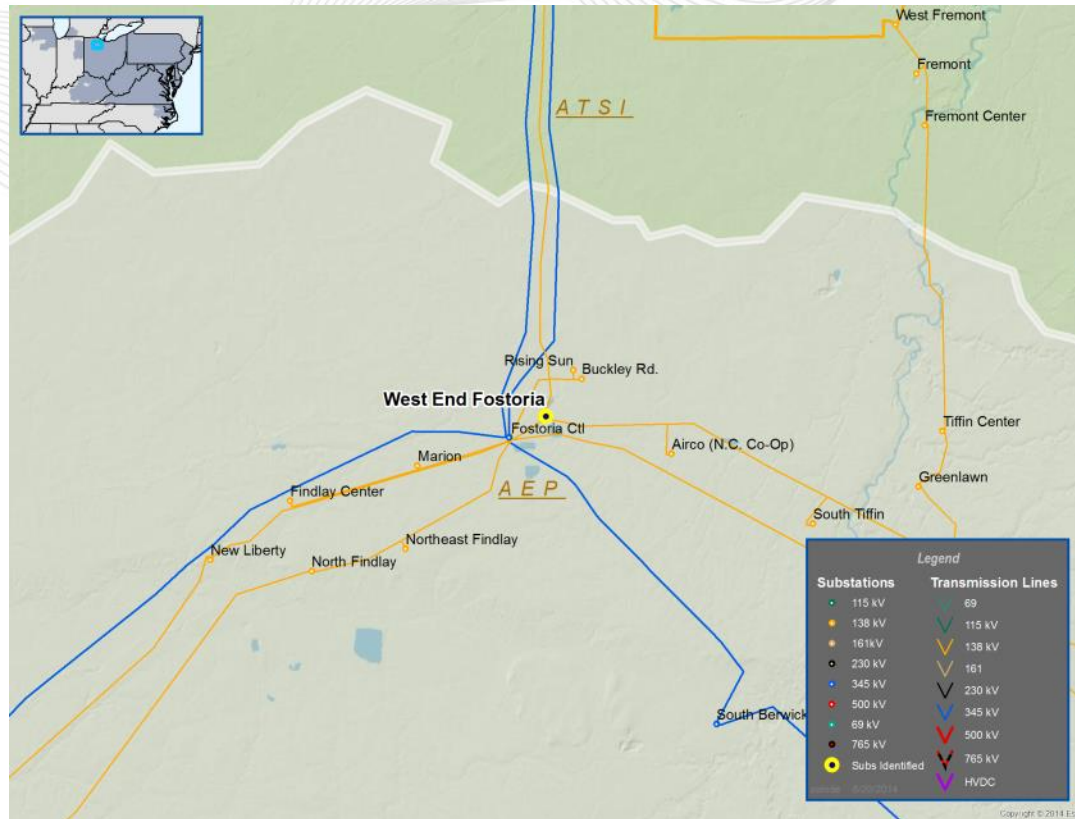


- **Supplemental Project**

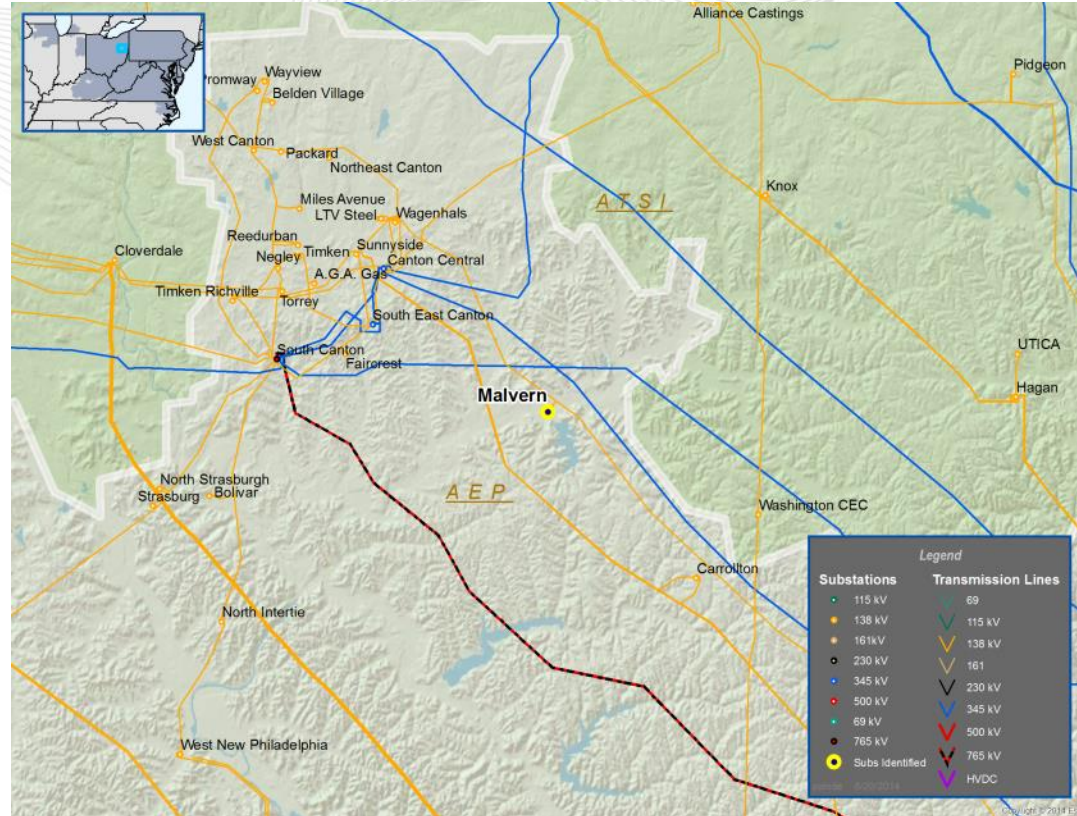
- Add new 69 kV Two way MOAB switching Station, “Conwave”, Convert existing AEP Ohio distribution customer to new 69 kV transmission service & metered at 69 kV; (S0740.1)
- Associated 69 kV line extension from new switch station to customer facility. Approximately two (2) spans of new 69 kV line. (S0740.4)
- Replace existing 69 kV circuit breaker (GE Type FK-69-2500-5) with new 69 kV circuit breaker (Areva DT1-72.5 F1 FK 3000A 40kA CB) (S0740.2)
- Retire MOAB”U”/ Add a 69 kV circuit breaker (Areva DT1-72.5 F1 FK 3000A 40kA CB) (S0740.3)
- Estimated Project Cost: \$4.4M
- Projected IS Date: 9/15/2014



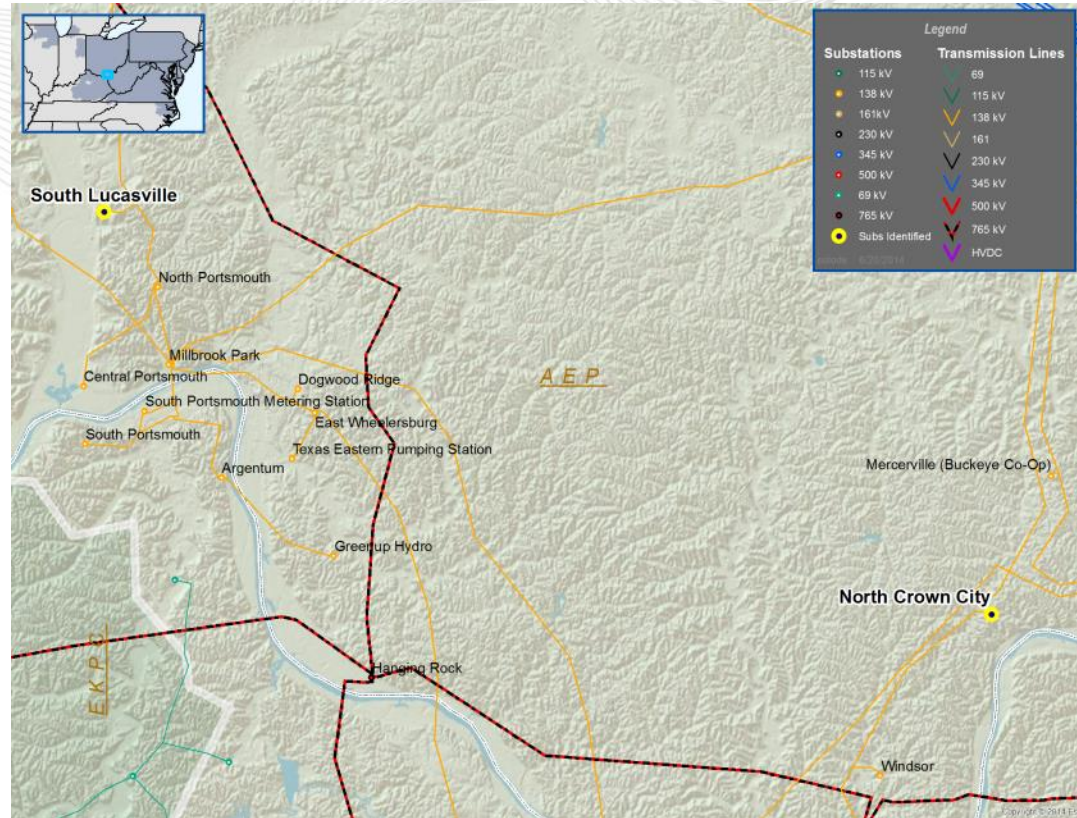
- **Supplemental Project**
- Add a new 69 kV switching Station, “Bradner” – One (1) way, phase over phase GOAB switch with bypass configuration for maintenance. (S0741.1)
- Associated 69 kV line extension from new switch station, “Bradner” to the new customer facility. (S0741.2)
- Install 69 kV High Side Customer Metering. (S0741.3)
- Estimated Project Cost: \$0.474M
- Projected IS Date: 7/30/2014



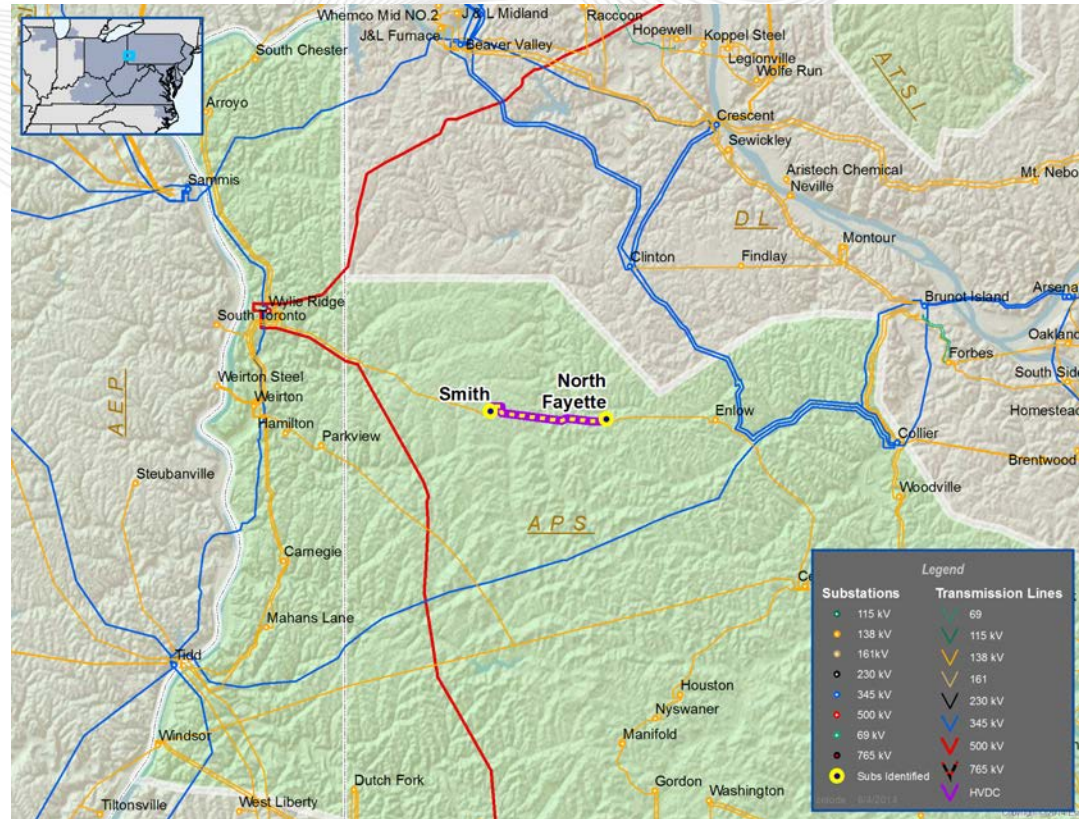
- **Supplemental Project**
- Replace existing one (1) way GOAB switch with a new three (3) way phase over phase GOAB switch with bypass configuration at Oneida 69kV station. (S0742.1)
- Replace existing wood pole structure with 80 foot steel pole at Oneida 69kV Station. (S0742.4)
- Retire existing customer low side meter (4 kV) and replace with a new high side (69 kV) meter at Oneida 69kV station (S0742.2)
- Malvern – Pekin 69kV line work needed to add a three way GOAB switch at Oneida 69kV station (S0742.3)
- Estimated Project Cost: \$1.1M
- Projected IS Date: 7/1/2014



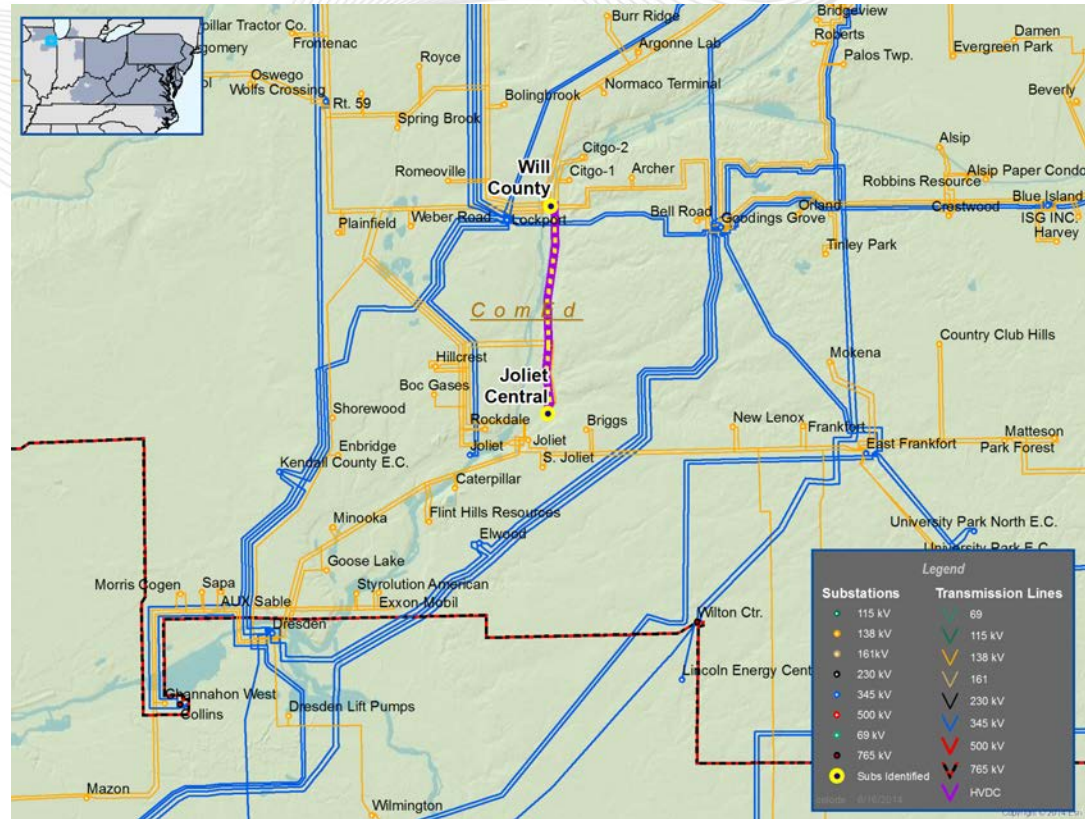
- **Supplemental Project**
- Install SCADA control, upgrade through path, and install 138 kV CB's at North Crown City 138KV station and South Lucasville 138kV station. (S0743)
- Estimated Project Cost: \$8M
- Projected IS Date: 12/1/2014



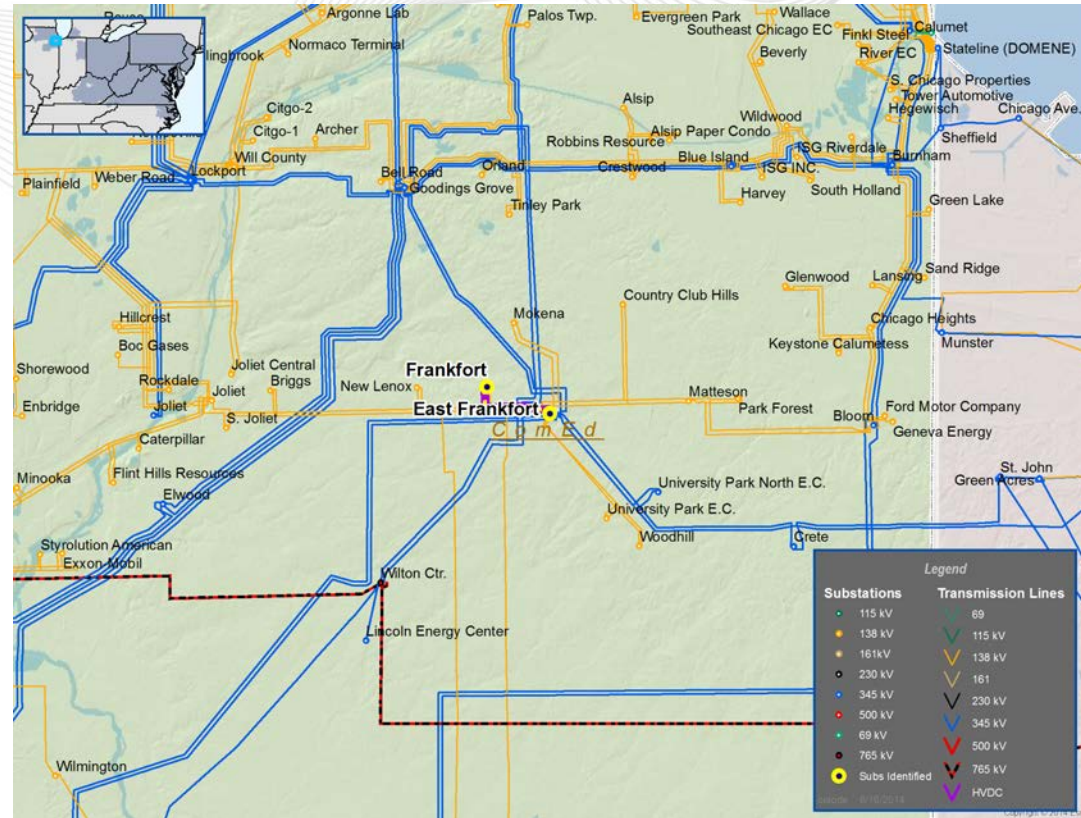
- Supplemental Project
- Load connection to Tap into the Smith – North Fayette 138kV line; (S0736.1)
- Construct approximately 1.3 miles of 138kV line to customer dead-end and install 3 SCADA controlled 138kV switches and two 138kV meters; (S0736.2)
- Install a 138kV breaker on the North Fayette terminal at Smith 138KV substation (S0736.3)
- Estimated Project Cost: \$3.8M
- Projected IS Date: 8/1/2015



