

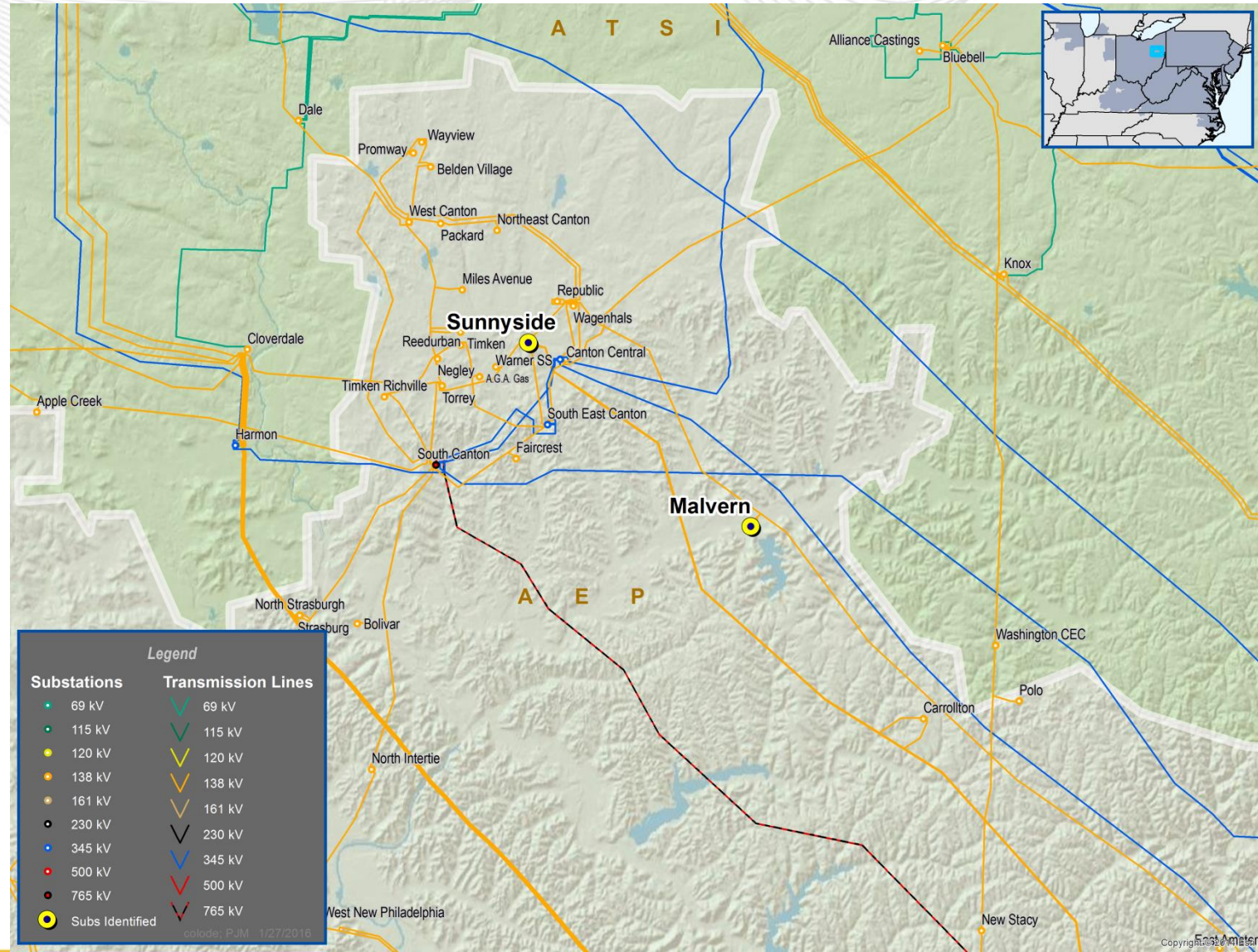


# Reliability Analysis Update

Sub Regional RTEP Committee  
PJM West

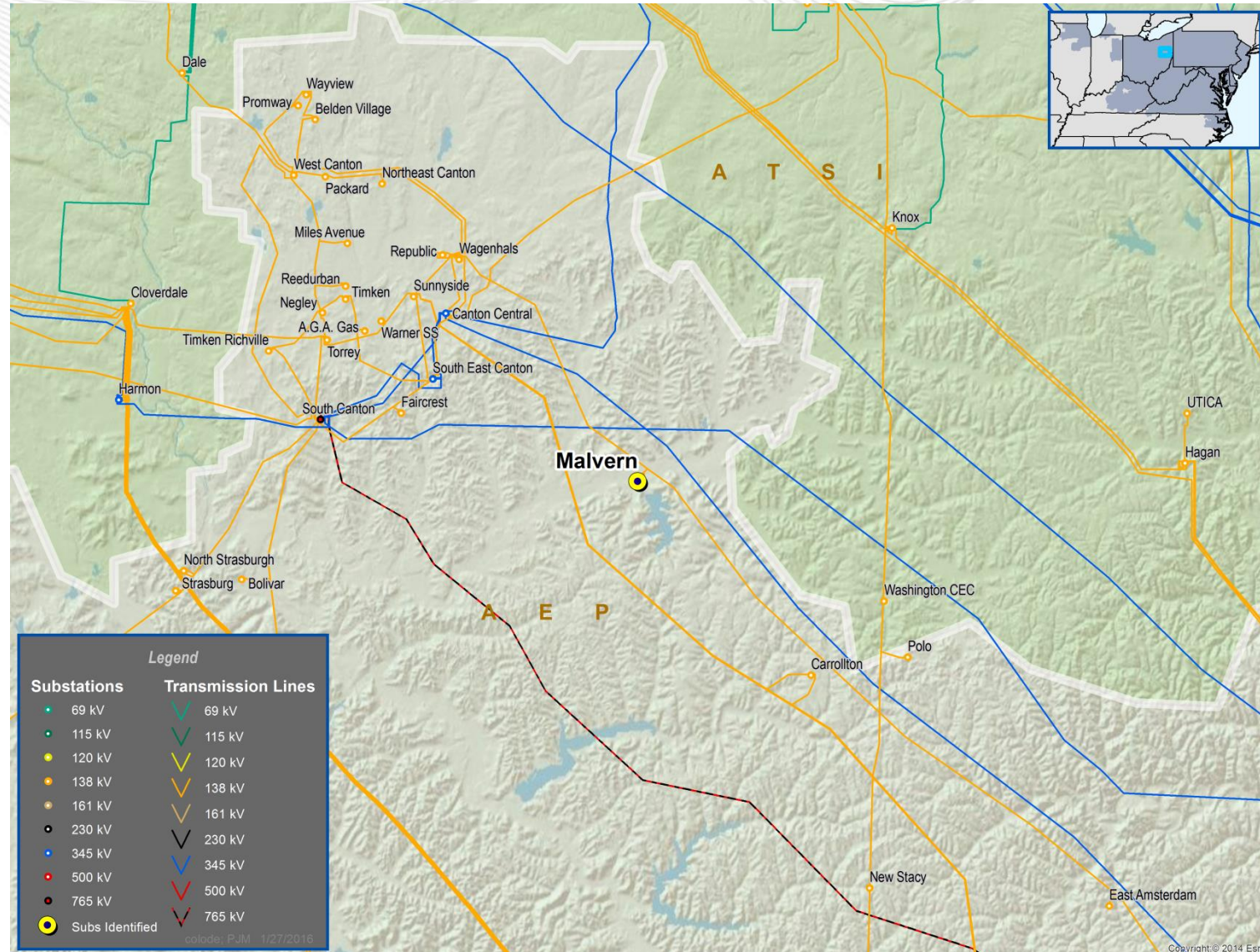
February 04, 2016

- **AEP Criteria Violation**
- Due to the local load increase and motor-starting concerns, it is necessary to serve the customer at 69kV to avoid overloads & voltage violations.
- The Malvern – Sandy VL 23KV line and Marlvern 138/23KV transformer are overload for the loss of the Sunnyside – Part PM 23kV line; Low voltage at multiple buses (Possible local voltage collapse) for the same contingency.
- **Immediate Need**
  - Due to the timing of the need for the reinforcement an RTEP proposal window is infeasible
- **Alternatives Considered**
  - Due to the immediate need of the project no alternatives were considered
- Convert the Sunnyside-East Sparta-Malvern 23kV sub-transmission network to 69kV. The lines are already built to 69kV standards. (B2731)
- **Construction Designation**
  - Due to the immediate need, the local Transmission Owner will be the Designated Entity
- **Estimated Project Cost: \$5.7M**
- **Required IS Date: 8/1/2016**