- **Supplemental Project**
- Relocate 138 kV lines 0905/0906 between Joliet Central and Will County (S0727)
- Estimated Project Cost: \$8.5M
- Projected IS Date: 12/31/2014

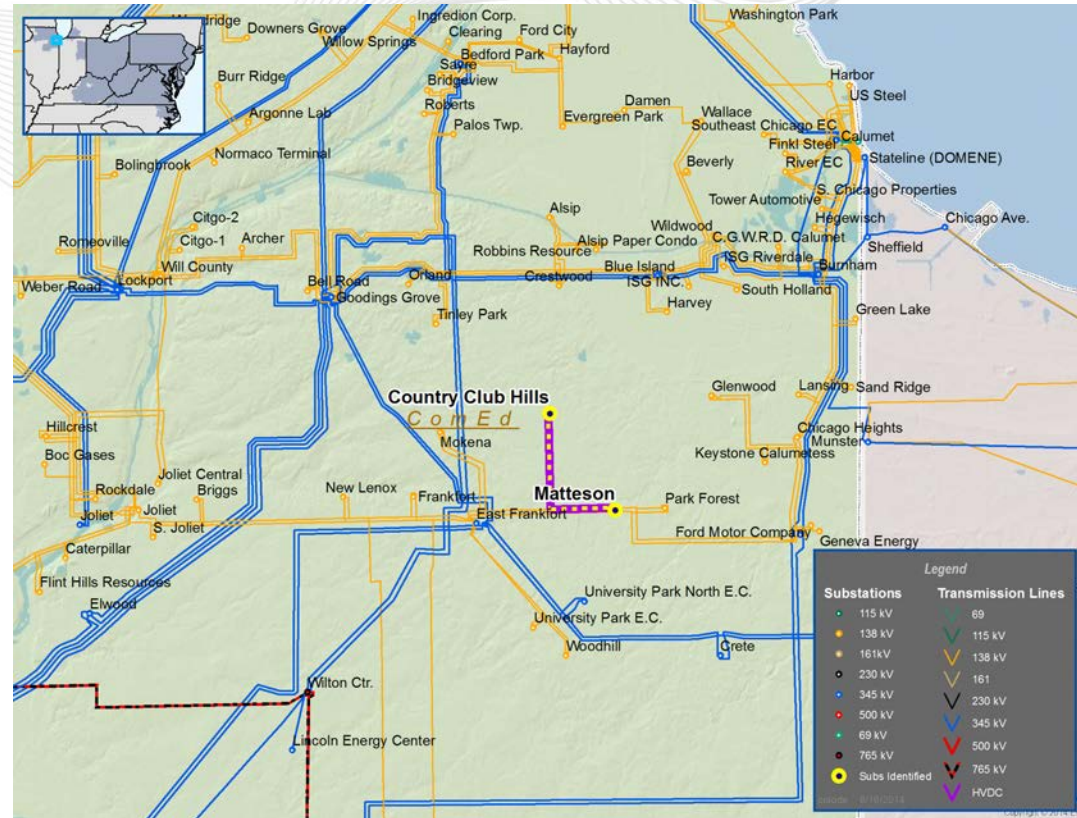


- **Supplemental Project**
- Reconductor 3.3 miles of 138 kV line 0901 from East Frankfort – Frankfort (S0728)
- Estimated Project Cost: \$2.4M
- Projected IS Date: 12/31/2014

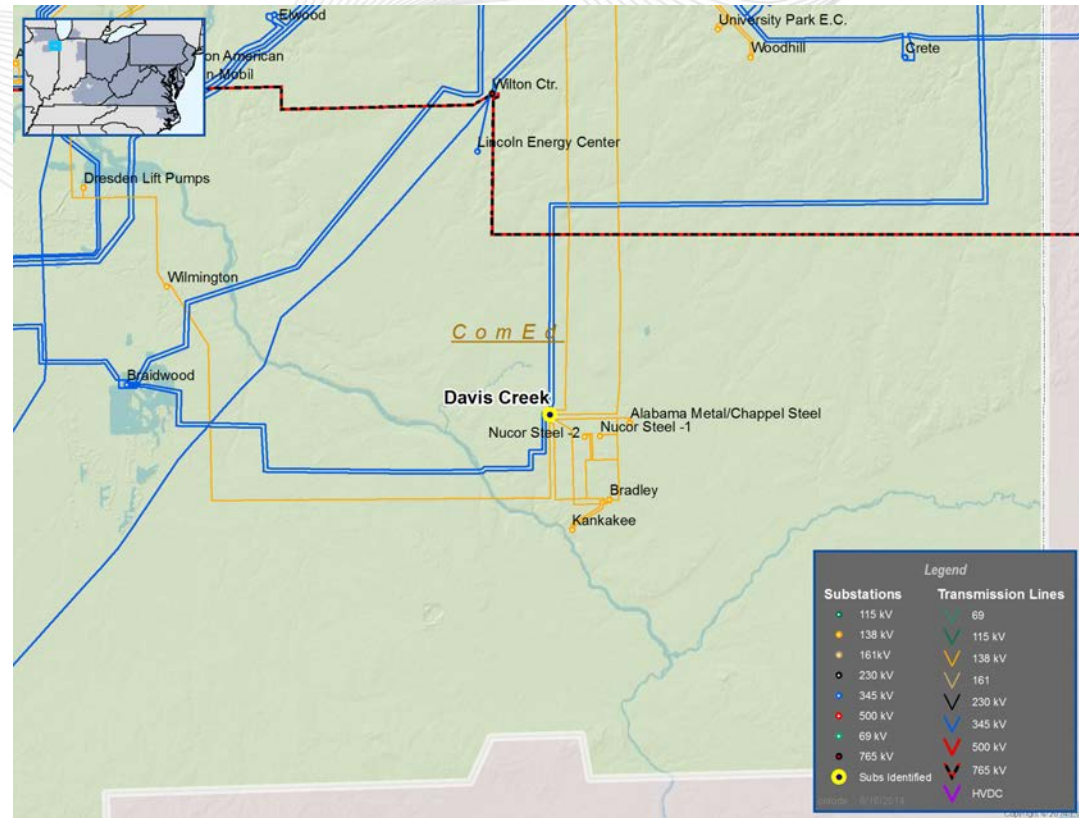




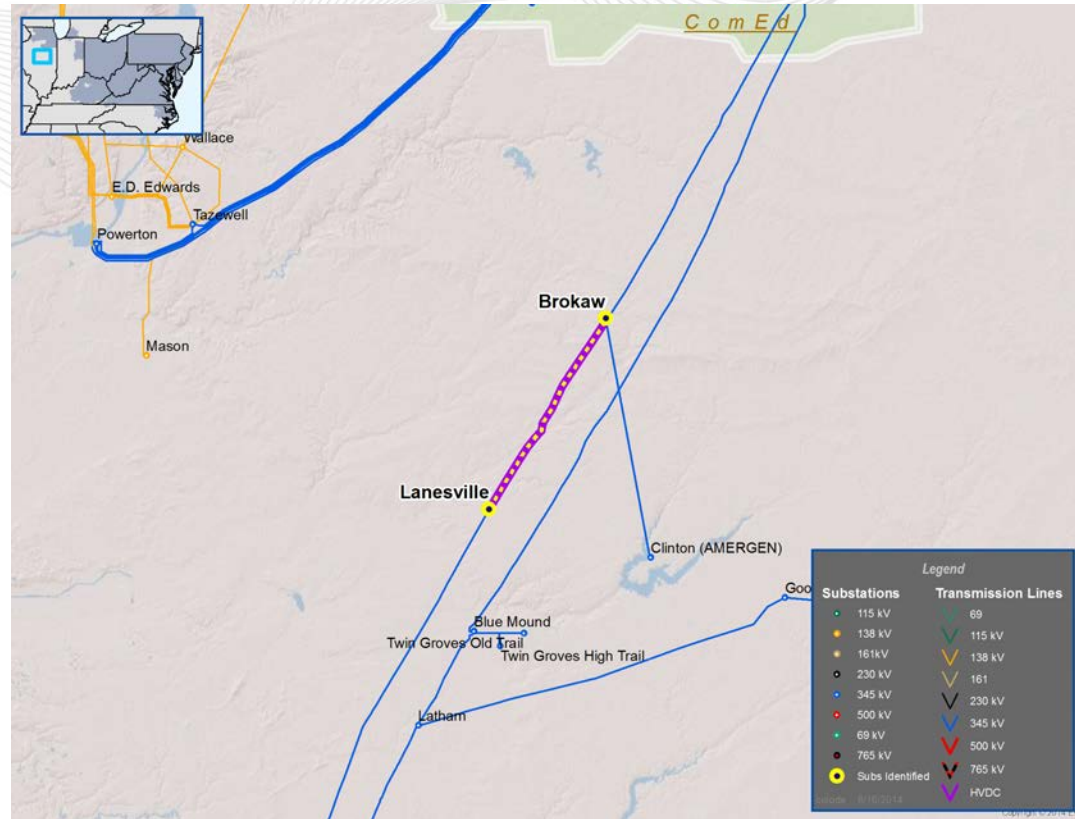
- **Supplemental Project**
- Reconductor 2 miles of 138 kV line 6604 from Country Club Hills to Matteson (S0729)
- Estimated Project Cost: \$2.6M
- Projected IS Date: 12/31/2015



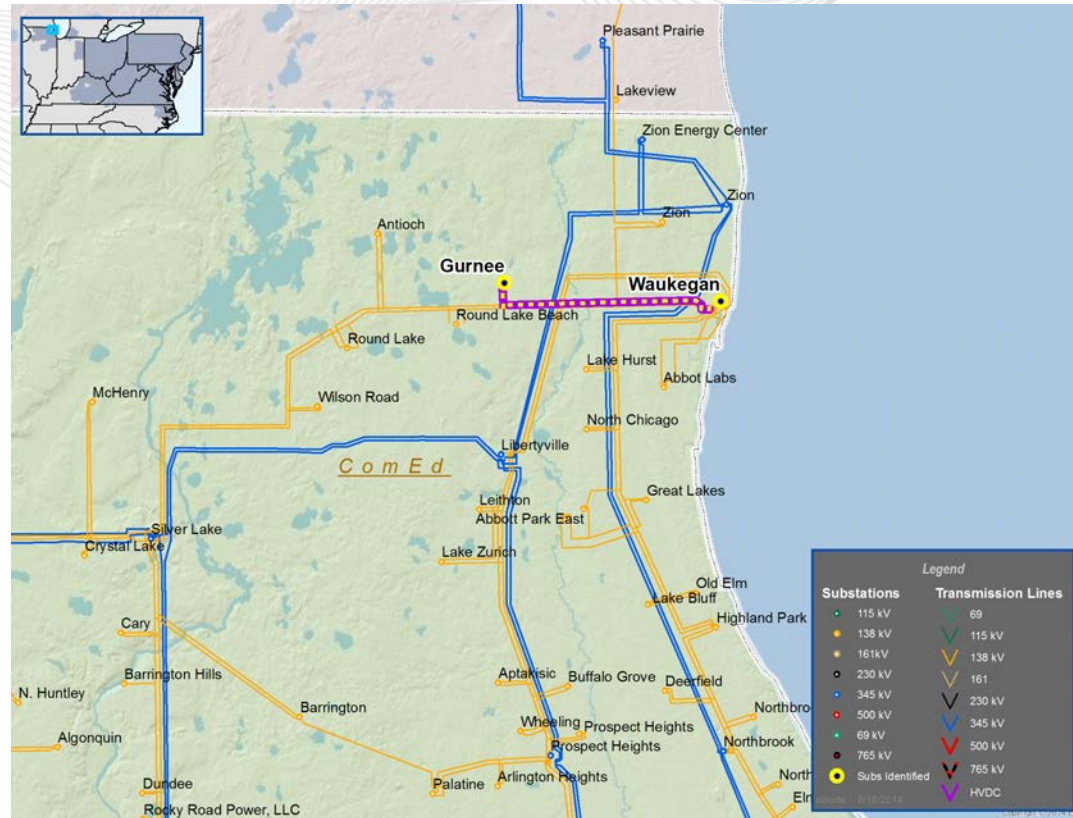
- **Supplemental Project**
- Reconductor 20 miles of 138 kV line 0901 from Davis Creek tap to Davis Creek (S0730)
- Estimated Project Cost: \$20M
- Projected IS Date: 12/31/2014



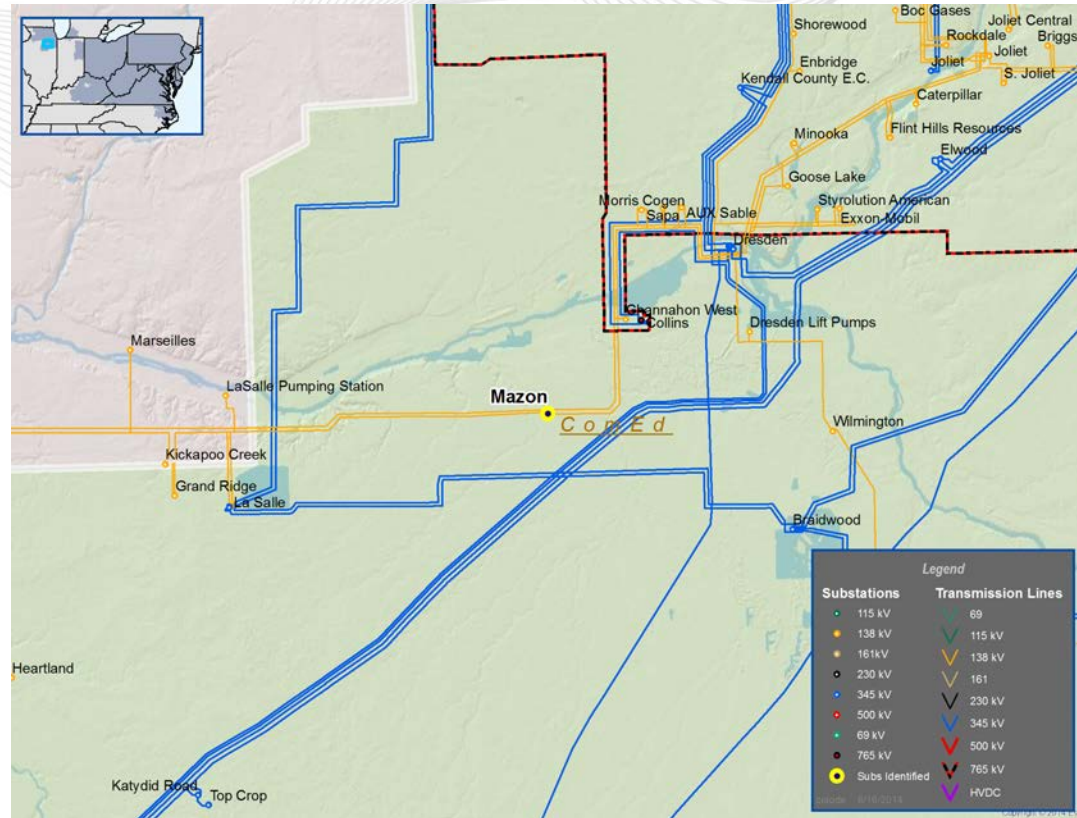
- **Supplemental Project**
- Reconductor 10 miles of 345 kV line 2107 between Lanesville and Brokaw (S0731)
- Estimated Project Cost: \$17M
- Projected IS Date: 12/31/2014



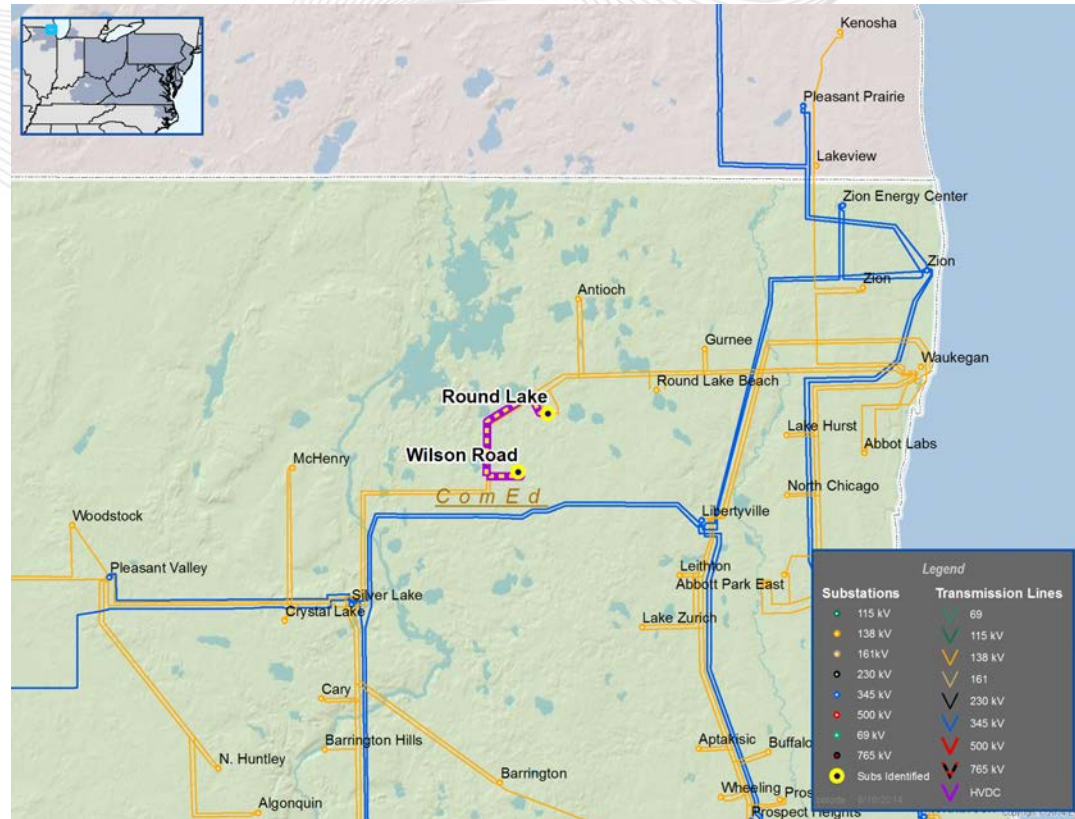
- **Supplemental Project**
- Reconductor 11 miles of 138 kV line 1603 Waukegan – Gurnee (S0732)
- Estimated Project Cost: \$10M
- Projected IS Date: 12/31/2015