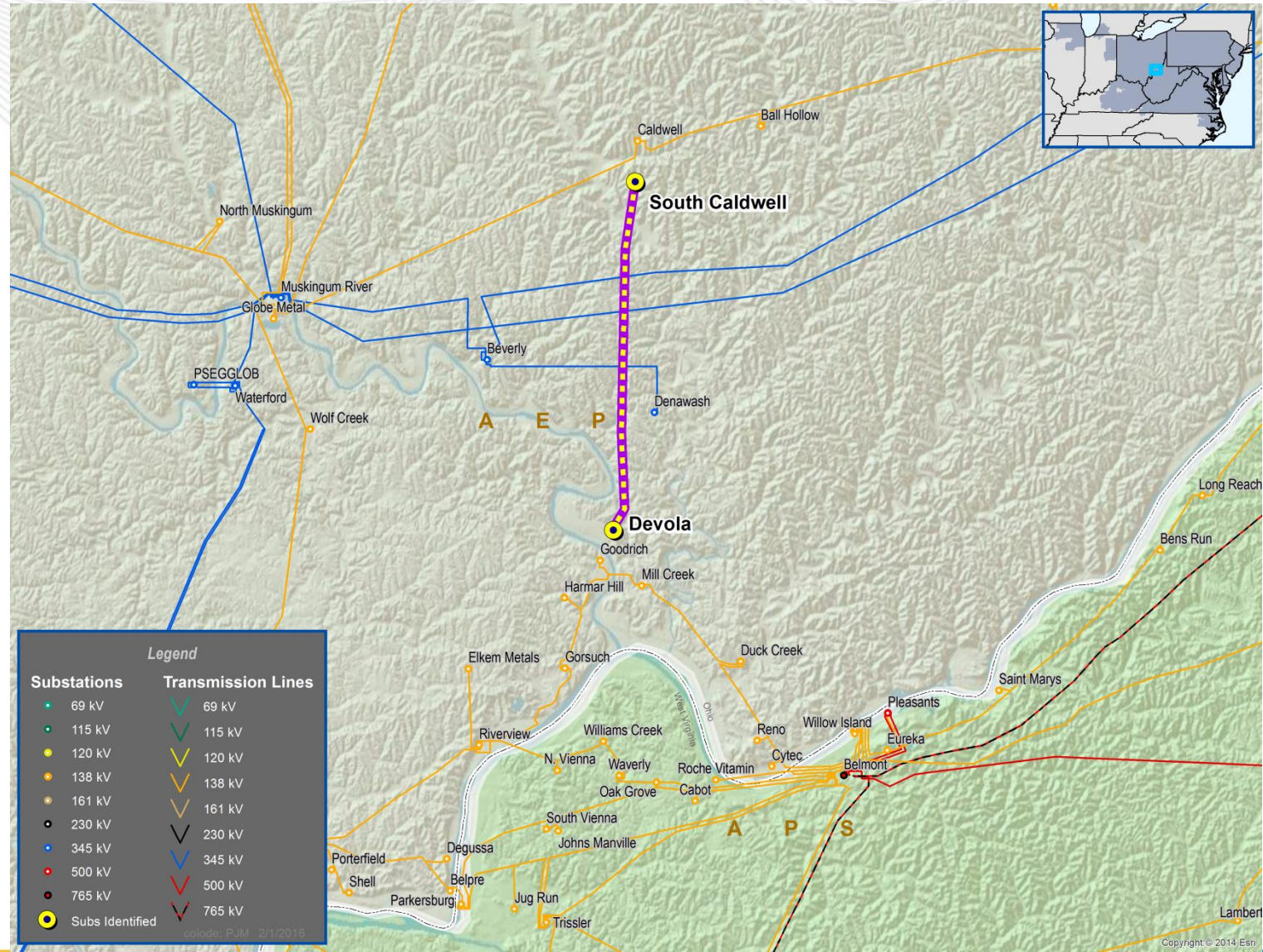


# Supplemental Projects

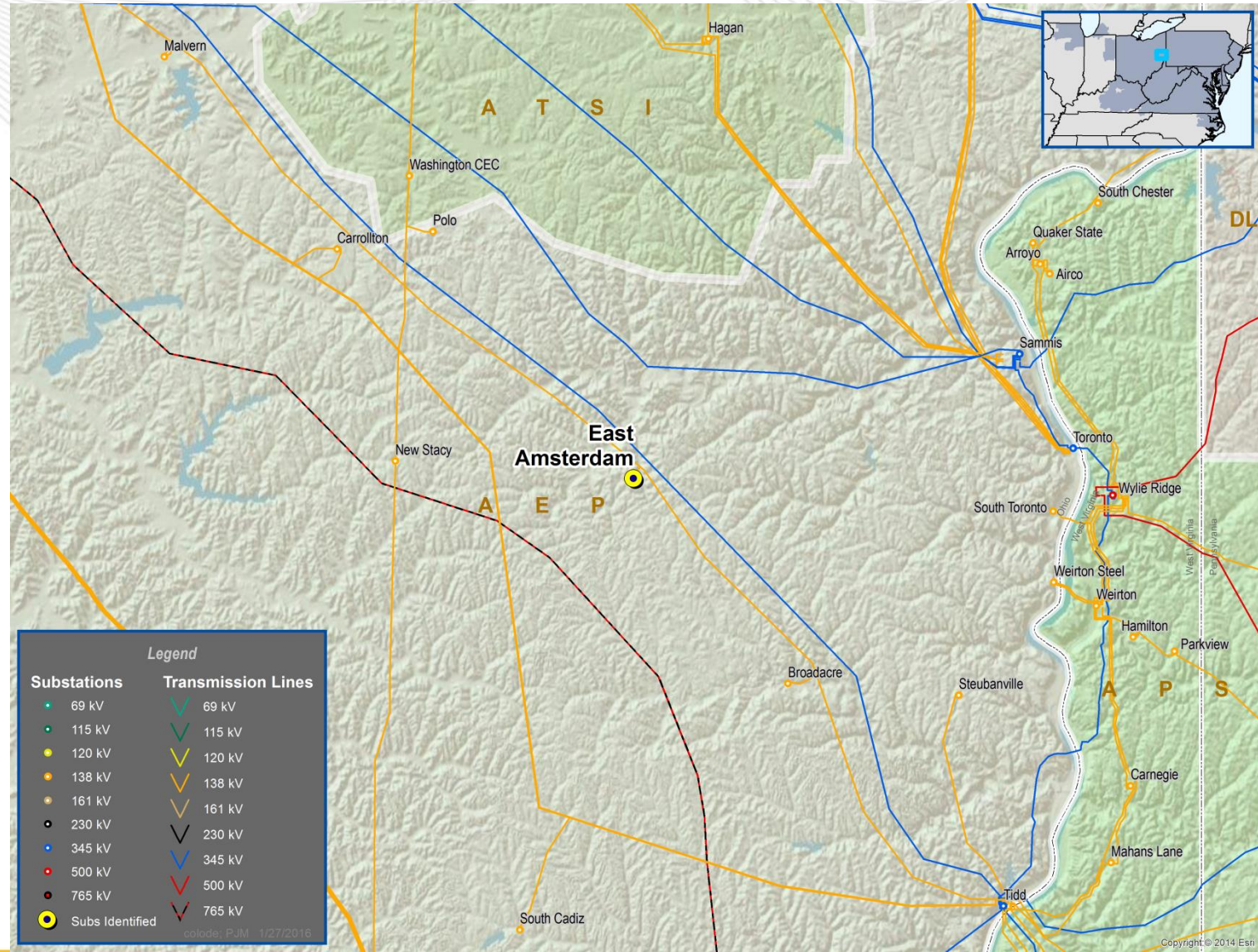
- **Supplemental Project**
- Upgrade the remote terminals from Malvern 138KV to remove a 4-terminal 138kV line, which is system protection concern, and replace aging infrastructure. (\$1124)
- Reliability Improvement and Aging infrastructure
- Estimated Project Cost: \$2.6M
- Projected IS Date: 12/1/2017



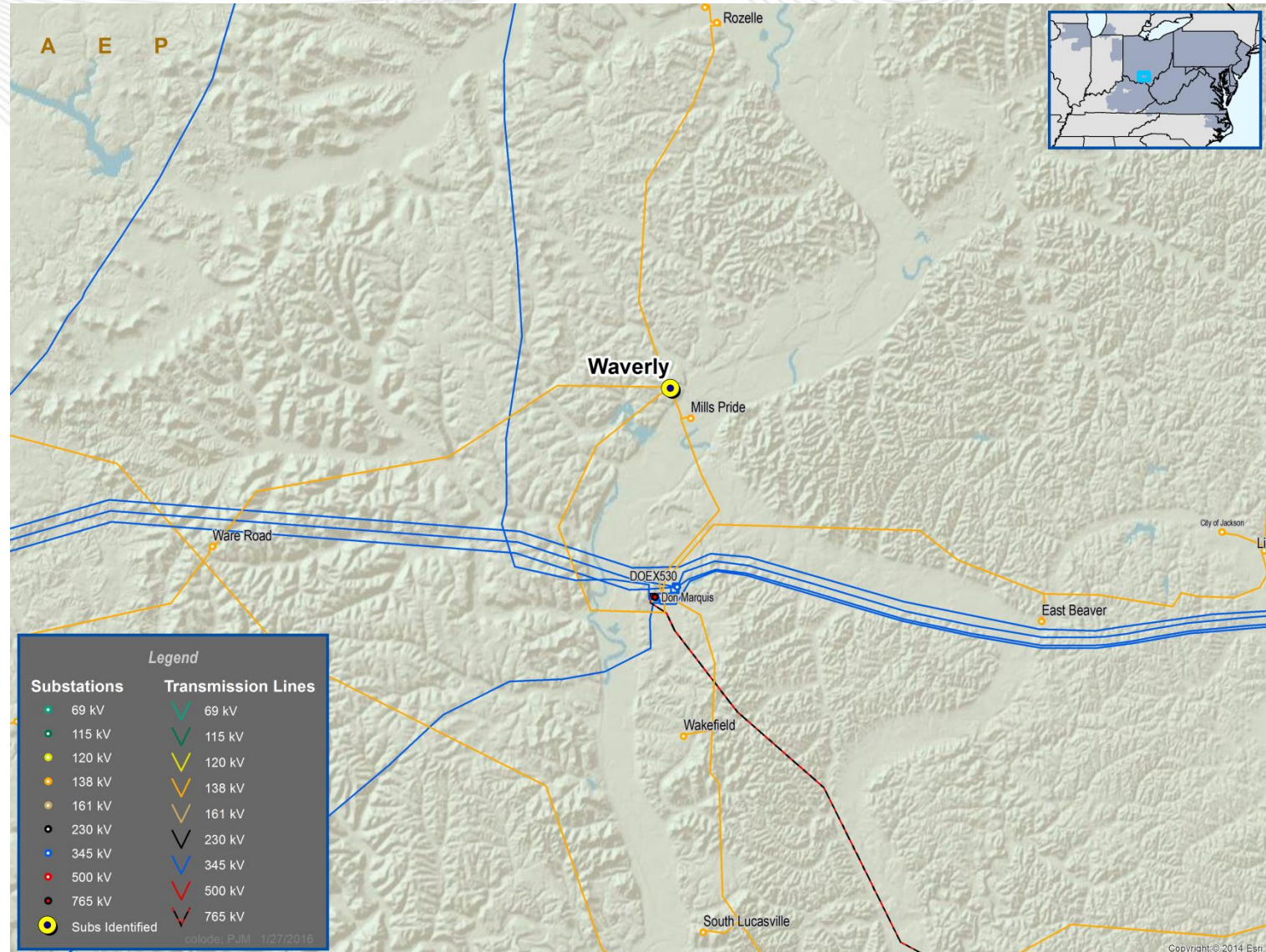
- **Supplemental Project**
- Construct a new 138 kV transmission network to support the retirement of AEP Ohio's deteriorated 23 kV distribution system in Washington County. Marietta North will build new 138 kV between South Caldwell and Devola stations. (S1125)
- Reliability improvement
- Estimated Project Cost: \$103.3M
- Projected IS Date: 6/1/2021



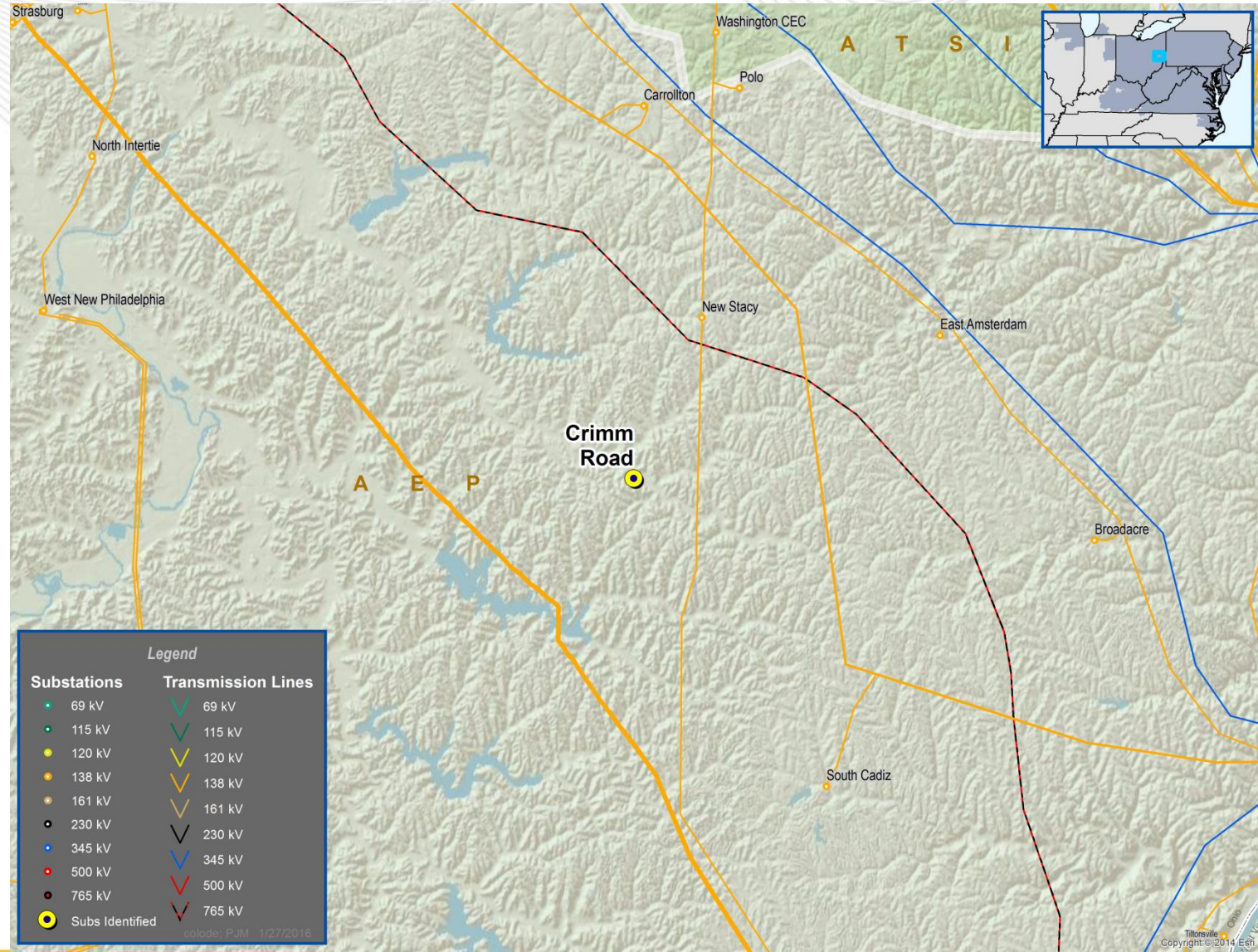
- **Supplemental Project**
- Replace the failed East Amsterdam 50 MVA 138-69kV transformer with a 90 MVA spare transformer (S1126)
- Equipment Failure
- Estimated Project Cost: \$0.2M
- Projected IS Date: 5/1/2016



- **Supplemental Project**
- Replace Waverly 138/69 XF#2 with two 138/69/13kV transformers and reconfigure the transformers at Waverly Station. (S1127)
- Equipment Failure
- Estimated Project Cost: \$2.5M
- Projected IS Date: 12/1/2016

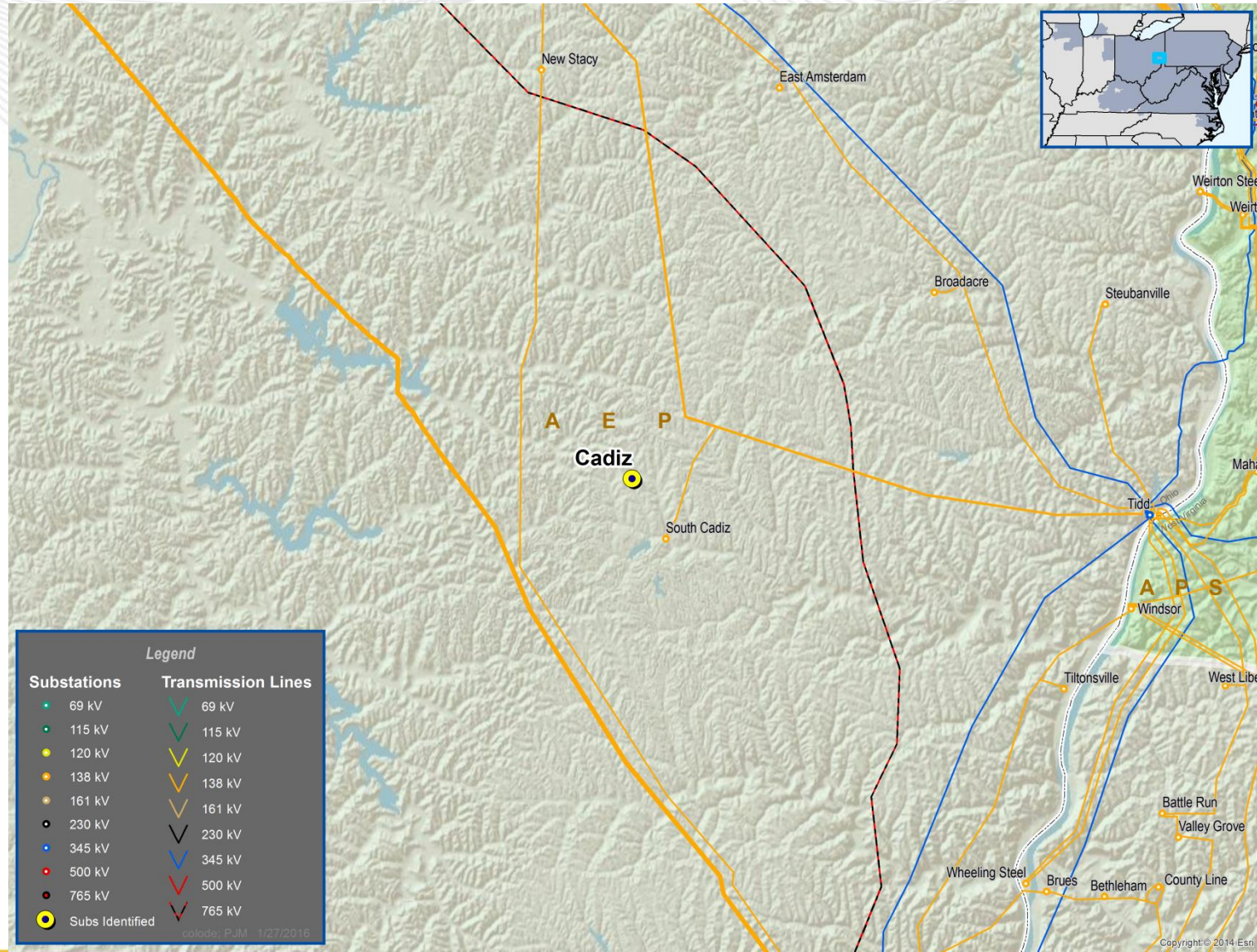


- **Supplemental Project**
- New 69kV circuit from AEP's existing Crimm Road 69KV Station to a new delivery point at Marathon's Scio plant to serve a new 2.6 MW load. (S1128)
- Customer Service
- Estimated Project Cost: \$3.5M
- Projected IS Date: 9/1/2016