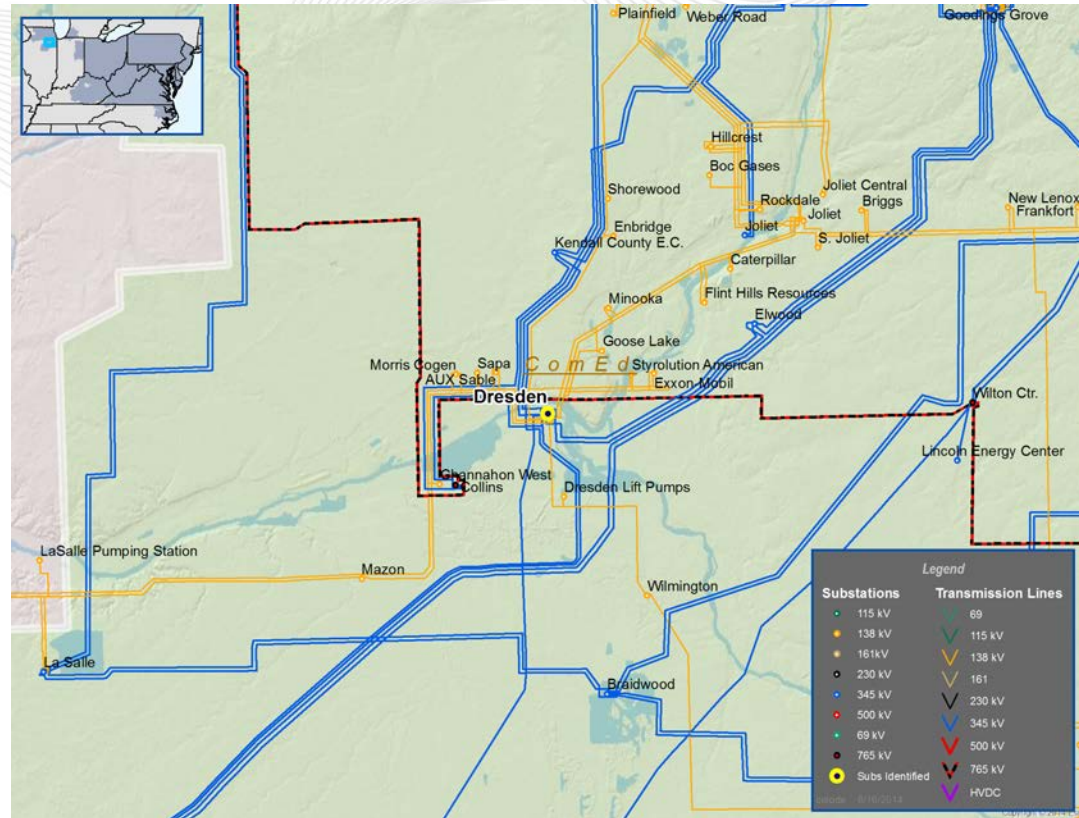
- **Supplemental Project**
- Reconductor 5.7 miles of 138 kV line 1205 from Mazon to ESS J-375 (S0707)
- Estimated Project Cost: \$5.25M
- Projected IS Date: 12/31/2015



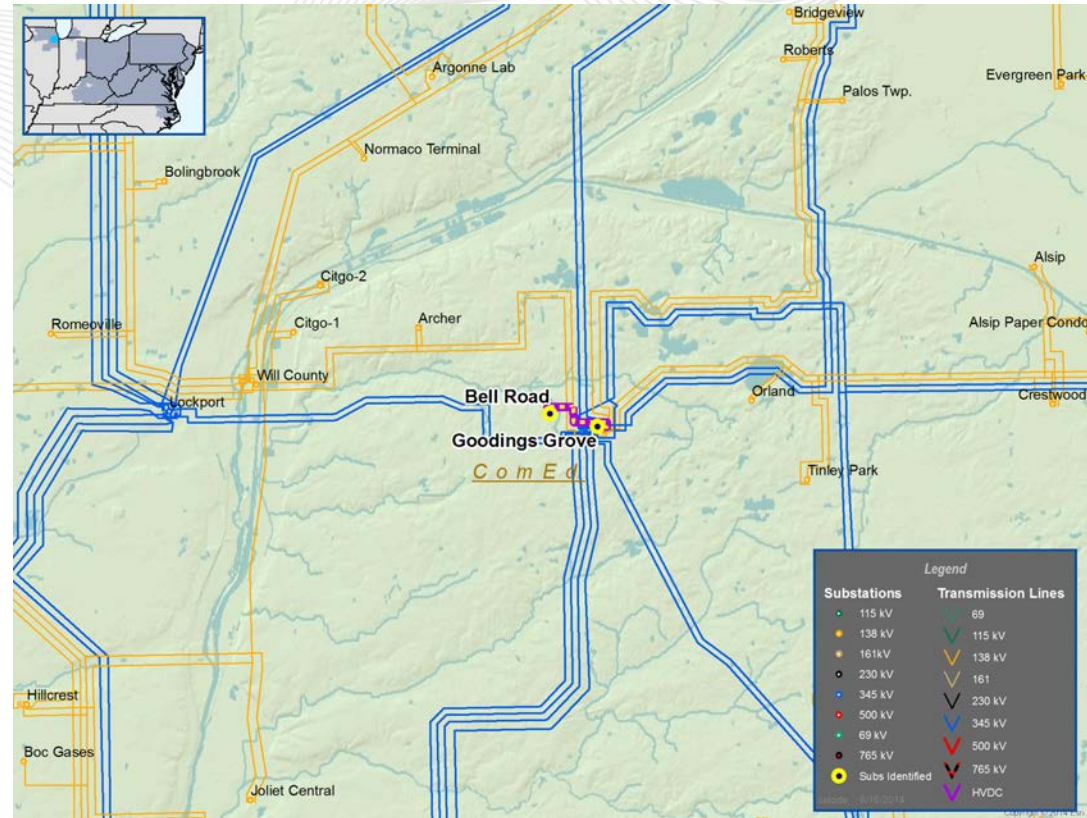
- **Supplemental Project**
- Reconductor 2.5 miles of 138 kV line 4202 from Round Lake to Wilson Rd. (S0708)
- Estimated Project Cost: \$3.5M
- Projected IS Date: 12/31/2015



- **Supplemental Project**
- Replace wave trap on 138 kV line 0904 at Dresden. (S0709)
- Estimated Project Cost: \$0.75M
- Projected IS Date: 6/1/2015

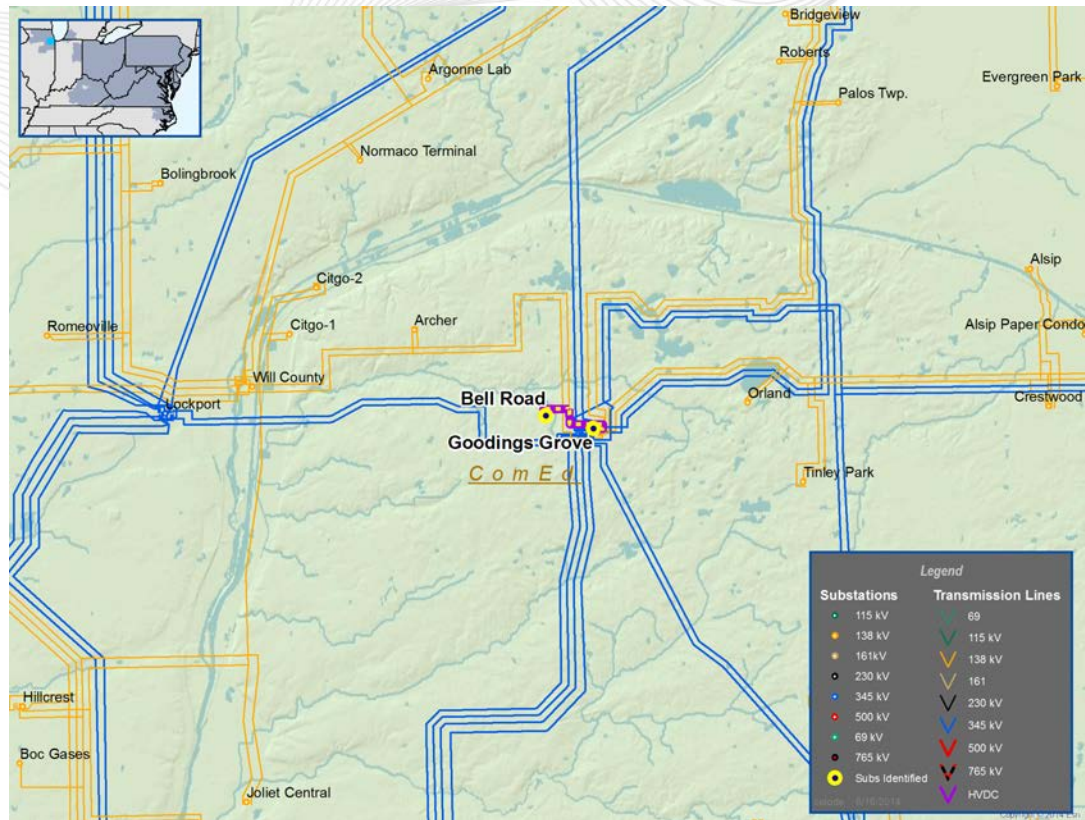


- **Supplemental Project**
- Reconductor 0.3 miles of 138 kV line 1808 from Goodings Grove to Bell Rd. (S0710)
- Estimated Project Cost: \$1.2M
- Projected IS Date: 6/1/2015

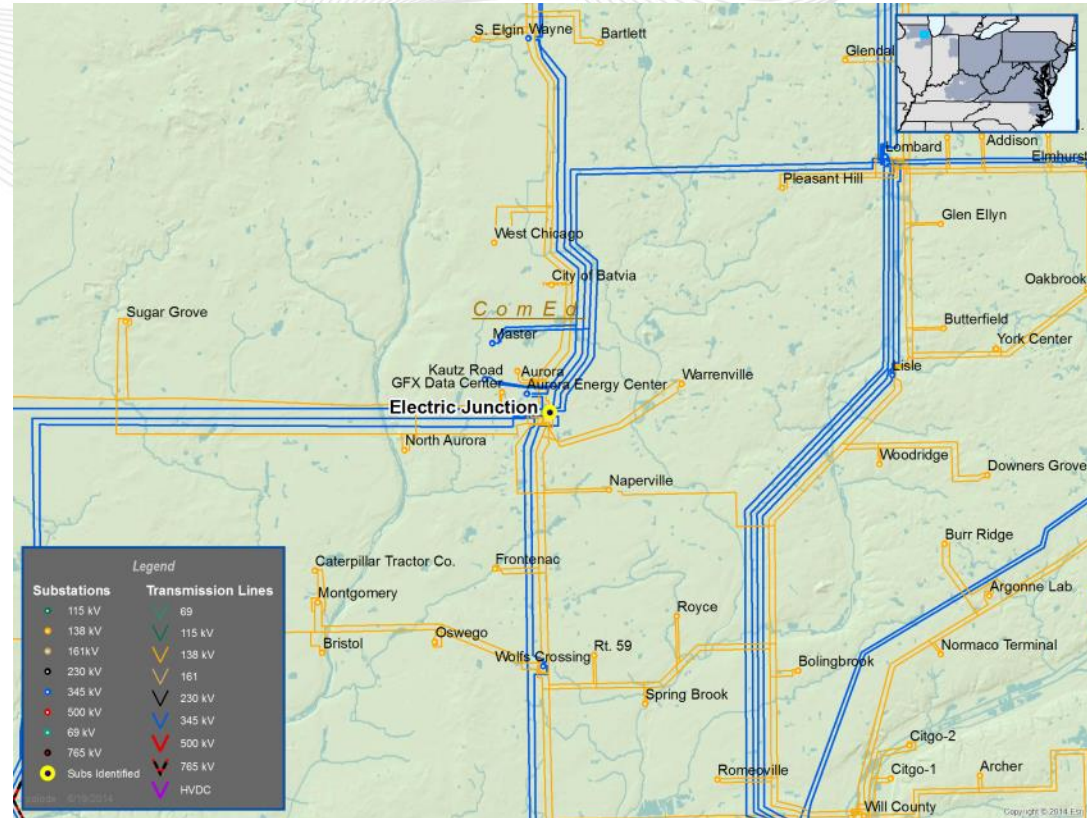




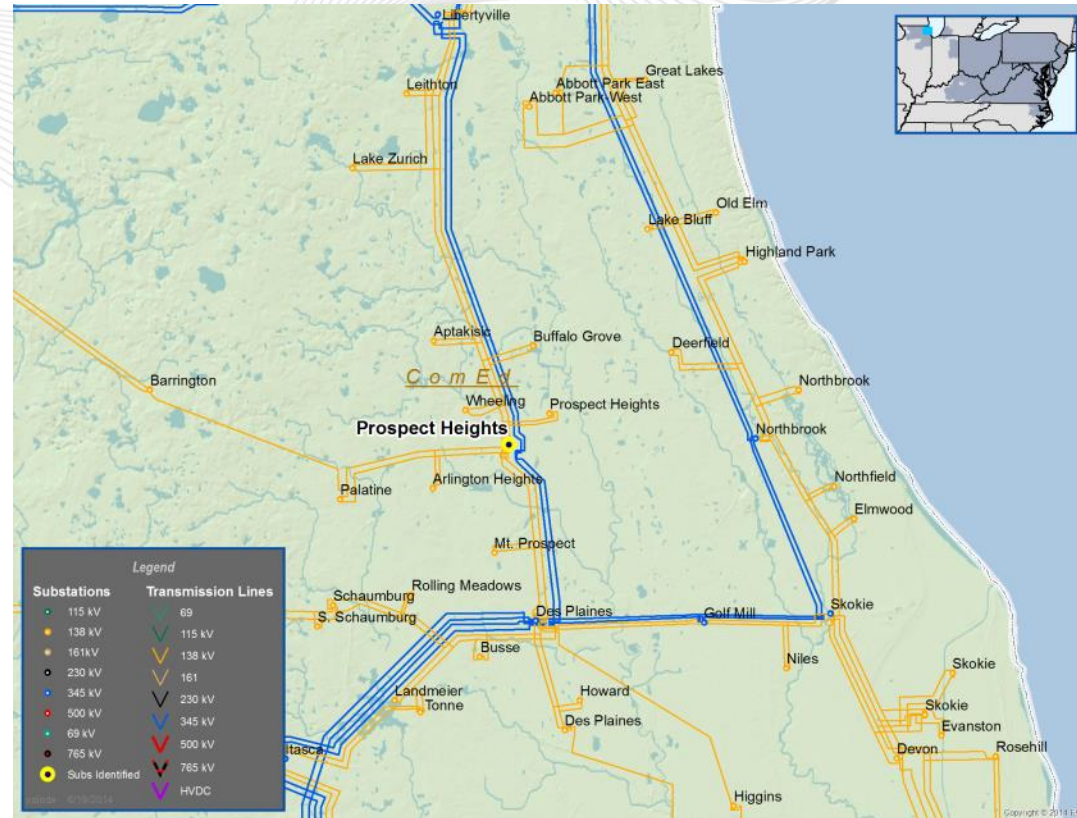
- **Supplemental Project**
- Reconductor 6 miles of 138 kV line 0902 from Briggs St. to New Lenox (S0711)
- Estimated Project Cost: \$7.8M
- Projected IS Date: 6/1/2015



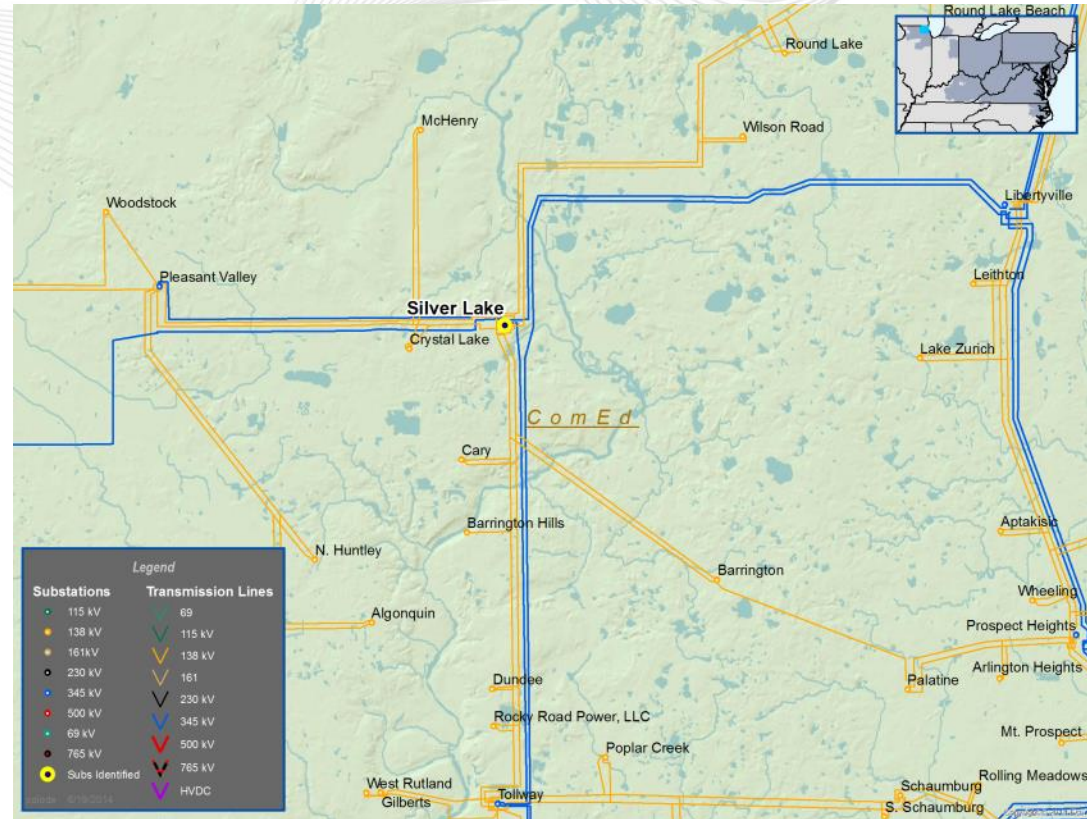
- **Supplemental Project**
- Replace Electric Junction 345 kV circuit breaker on line 11120 (Electric Junction – Lombard 345kV line), replace 345 kV circuit switcher on Electric Junction 345/138kV transformer 83 with a circuit breaker. (S0712)
- Estimated Project Cost: \$3.6M
- Projected IS Date: 12/31/2014