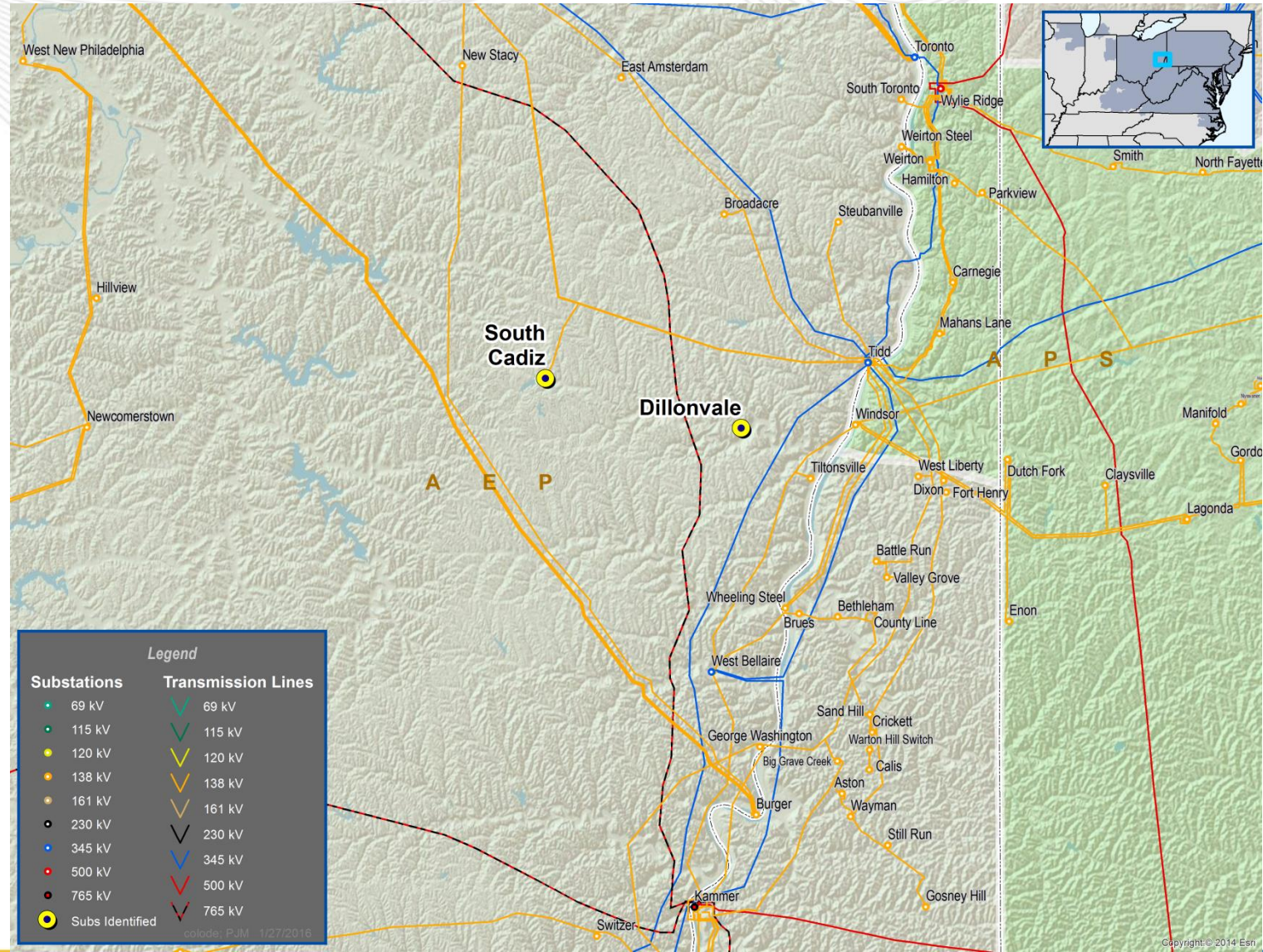




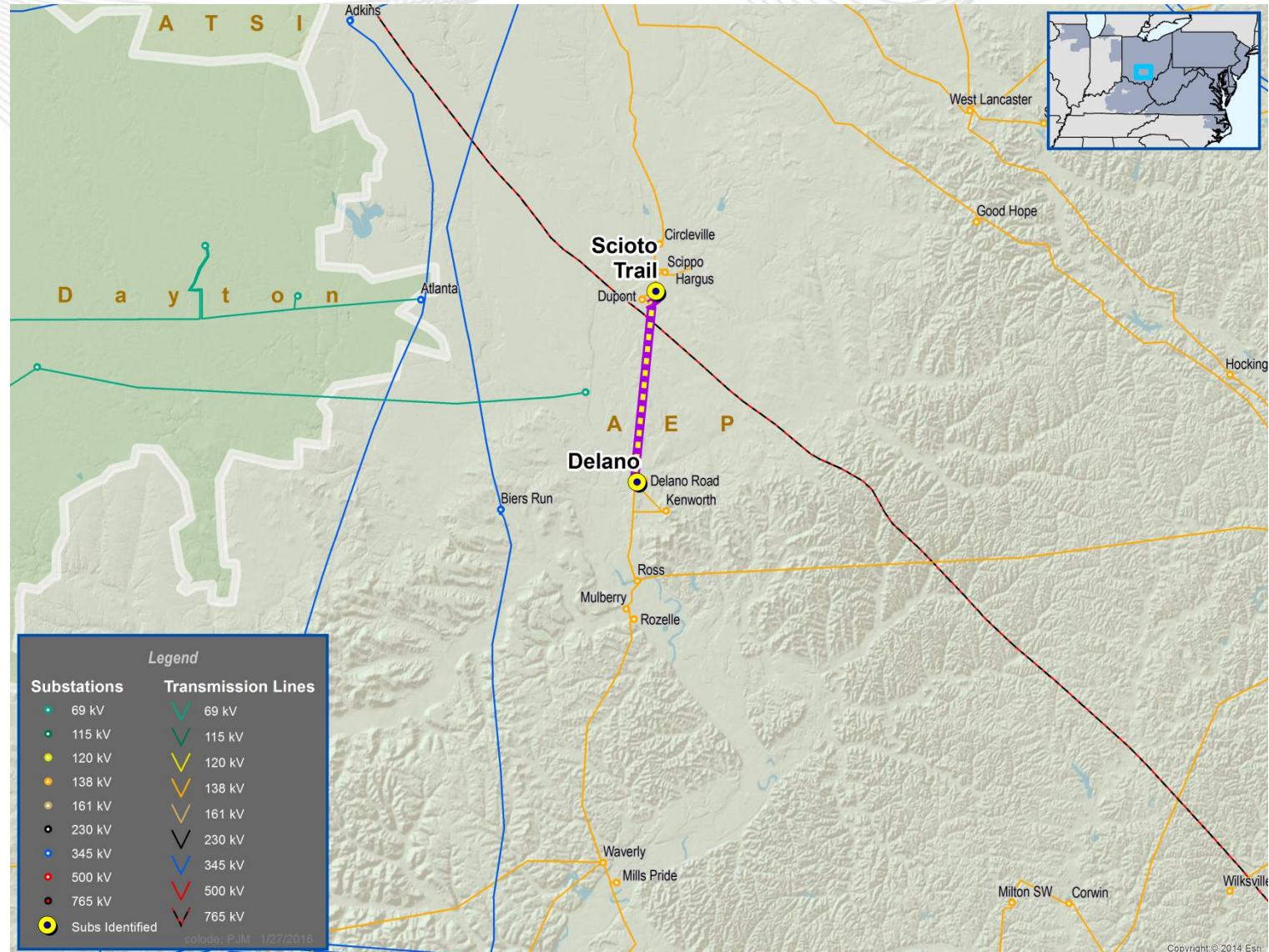
- **Supplemental Project**
- Construct a new 69kV circuit at AEP's existing Sparrow 69kV station. The line will be a radial 138kV line (service at 69kV) to serve a new 3.75 MW load at Marathon's Cadiz plant. (S1129)
- Customer Service
- Estimated Project Cost: \$3.5M
- Projected IS Date: 9/1/2016



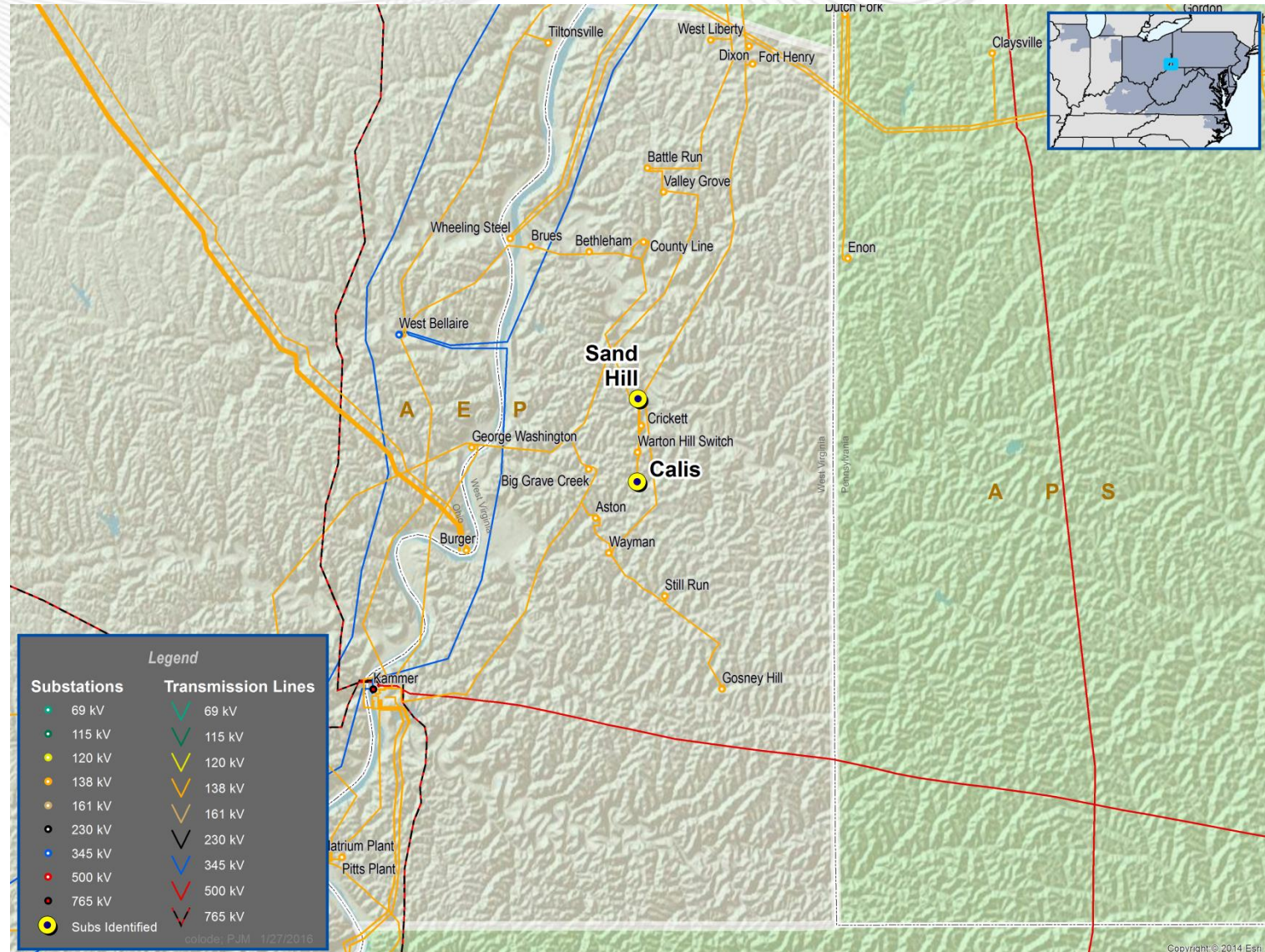
- **Supplemental Project**
- Loop into existing Blackhawk-Dillonvale-South Cadiz 69kV circuit to provide looped 138kV facilities (service at 69kV) to a 10 MW Sunoco Pipeline facility. (S1130)
- Customer Service
- Estimated Project Cost: \$4.0M
- Projected IS Date: 6/1/2016



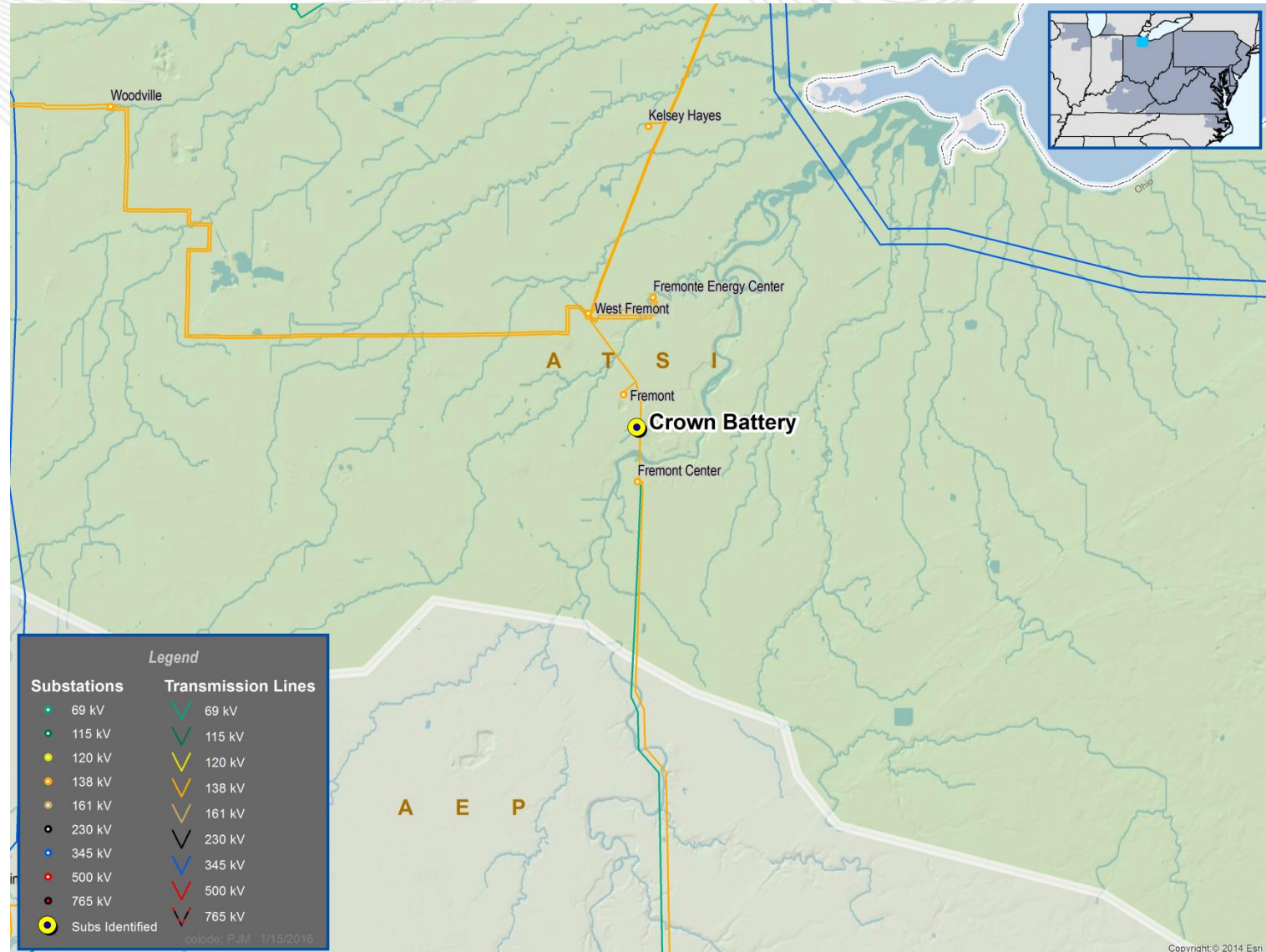
- **Supplemental Project**
- Tap the existing AEP Delano-Scioto Trail 138kV circuit, build a 138kV ring bus station called “Tuscany Station”, and provide dual feeds to the customer.(S1131)
- Customer Service
- Estimated Project Cost: \$10.04M
- Projected IS Date: 8/1/2017