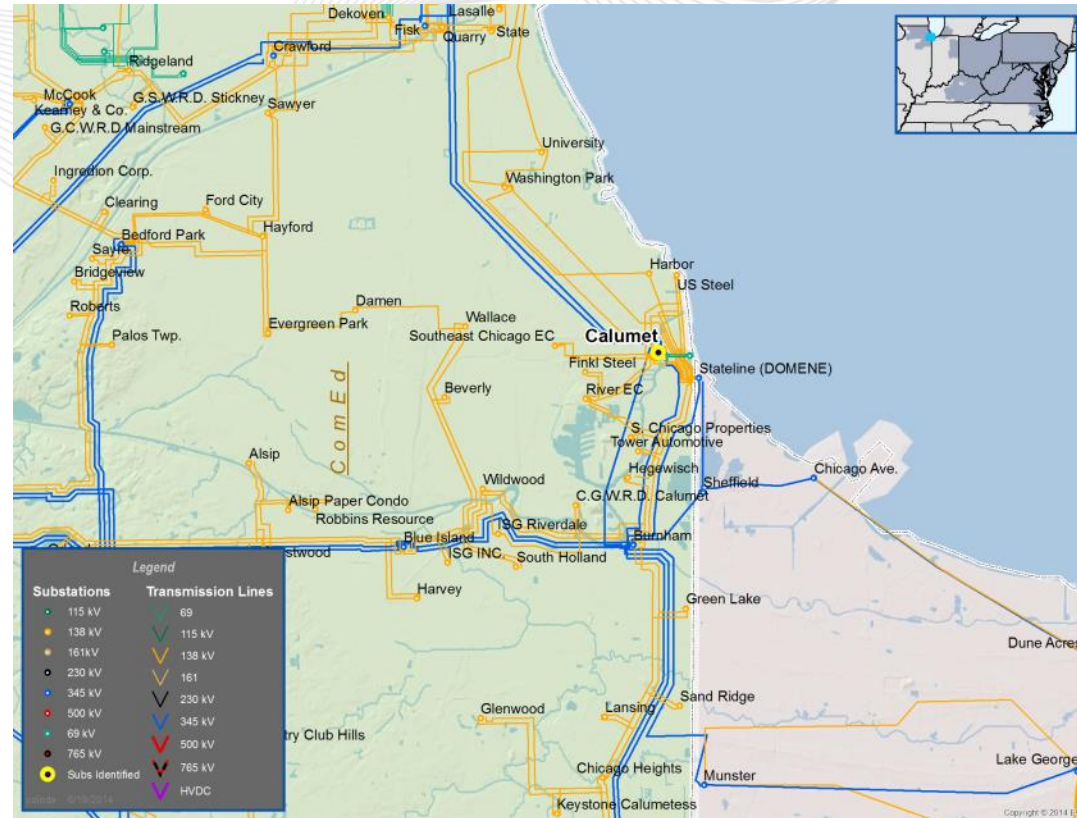
- **Supplemental Project**
- Replace the 345 kV MOD on Prospect Heights 345/138kV TR 84 with a circuit breaker. (S0713)
- Estimated Project Cost: \$1.8M
- Projected IS Date: 12/31/2014



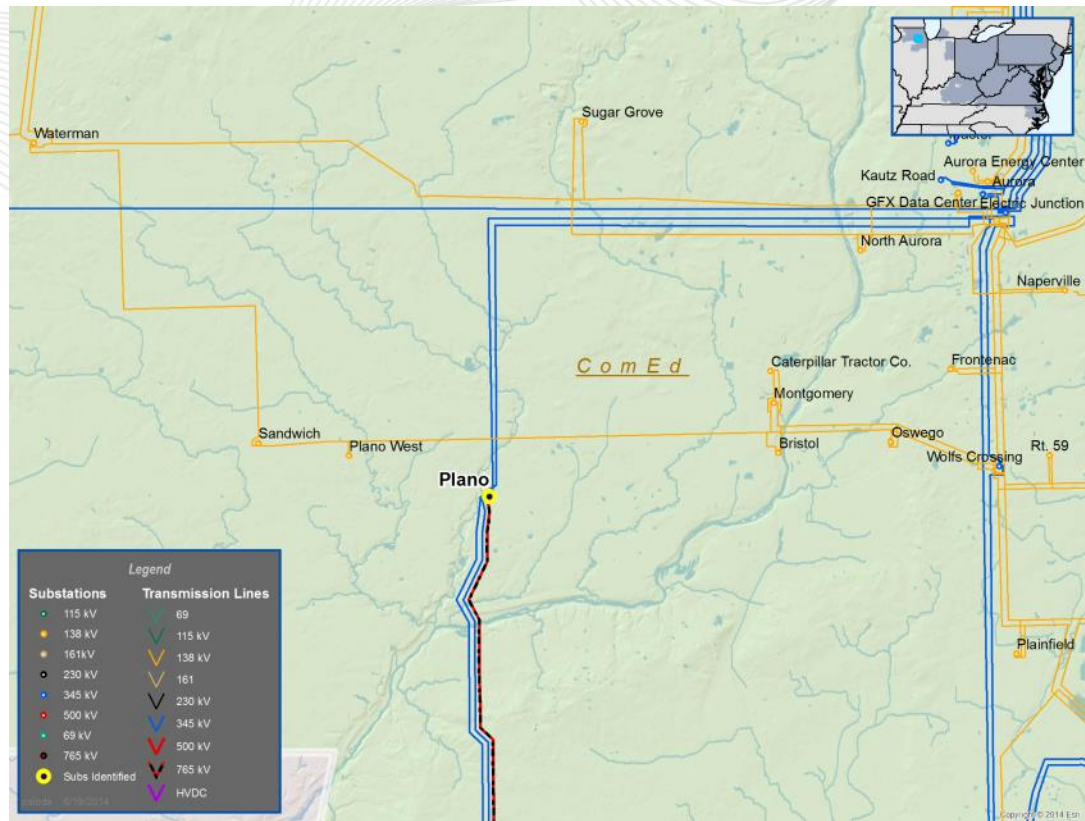
- **Supplemental Project**
- Replace Silver Lake 345 kV bus tie 5-6, 12/31/14. (S0714)
- Estimated Project Cost: \$1.8M
- Projected IS Date: 12/31/2014



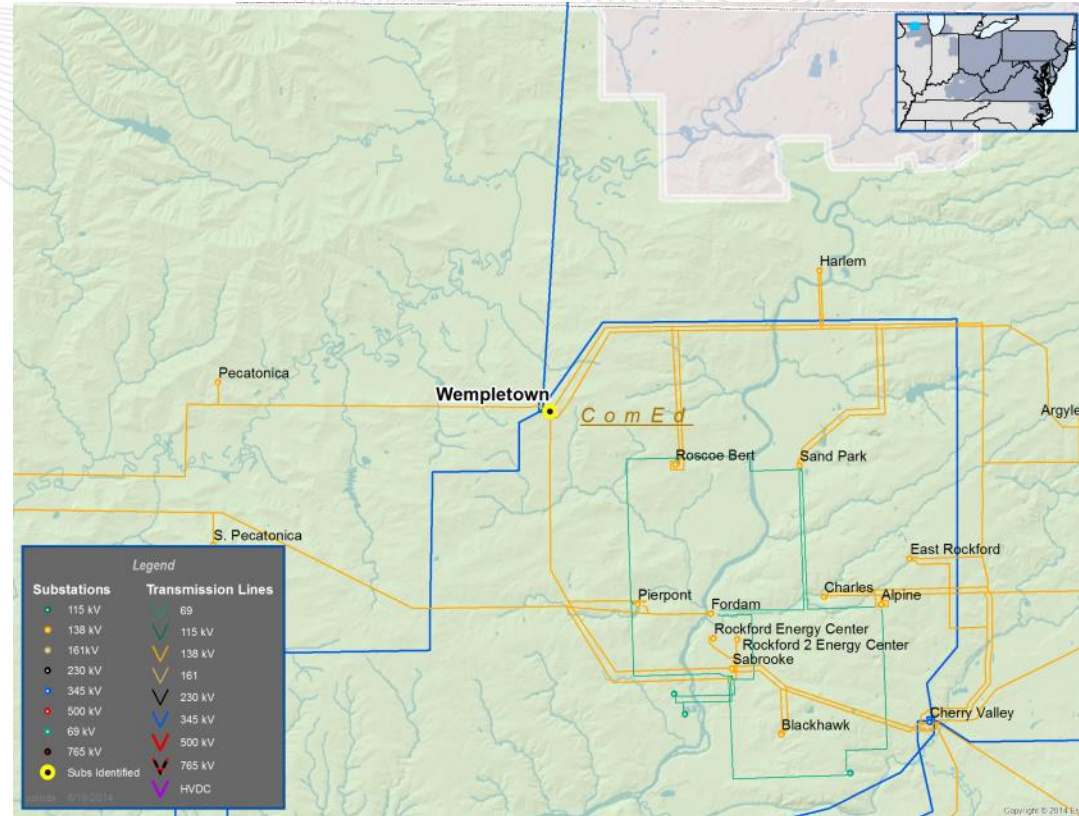
- **Supplemental Project**
- Replace Calumet 345 kV inductor 1 circuit breaker. (S0715)
- Estimated Project Cost: \$1.8M
- Projected IS Date: 12/31/2014



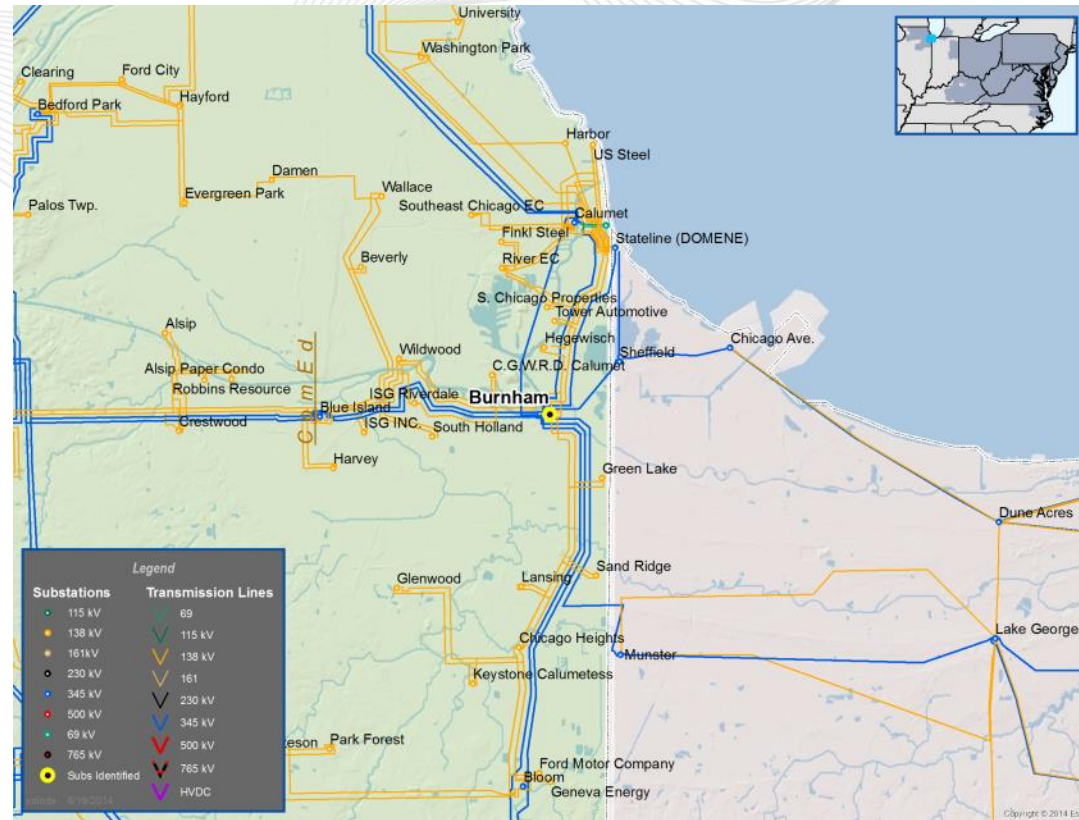
- **Supplemental Project**
- Replace Plano 345 kV bus tie 9-12 and 765/345KV transformer 93A. (S0716)
- Estimated Project Cost: \$6.5M
- Projected IS Date: 12/31/2014



- **Supplemental Project**
- Replace Wempletown 345/138KV transformer 84. (S0717)
- Estimated Project Cost: \$4.5M
- Projected IS Date: 12/31/2014

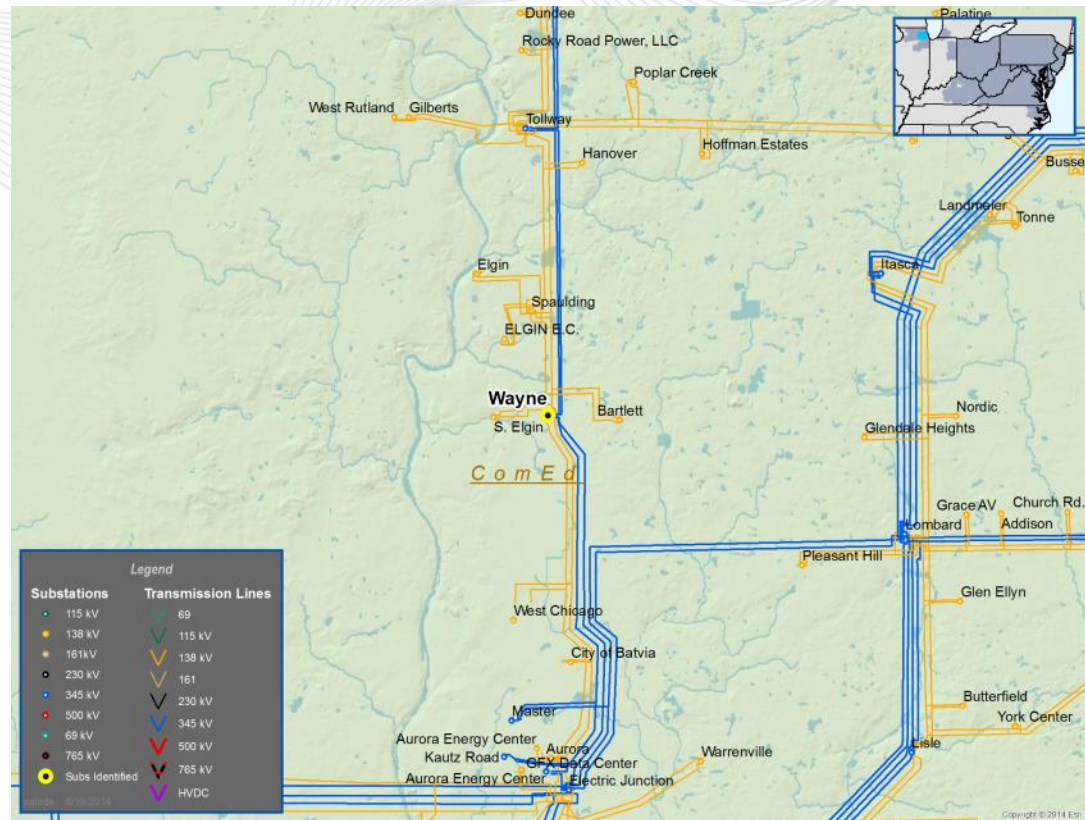


- **Supplemental Project**
- Replace Burnham 345 kV circuit breakers 2-4 and 4-5. (S0718)
- Estimated Project Cost: \$3.6M
- Projected IS Date: 12/31/2014