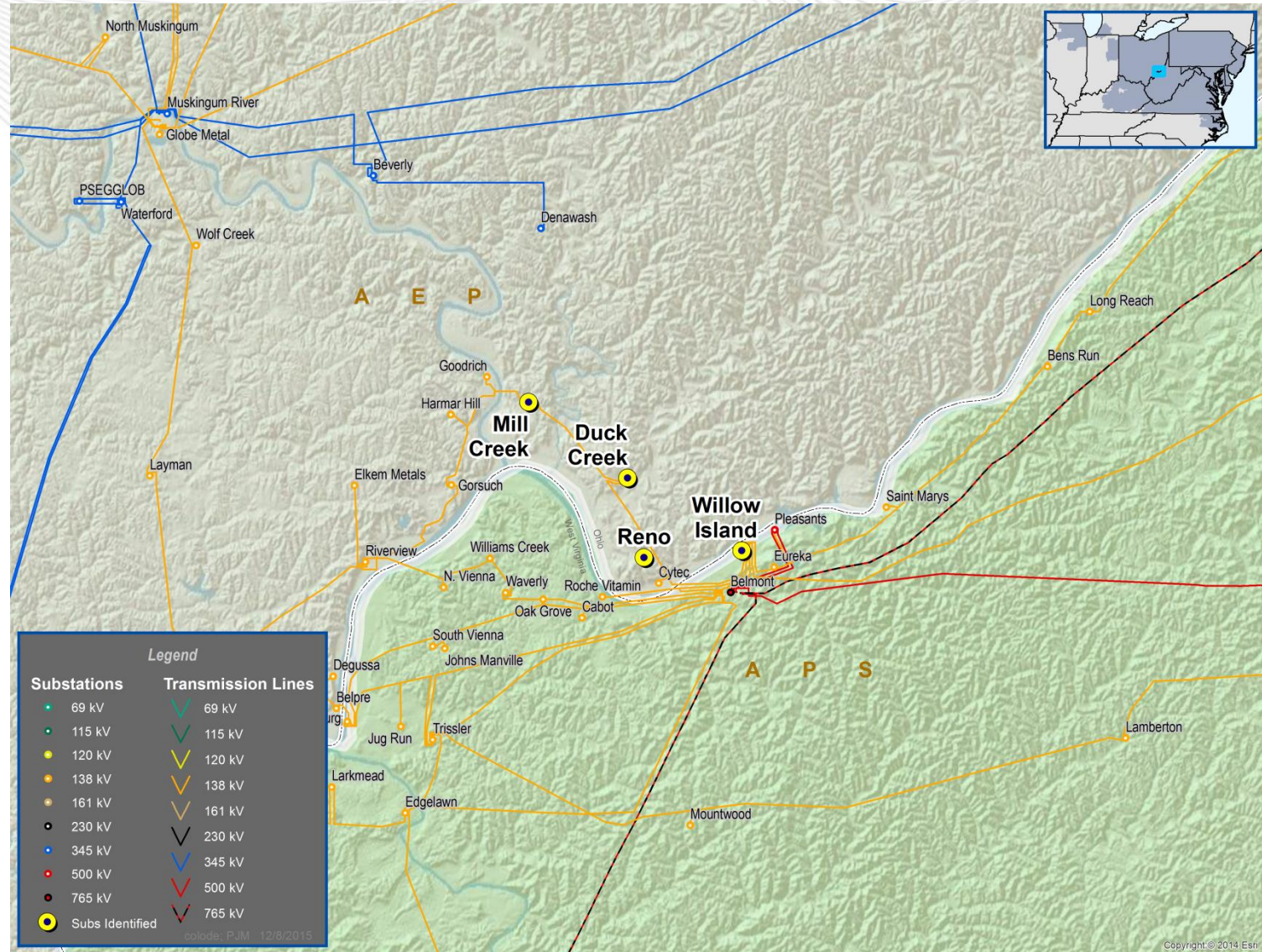
- **Supplemental Project**
- Install 43.2Mvar capacitor banks at Calis and Upgrade Sand Hill capacitor banks to 57.6Mvar. (S1132)
- Reliability improvement
- Estimated Project Cost: \$0.85M
- Projected IS Date: 12/1/2016



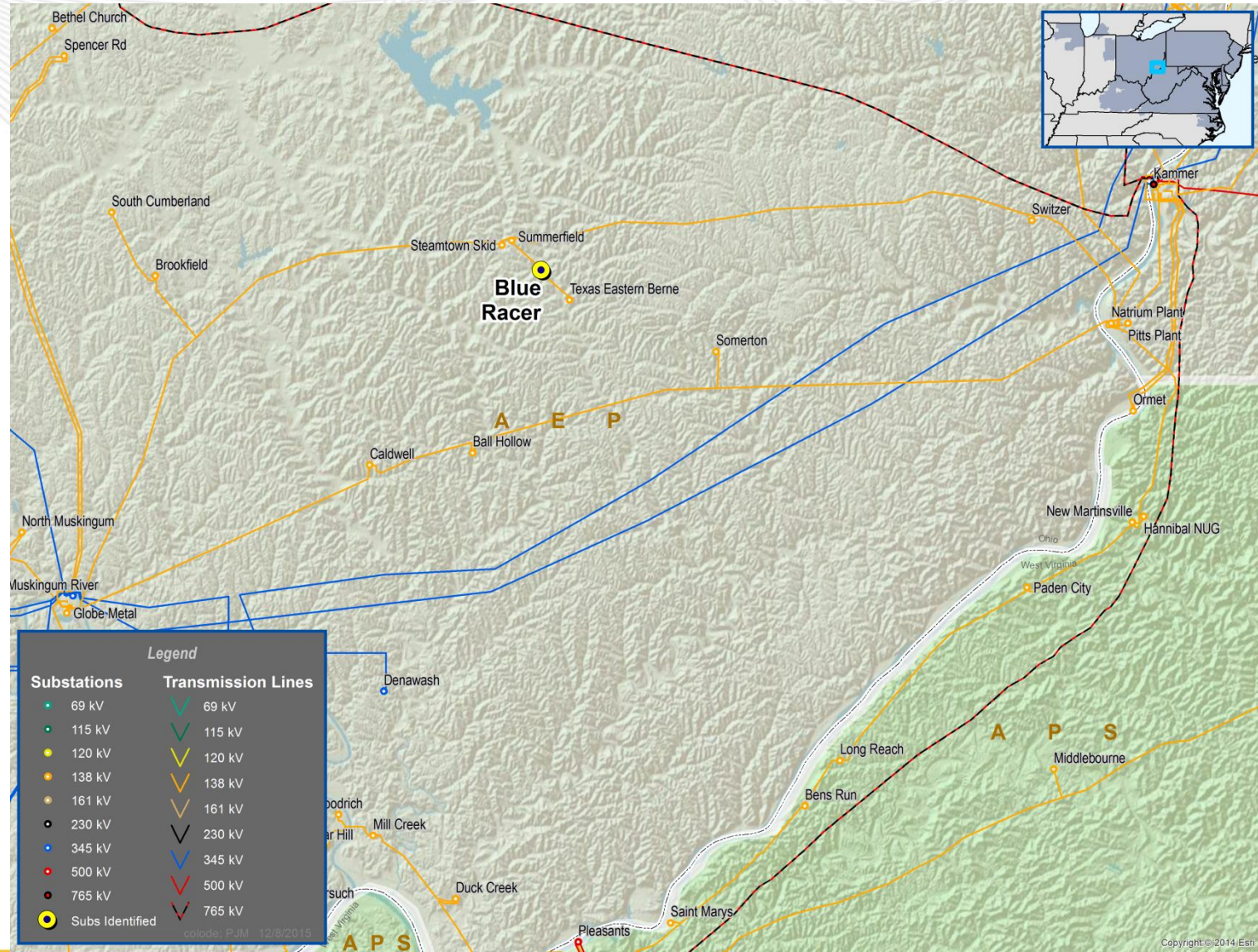
- **Supplemental Project**
- Construct a new 69 kV switching Station, “Crown Battery” , off the Fremont – Fremont Center #2 69kV line.(S1110)
- Customer requested, obligation to serve (6.5MVA new load)
- Estimated Project Cost: \$0.915M
- Projected IS Date: 9/15/2016



- **Supplemental Project**
- Construct a new 138-12kV AEP Ohio distribution substation “Levee”, connected to the Mill Creek-Willow Island 138kV circuit, in between Duck Creek and Reno stations. Construct a 0.2 mile 138kV line extension to get to the new property. (S1133)
- Reliability Improvement
- Estimated Project Cost: \$3.5M
- Projected IS Date: 4/1/2017