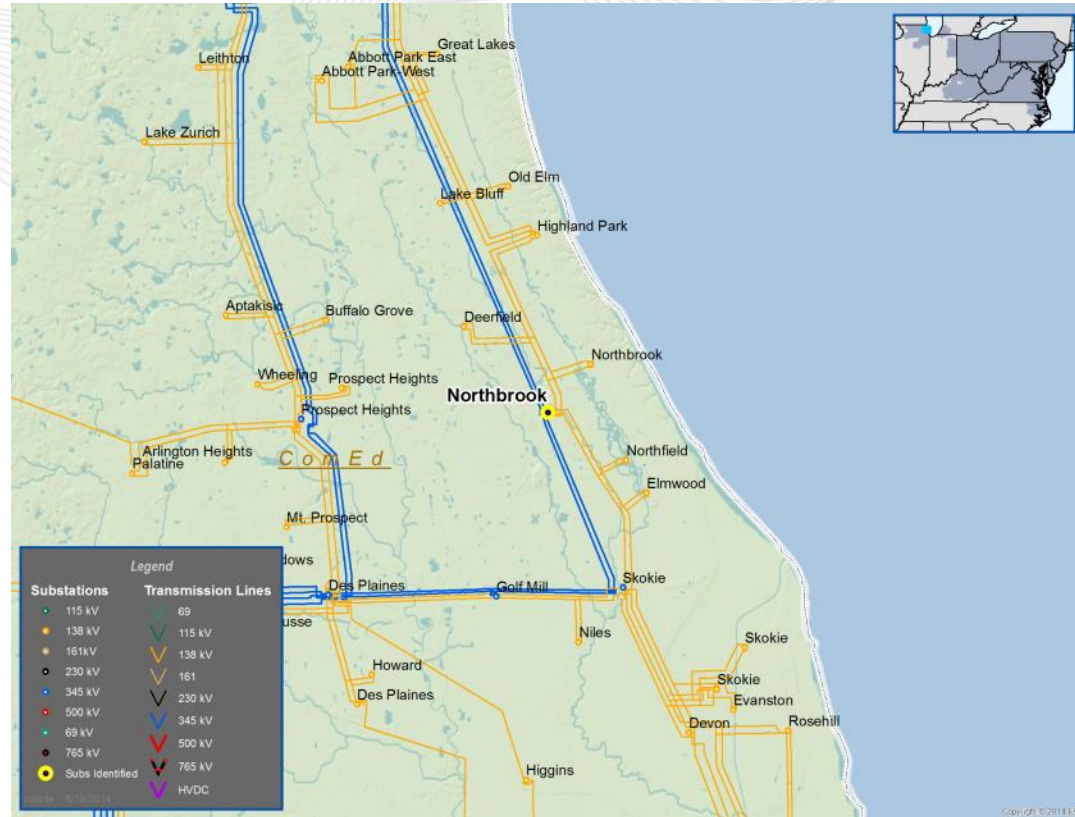




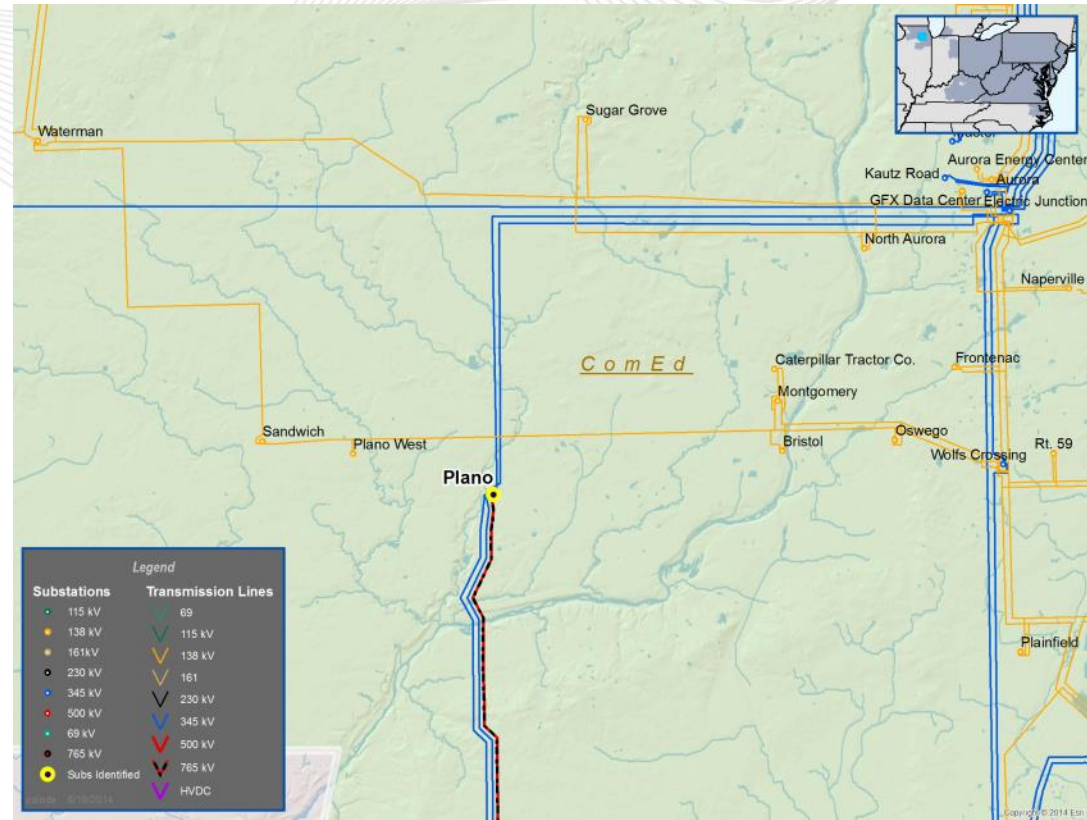
- **Supplemental Project**
- Move Wayne 138kV cap bank from TR 81 tertiary to 138 kV bus 2. (S0719)
- Estimated Project Cost: \$5M
- Projected IS Date: 12/31/2014



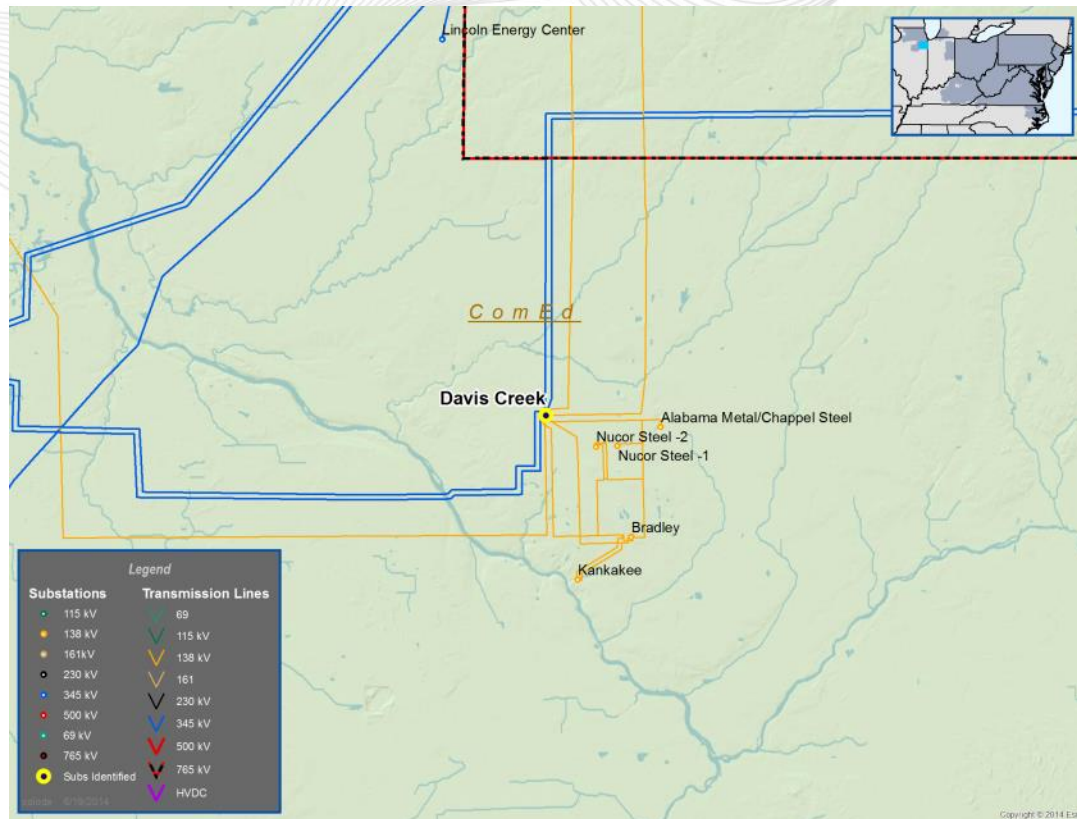
- **Supplemental Project**
- Replace Northbrook 345/138KV transformer 81 and its 138 kV circuit breaker, replace its 345 kV MOD with a circuit breaker. (S0720)
- Estimated Project Cost: \$8M
- Projected IS Date: 6/1/2015



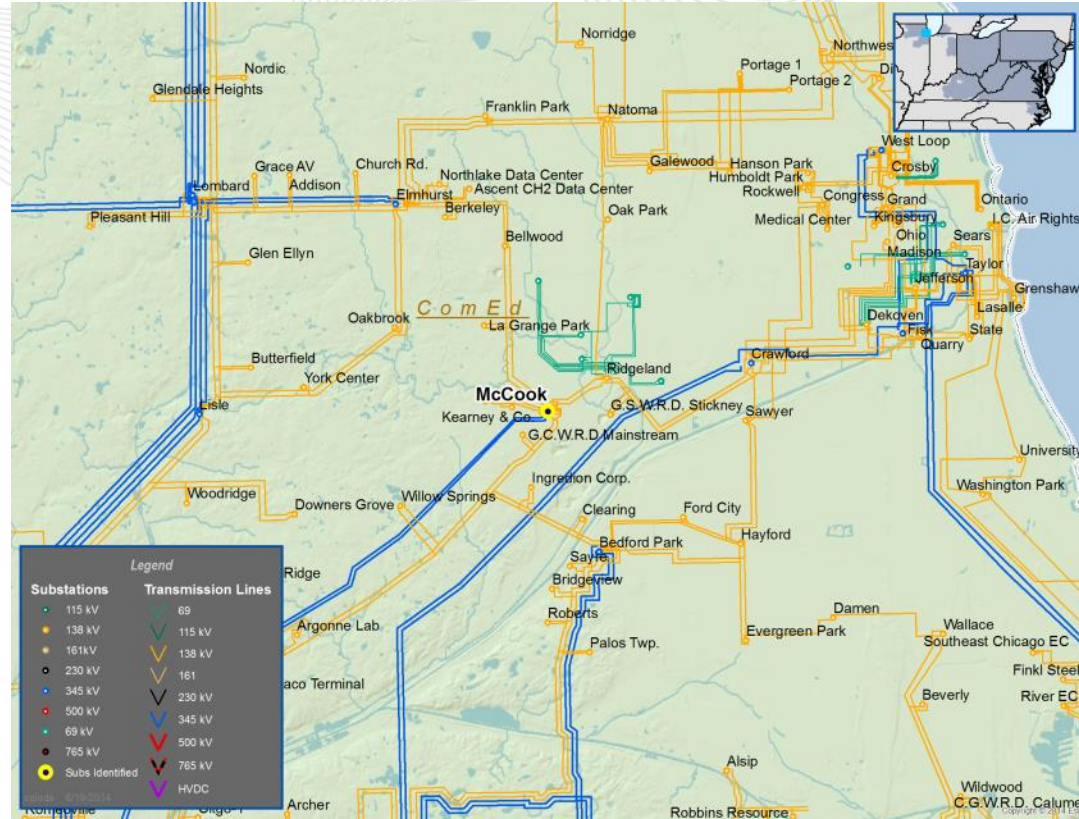
- **Supplemental Project**
- Replace Plano TR 94(A,B,&C) and 345 kV bus tie 2-5 (S0721)
- Estimated Project Cost: \$15M
- Projected IS Date: 6/1/2015



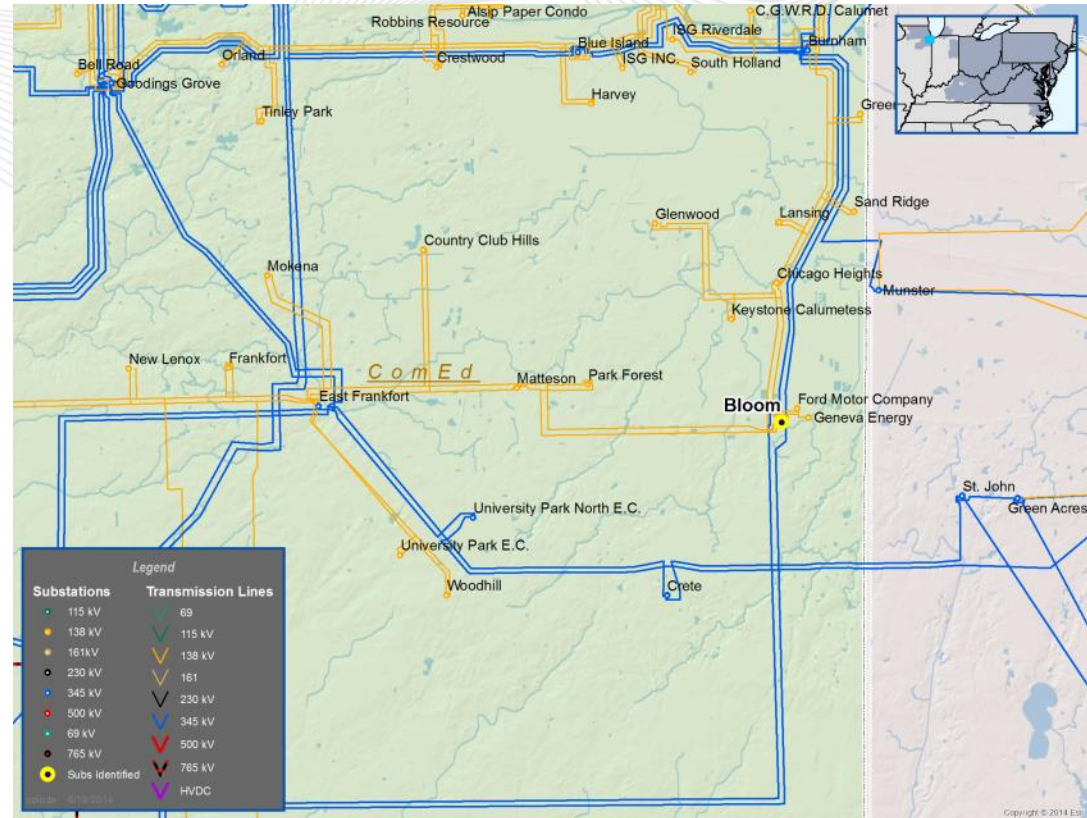
- **Supplemental Project**
- Replace Davis Creek 345 kV bus tie 3-4 (S0722)
- Estimated Project Cost: \$1.8M
- Projected IS Date: 6/1/2015



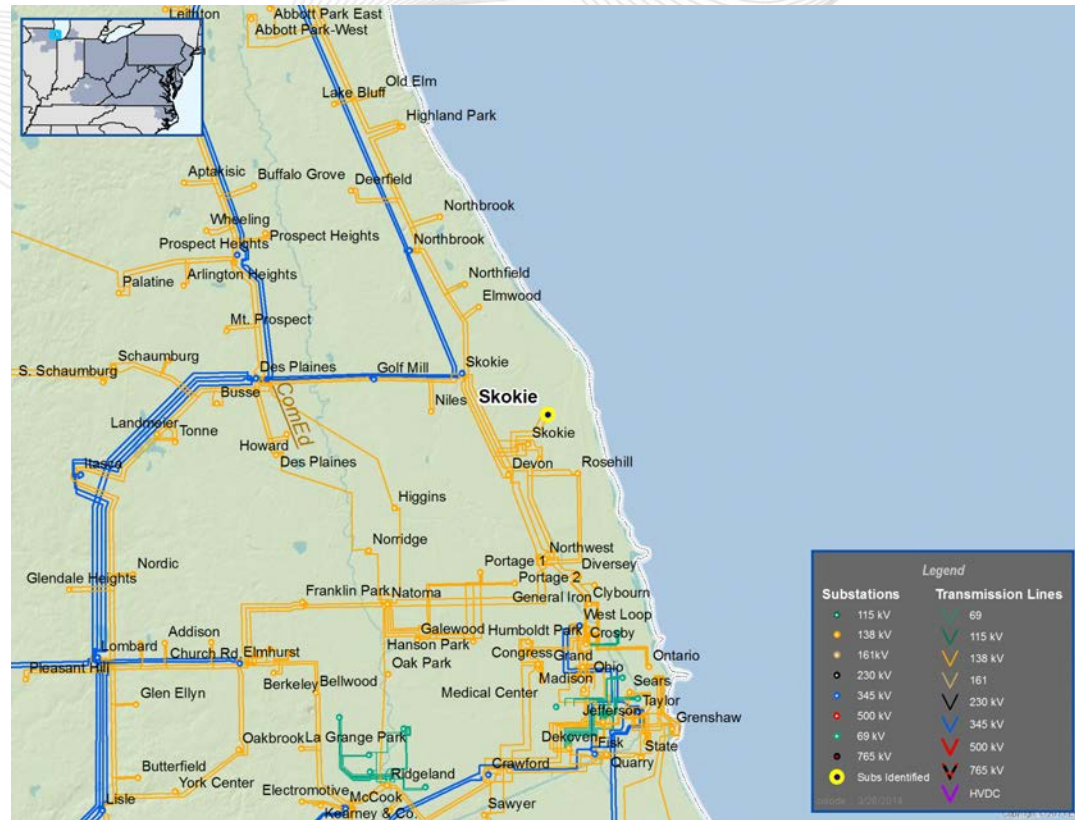
- **Supplemental Project**
- Replace McCook 345/138KV TR 82, replace high-side MOD with 345 kV circuit breaker (S0723)
- Estimated Project Cost: \$4.5M
- Projected IS Date: 6/1/2015



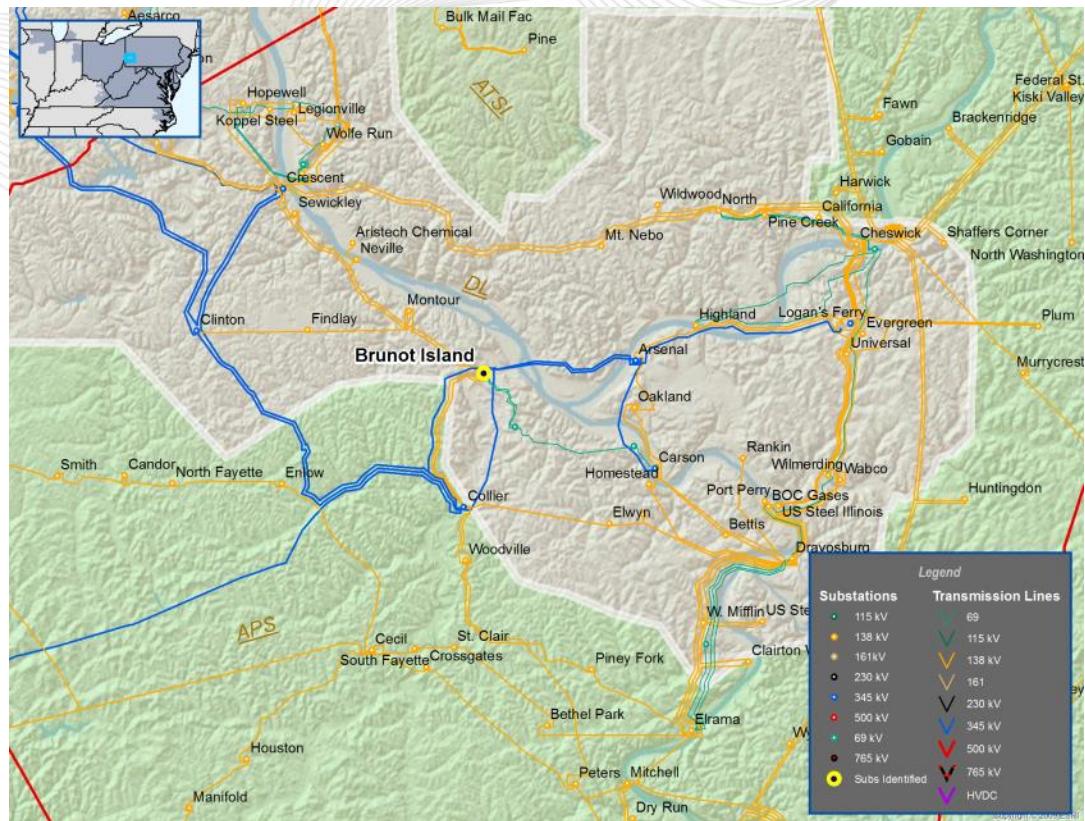
- **Supplemental Project**
- Replace Bloom 345/138KV TR 84, replace high-side MOD with 345 kV circuit breaker (S0724)
- Estimated Project Cost: \$4.5M
- Projected IS Date: 6/1/2015



- **Supplemental Project**
- Replace Skokie 345/138kV TR 84, replace high-side MOD with 345 kV circuit breaker (S0725)
- Estimated Project Cost: \$4.5M
- Projected IS Date: 6/1/2015



- **Supplemental Project**
- Brunot Island 3-10 138kV tie breaker replacement (S0733)
- Estimated Project Cost: \$0.35M
- Projected IS Date: 12/31/2014

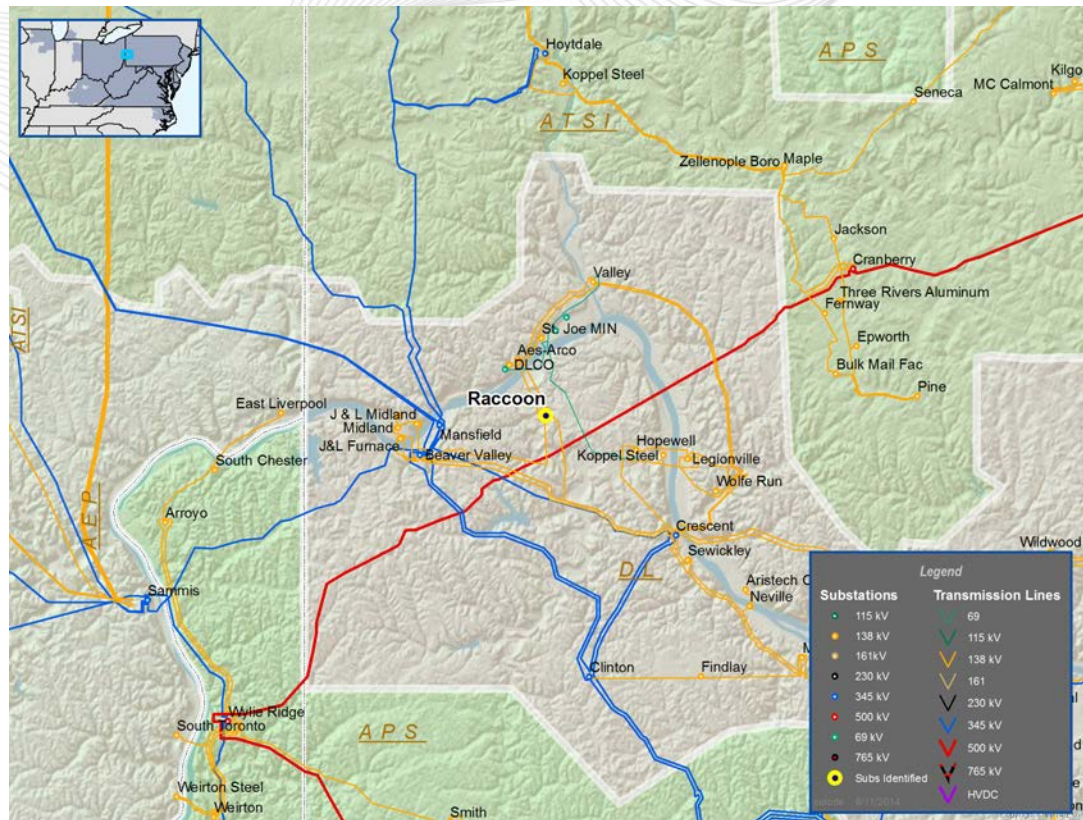




- **Supplemental Project**
- Carson 3-4 138kV tie breaker replacement (S0734)
- Estimated Project Cost: \$0.35M
- Projected IS Date: 12/31/2014



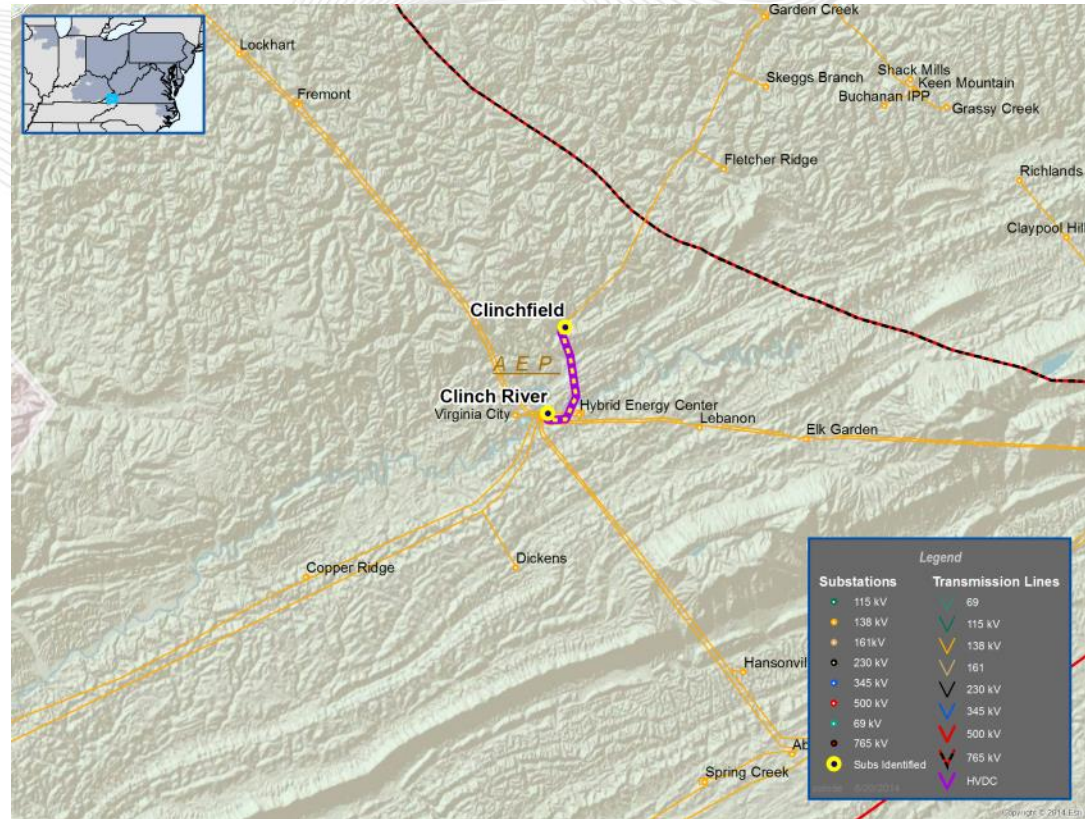
- **Supplemental Project**
- Raccoon Z-81 138kV breaker replacement (S0735)
- Estimated Project Cost: \$0.35M
- Projected IS Date: 12/31/2014



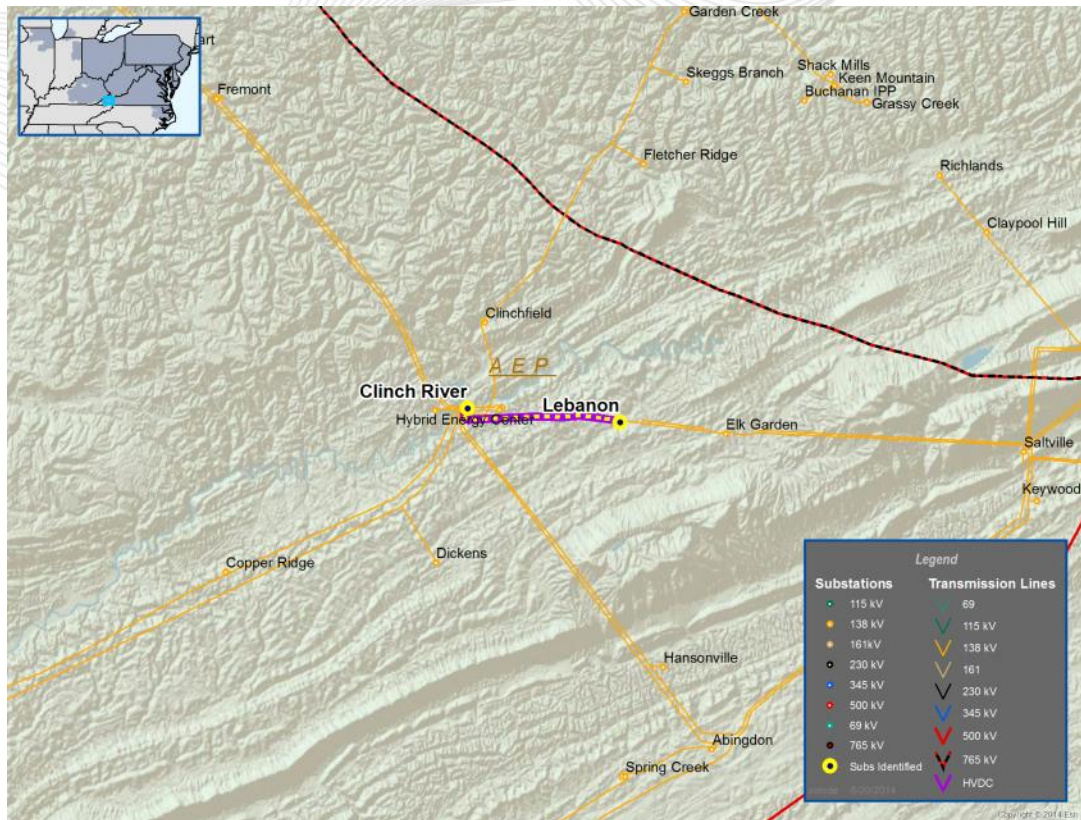


# 2014 RTEP Preliminary Reliability Results Posted for the Anticipated 6/27/2014 RTEP Window

- Generation Deliverability and Common Mode Outage Violation.
- The Clinch River to Clinchfield 138 kV circuit is overloaded for multiple contingencies.



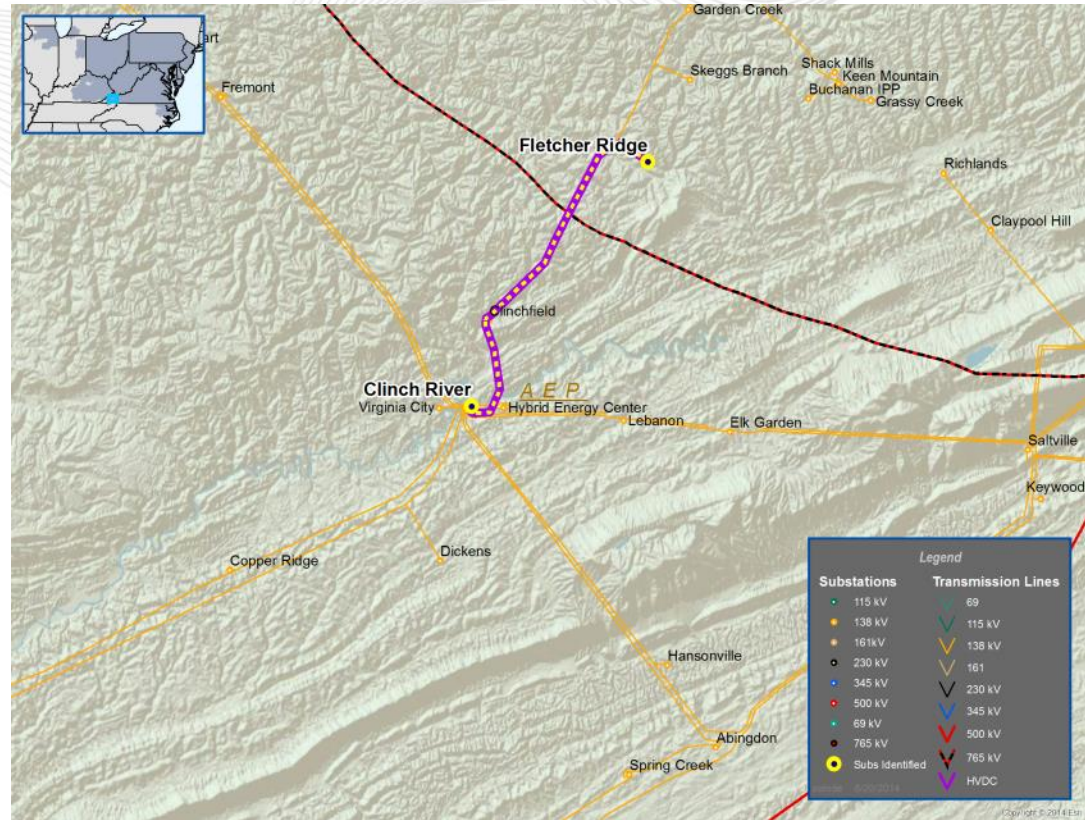
- Generation Deliverability and Common Mode Outage Violation.
- The Clinch River to Lebanon 138 kV circuit is overloaded for multiple contingencies.



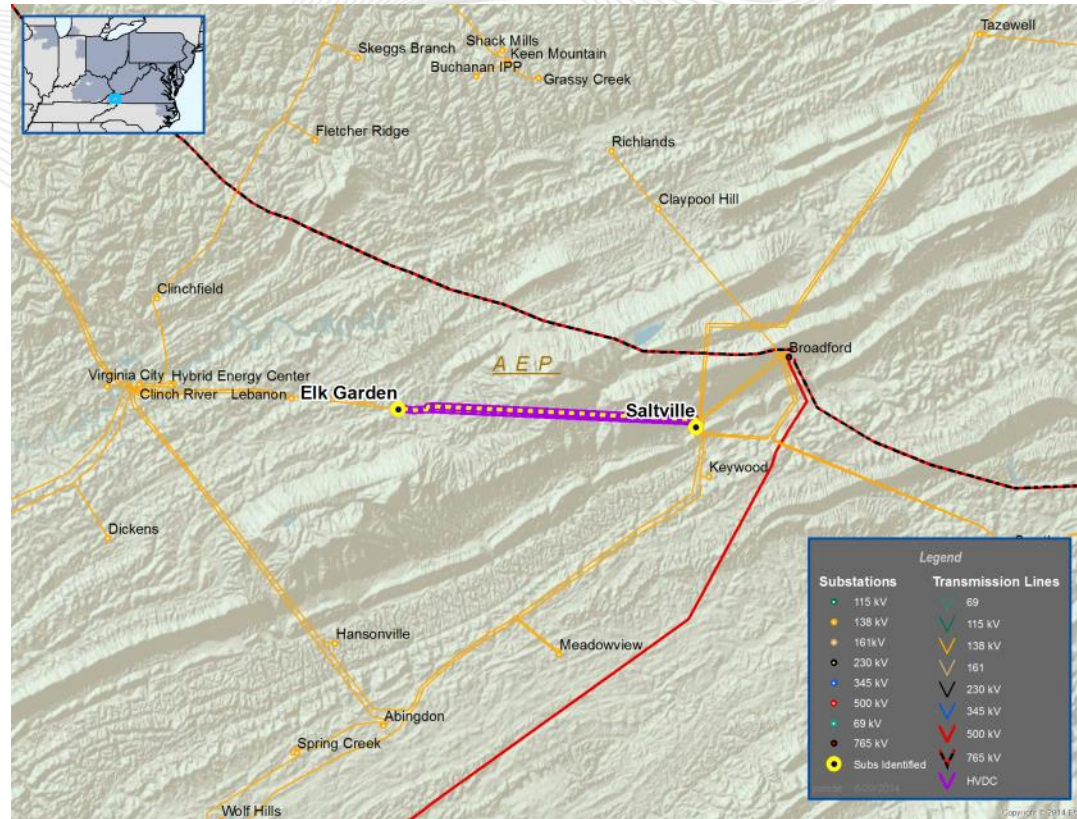


# AEP Transmission Zone

- Generation Deliverability Violation.
- The Clinch Field to Fletcher Ridge 138 kV circuit is overloaded for multiple single contingencies.