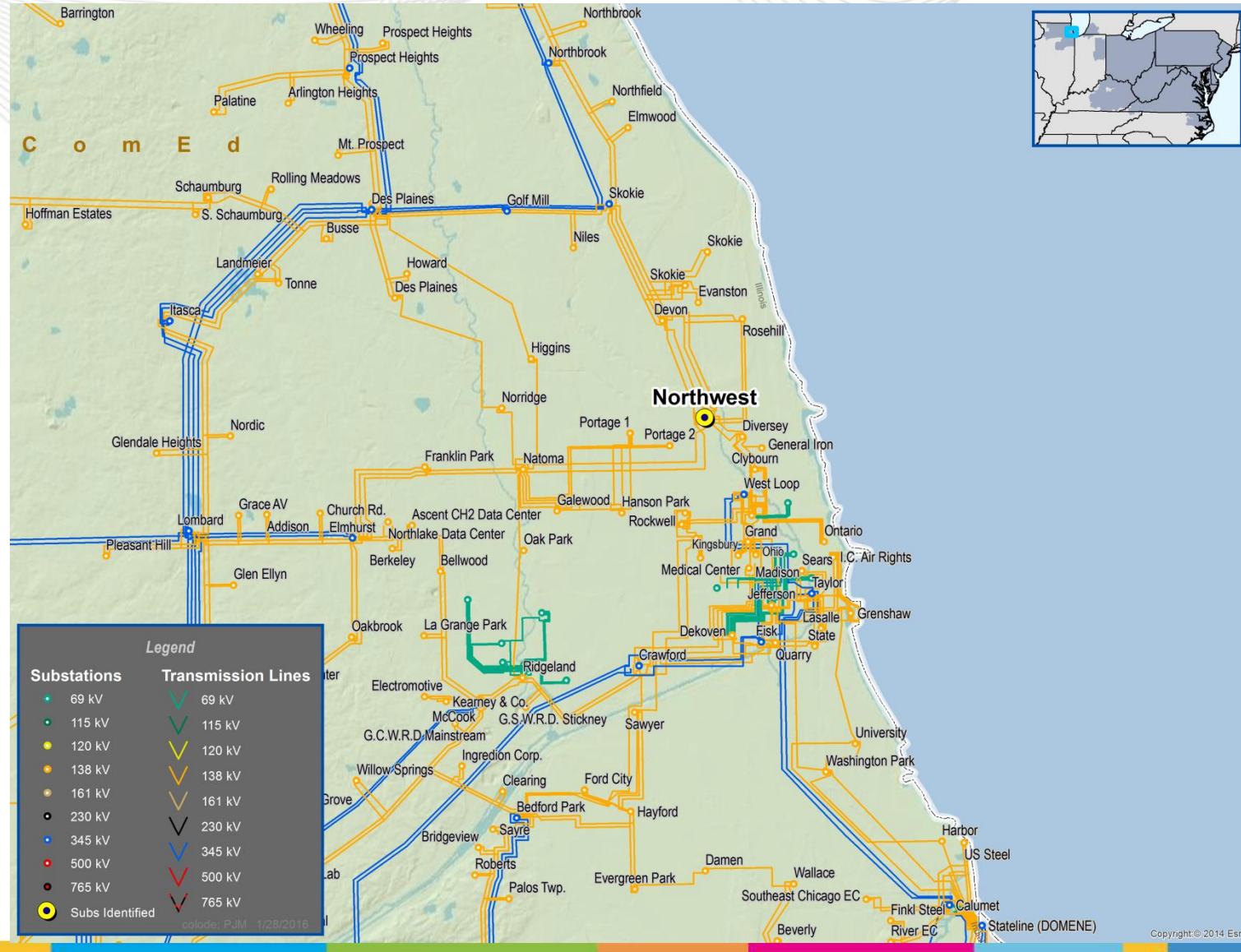
- **Supplemental Project**
- Construct a new 345-138kV substation “Lamping”, connected to AEP’s Kammer-Muskingum 345kV circuit. Build a new 10 mile 138kV circuit from Lamping to Blue Racer substation.(S1134)
- Reliability improvement
- Estimated Project Cost: \$40M
- Projected IS Date: 6/1/2019



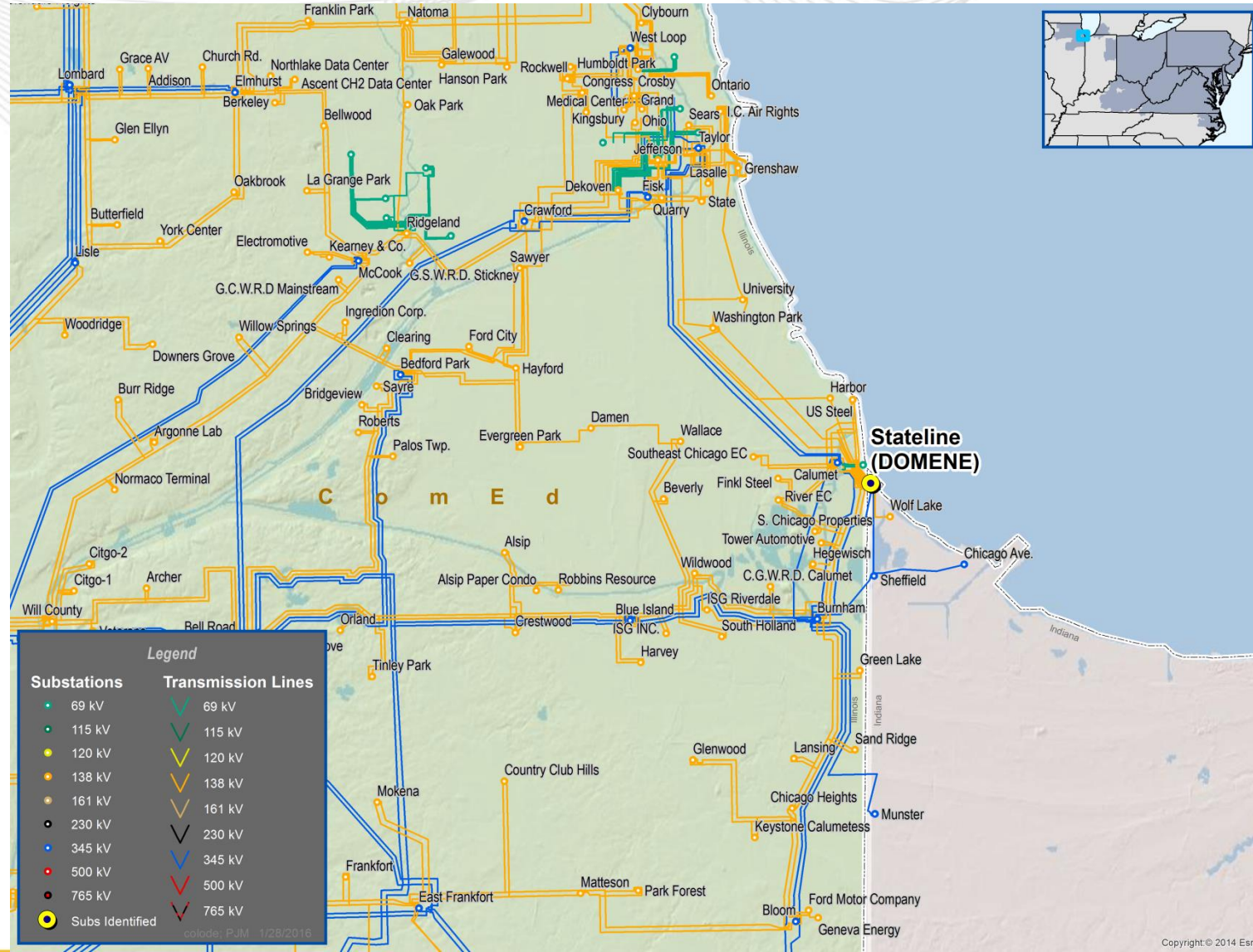




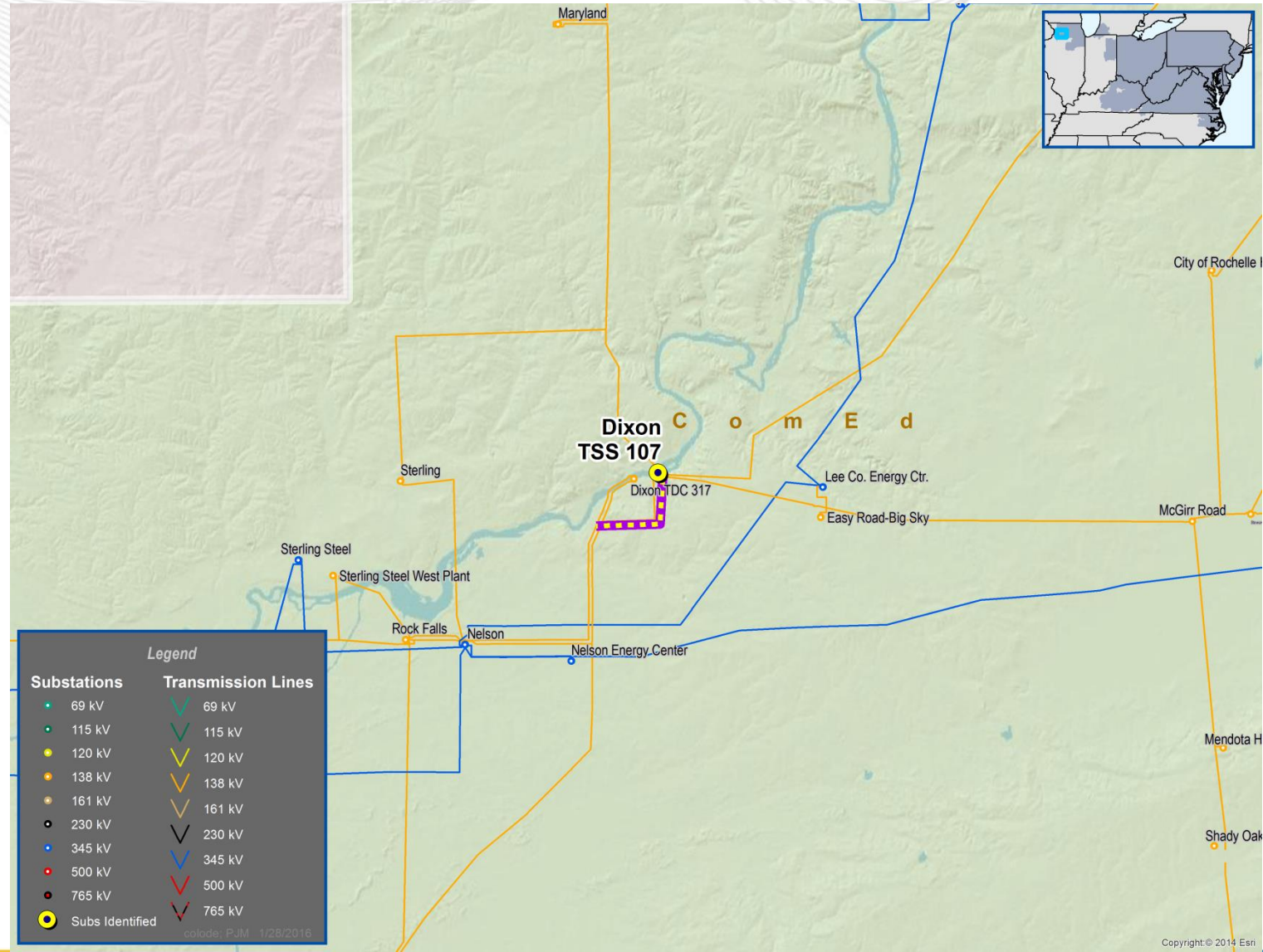
- **Supplemental Project**
- Northwest replace 138 kV bus ties 711, 716, 713, 714, 721, 723, & 725 (S1115)
- No line rating change
- Material condition: Breakers are 62 years old and highly stressed (~99% fault duty).
- Estimated Project Cost: \$11.7 M
- Projected IS Date: 12/31/2017