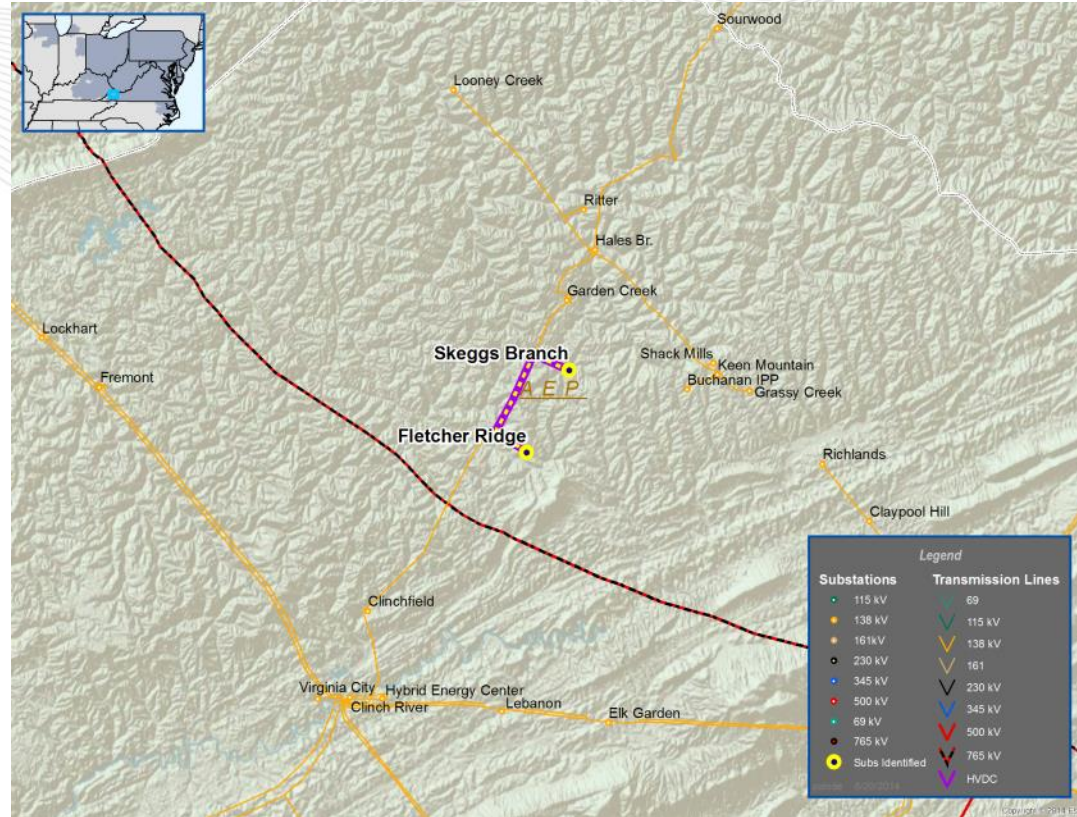
- Generation Deliverability and Common Mode Outage Violation.
- The Saltville – Elk Garden 138 kV circuit is overloaded for multiple contingencies.





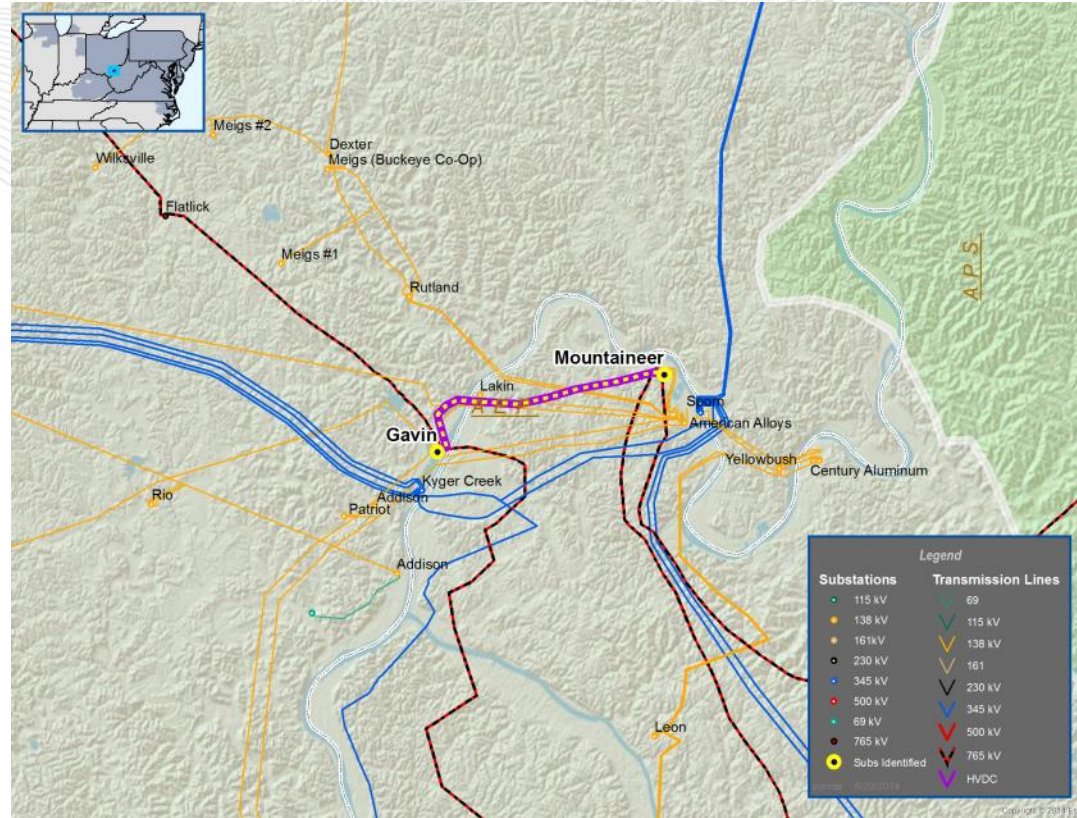
# AEP Transmission Zone

- Generation Deliverability Violation.
- The Fletcher Ridge to Skeggs Branch 138 kV circuit is overloaded for multiple single contingencies.

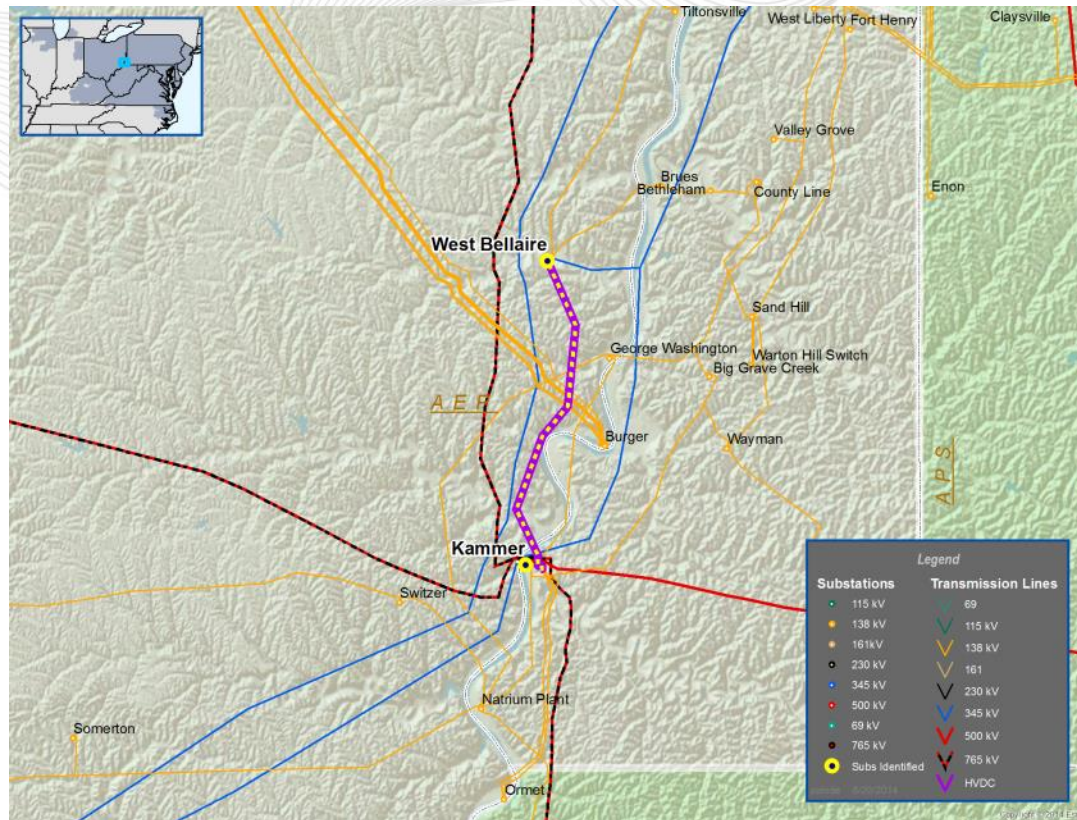




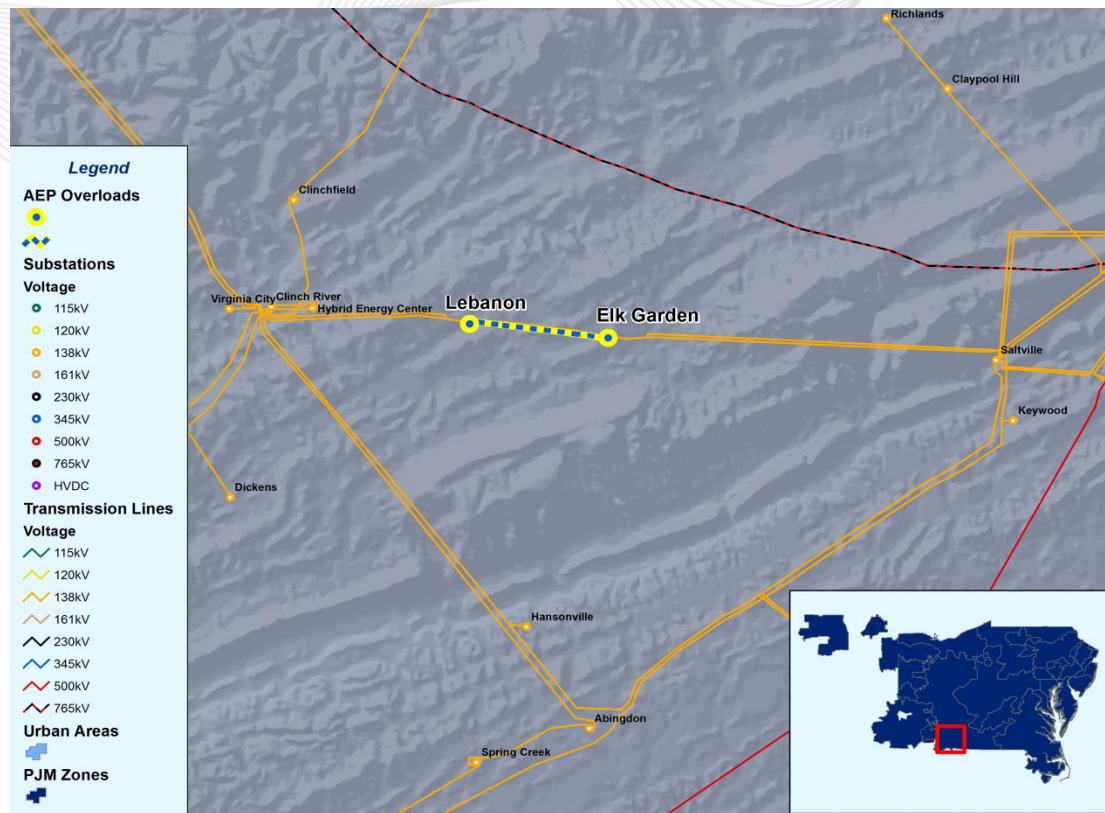
- Generation Deliverability Violation.
- The Gavin to Mountaineer 765 kV is overloaded for single contingency loss of the Flatlick – Marysville 765 kV circuit.



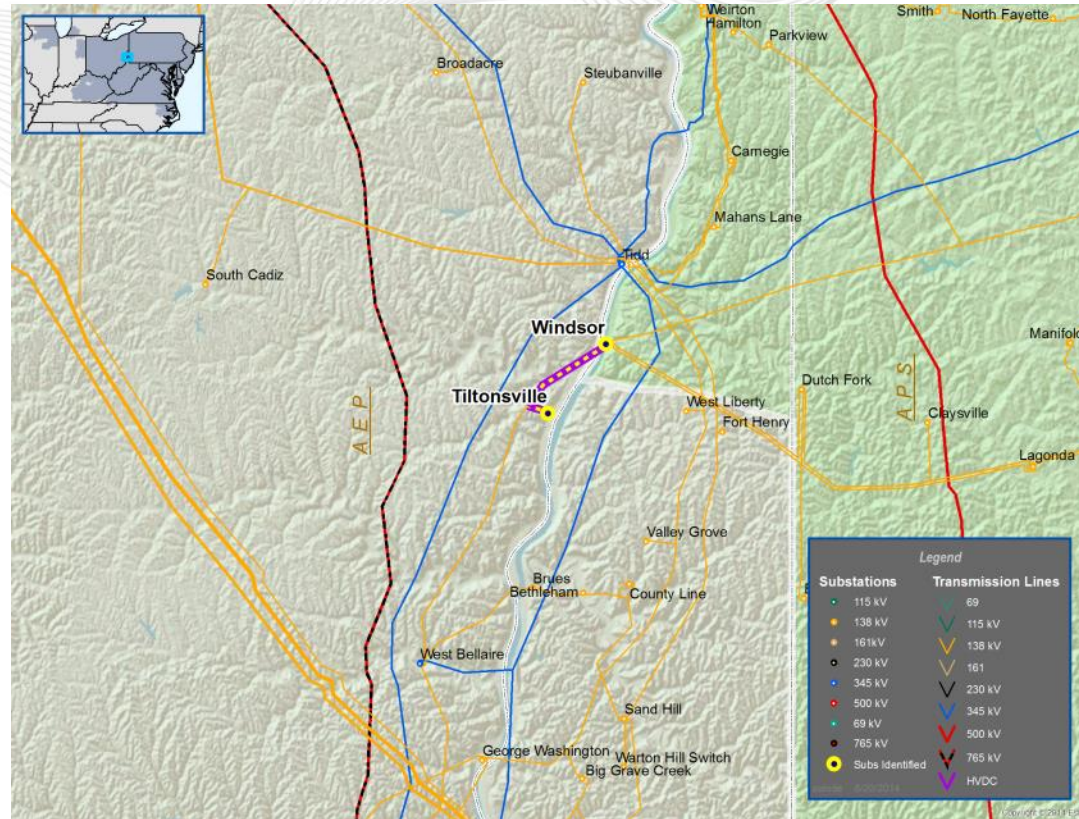
- Generation Deliverability and Common Mode Outage Violation.
- The Kammer to West Bellaire 138 kV circuit is overloaded for multiple contingencies.



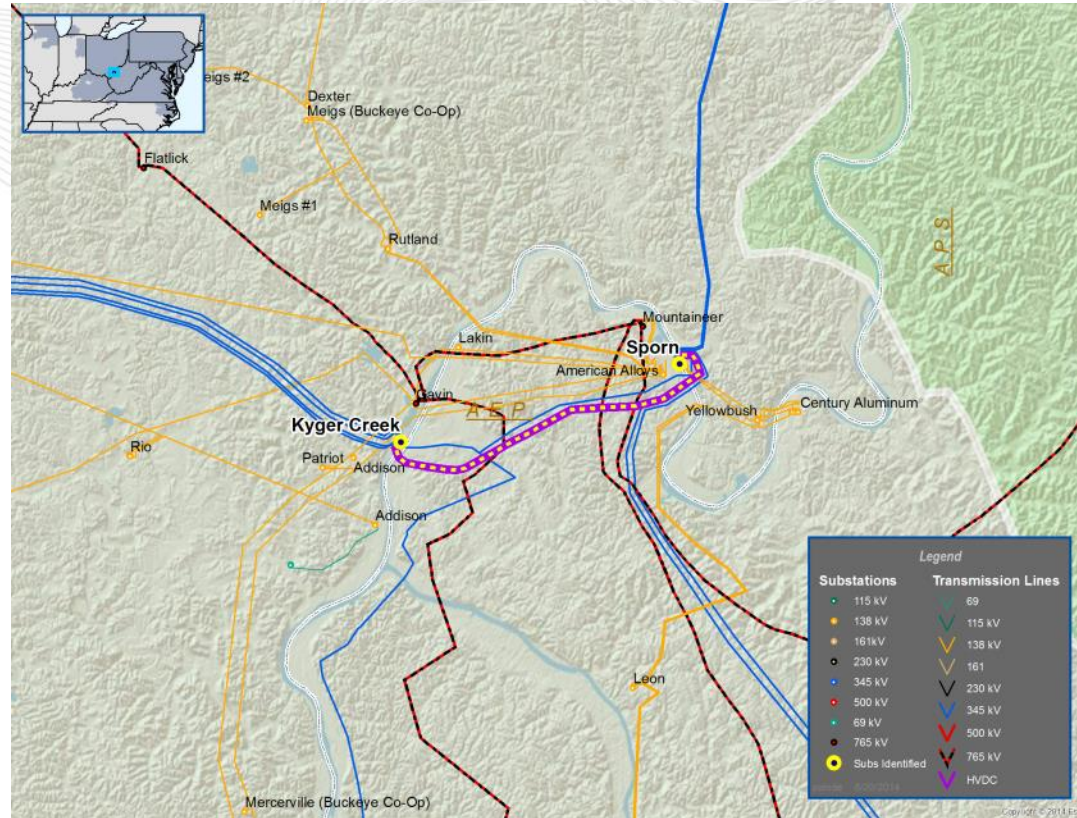
- Generation Deliverability and Common Mode Outage Violation.
- The Lebanon to Elk Garden 138 kV circuit is overloaded for multiple contingencies.



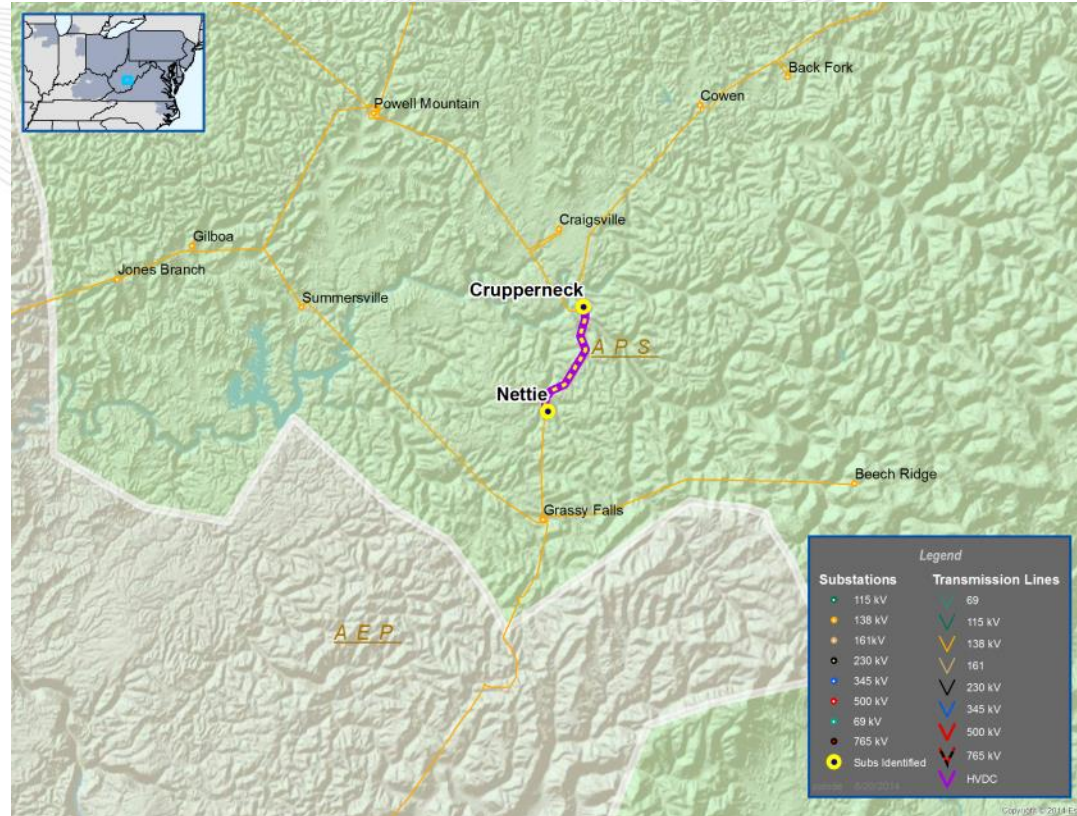
- Baseline, Generation Deliverability and Common Mode Outage Violation.
- The Tiltonsville to Windsor 138 kV circuit is overloaded for multiple contingencies.



- Generation Deliverability Violation.
- The Kyger Creek to Sporn 345 kV circuit #2 is overloaded for multiple single contingencies.



- Common Mode Outage Violation.
- The Nettie – Crupperneck 138 kV circuit is overloaded for line fault stuck breaker contingency loss of the Gilboa – Powell Mt. – Summersville 138 kV circuit and Gilboa 138/23 kV transformer.



- Common Mode Outage Violation.
- The Avon 345/138 kV transformer #92 is overloaded for line fault stuck breaker contingency loss of Avon – Juniper 345 kV circuit and Avon 345/138 kV transformer #91.



- Common Mode Outage Violation.
- The Beaver – Lake Ave. 345 kV circuit #2 is overloaded for line fault stuck breaker contingency loss of Beaver – Carlisle and Beaver – Lake Ave. #1 345 kV circuits.
- Update: 6/24/2014 – the correct rating is applied this is no longer an issue

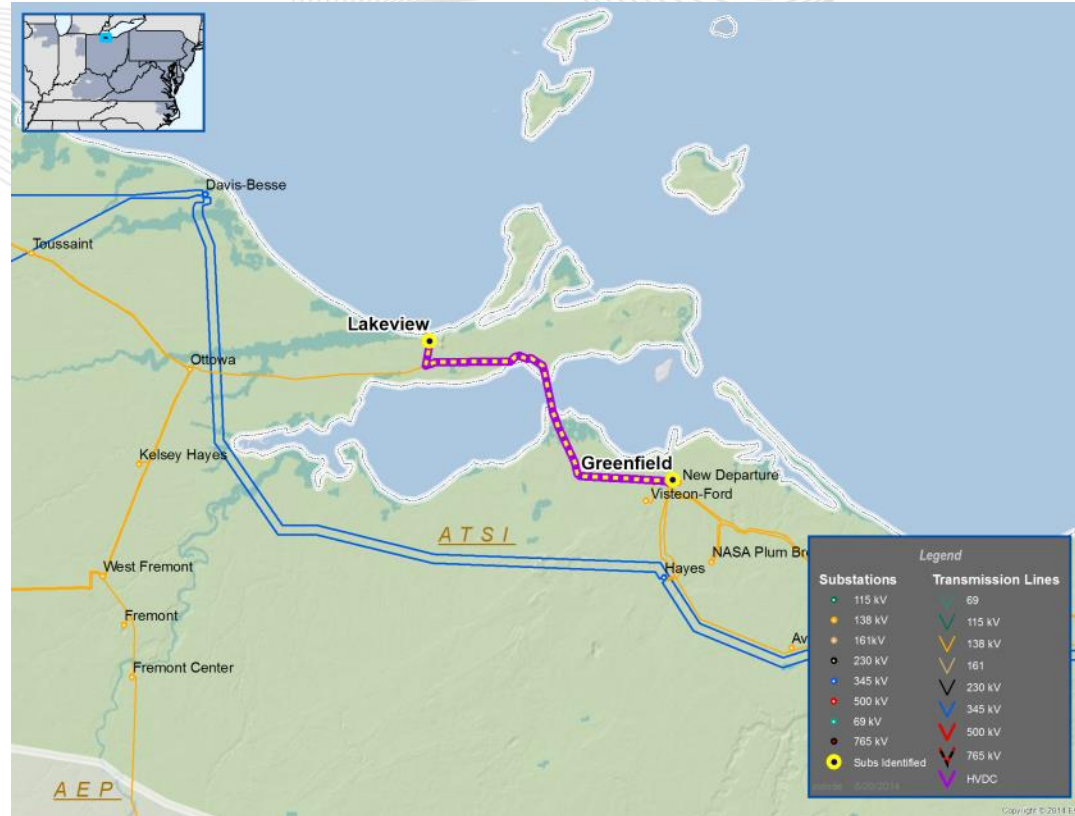




- Baseline and Common Mode Outage Violation.
- The Black River to Lorain 138 kV circuit is overloaded for multiple category C contingencies.



- Common Mode Outage Violation.
- The Lakeview – Greenfield 138 kV circuit is overloaded for tower contingency loss of the Dave Besse – Lemoyne and Dave Besse – Beaver 345 kV circuits.



- Common Mode Outage Violation.
- The Ottawa - Lakeview 138 kV circuit is overloaded for tower contingency loss of the Dave Besse – Lemoyne and Dave Besse – Beaver 345 kV circuits.



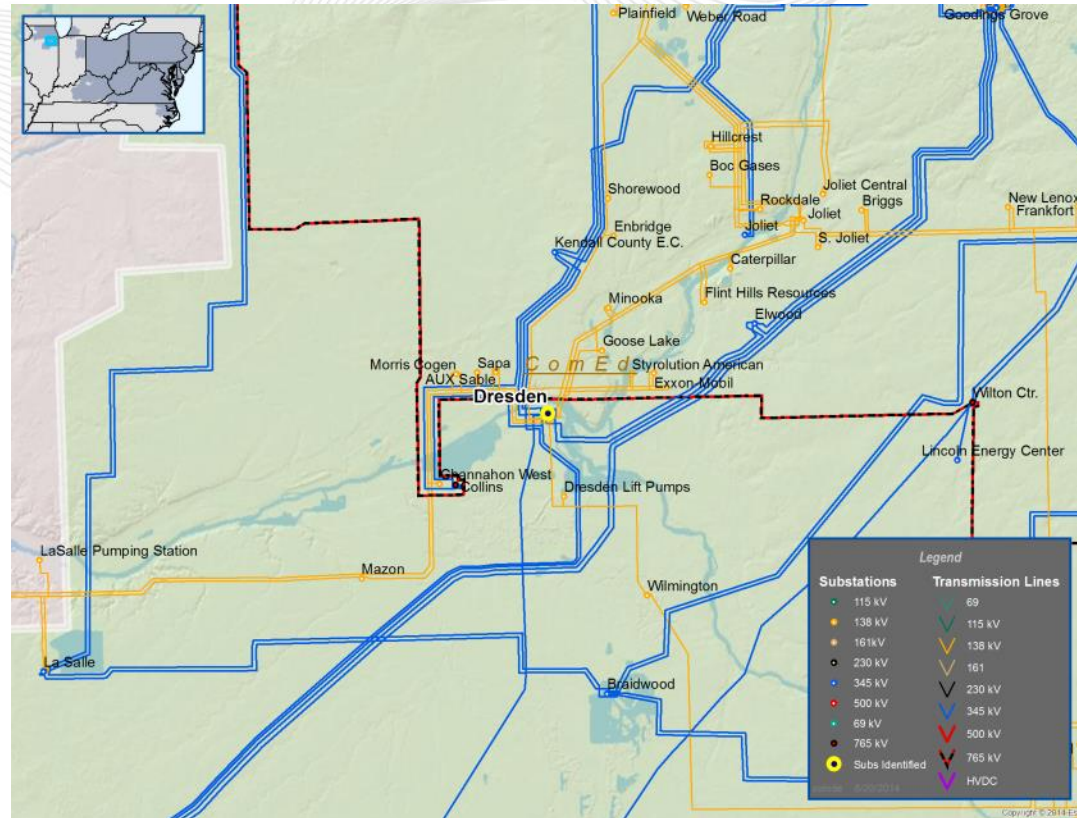


# ATSI Transmission Zone

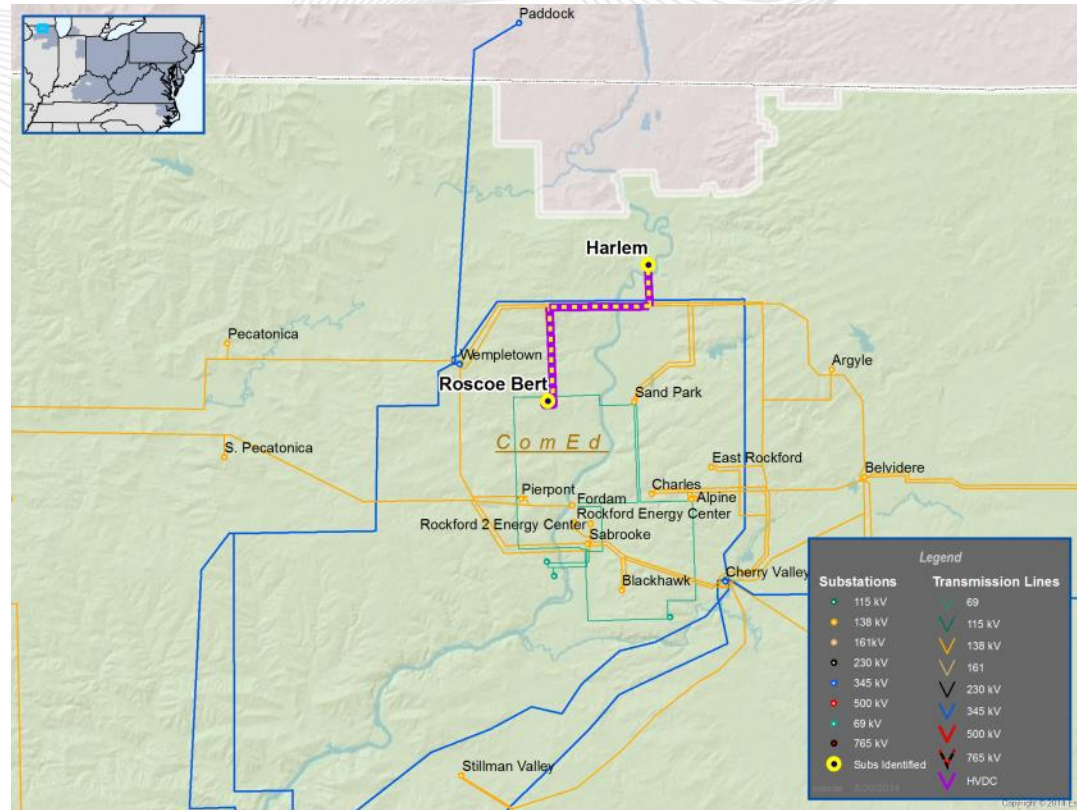
- Common Mode Outage Violation.
- The Richland to Naomi 138 kV circuit is overloaded for bus contingency loss of the Richland 138 kV bus section.



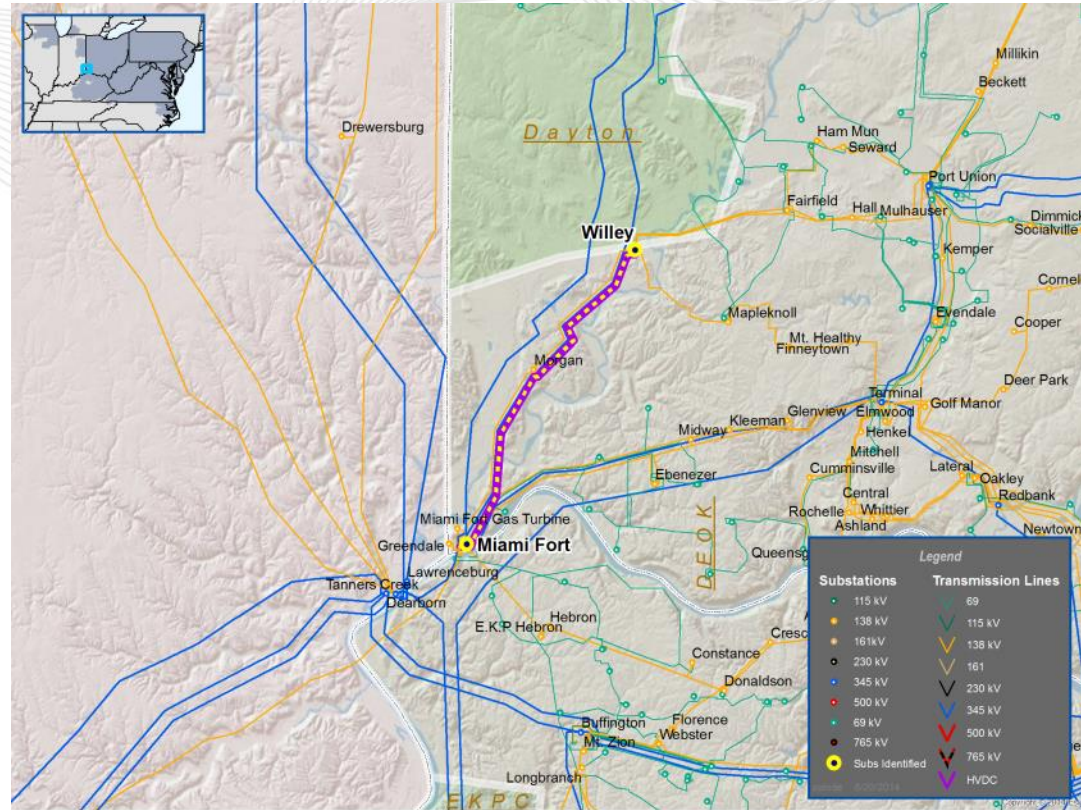
- Common Mode Outage Violation.
- The Dresden 345/138 kV transformer 83 is overloaded for line fault stuck breaker contingency loss of Dresden – Elwood 345 kV circuit and Elwood bus tie.



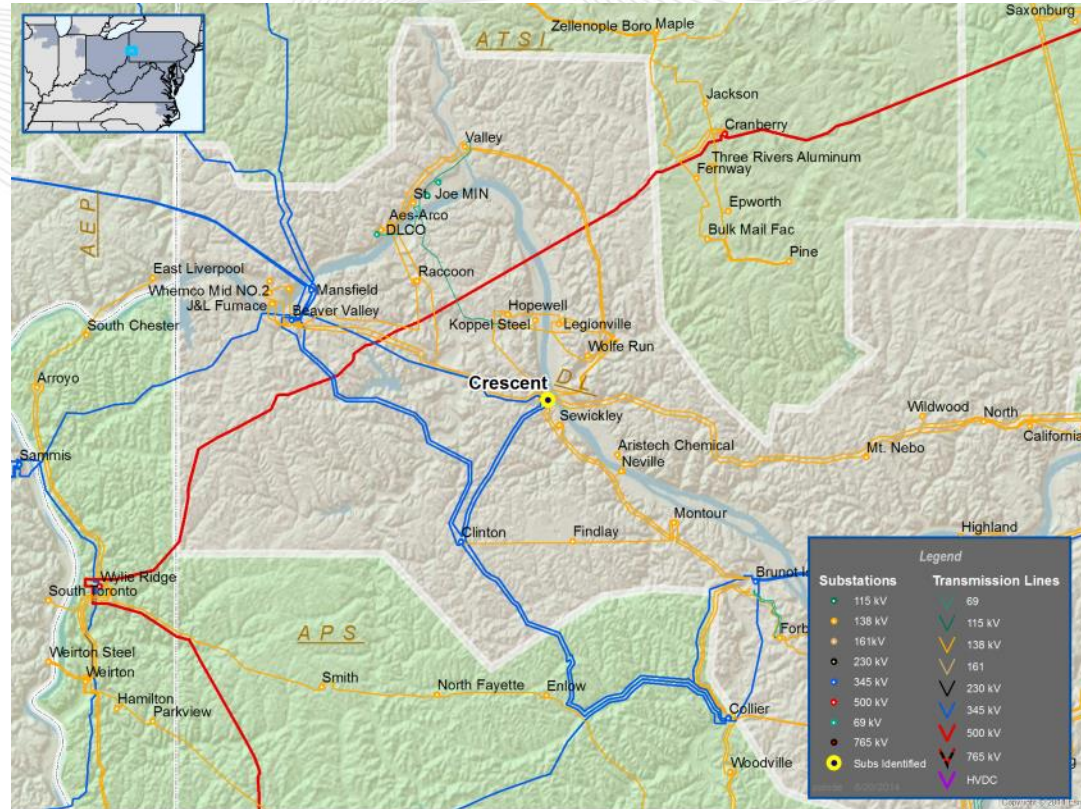
- Baseline, Generation Deliverability and N-1-1 Violation.
- The Harlem to Roscoe Bert 138kV Blue line is overloaded for single contingency loss of the Cherry Valley – Belvidere 138 kV circuit and for multiple contingency pairs.



- Baseline and Common Mode Outage Violation.
- The Miami Fort to Willey 138 kV circuit is overloaded for line fault stuck breaker contingency loss of the Miami Fort – Clifty Creek, Miami Fort – Hebron Tap, Miami Fort – Midway, Miami Fort – Morgan 138 kV circuits and one of the Miami Fort 345/138 kV transformer.



- Baseline and Common Mode Outage Violation.
- The Crescent 345/138 kV transformers #1 and #2 are overloaded for multiple category C contingencies.





## • Revision History

- remove S0726 since it is a duplication of S0692 and B2469
- diagram updates for slides 65 -67
- split S0736, S0740.1 and S0742.1
- S0716, transformer 93A should be 765/345KV instead of 345/138KV
- corrected the number duplication for B1428.1, B1859.1, B1871.1