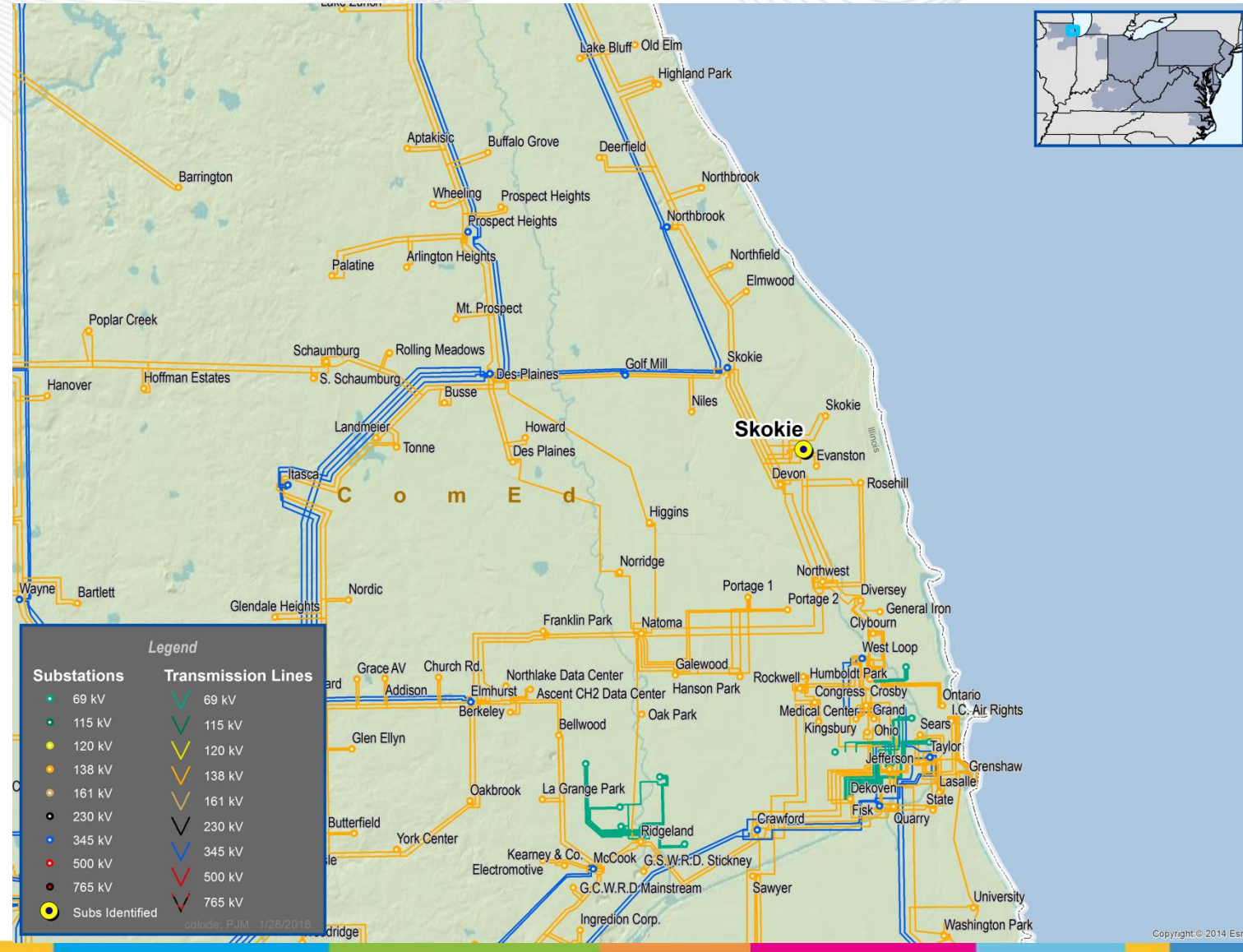
- **Supplemental Project**
- Replace State Line 138kV PAR on line 0705 with 300 MVA ±15 deg. unit (S1116)
- Old Rating: SN/SE=265/317 MVA
- New Rating: SN/SE=365/421 MVA
- Material condition
- Estimated Project Cost: \$8.3 M
- Projected IS Date: 6/1/2017



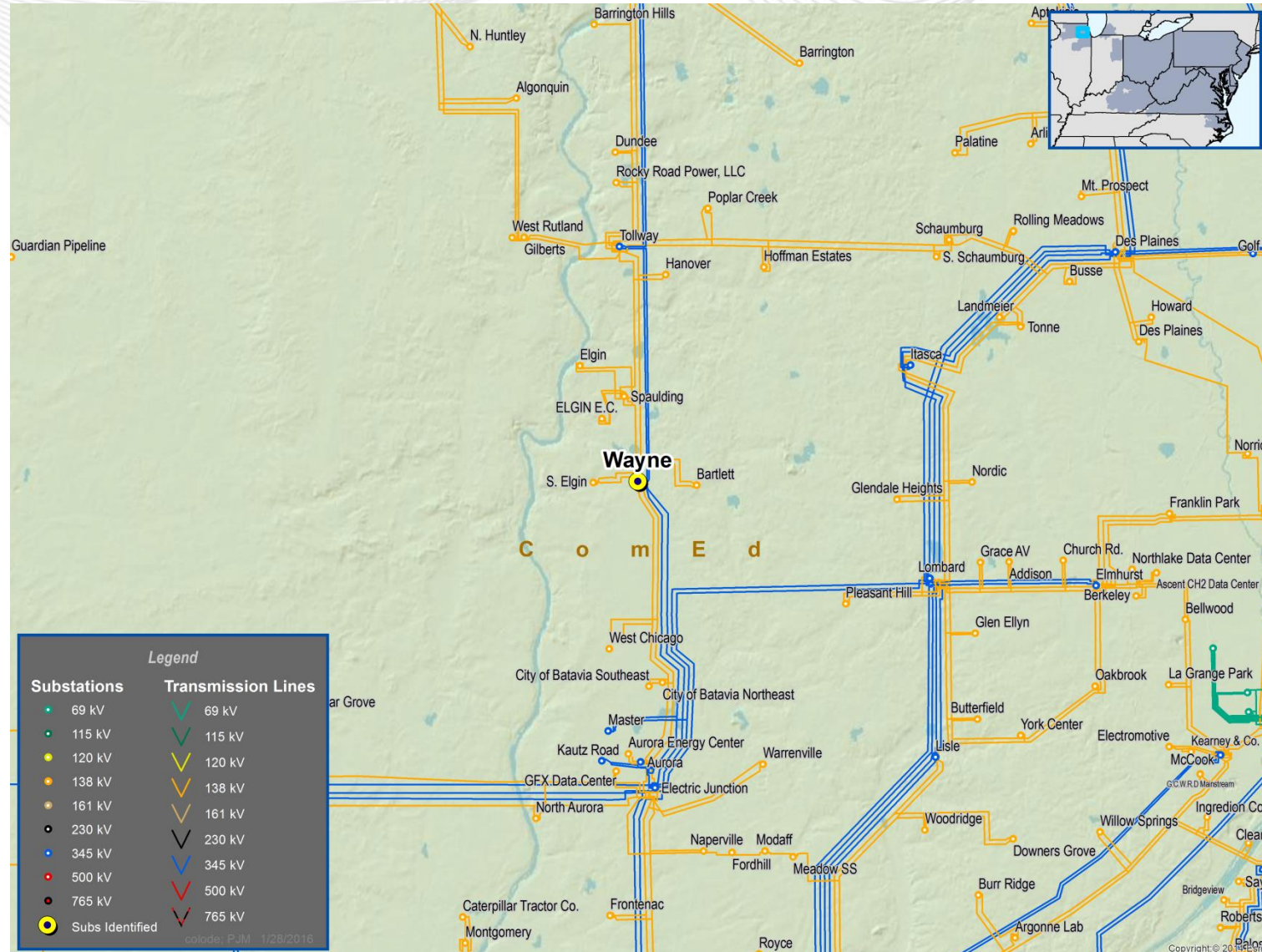
- **Supplemental Project**
- Reconductor 138 kV line 12411 for 4.2 miles From Dixon to Dixon Tap, replace line CB at Dixon replace bus tie CB and rehab bus (S1117)
- Old Rating: SN/SE=120/154 MVA
- New Rating: SN/SE=351/449 MVA
- Material condition: Existing conductor is 76 year old 3/0 copper.
- Estimated Project Cost: \$17.2 M
- Projected IS Date: 6/1/2017



- **Supplemental Project**
- Move Skokie TR84 tertiary cap bank to 138 kV bus 4. (S1118)
- Reliability improvement & bringing up to current standards.
- Estimated Project Cost: \$4.8 M
- Projected IS Date: 6/1/2017



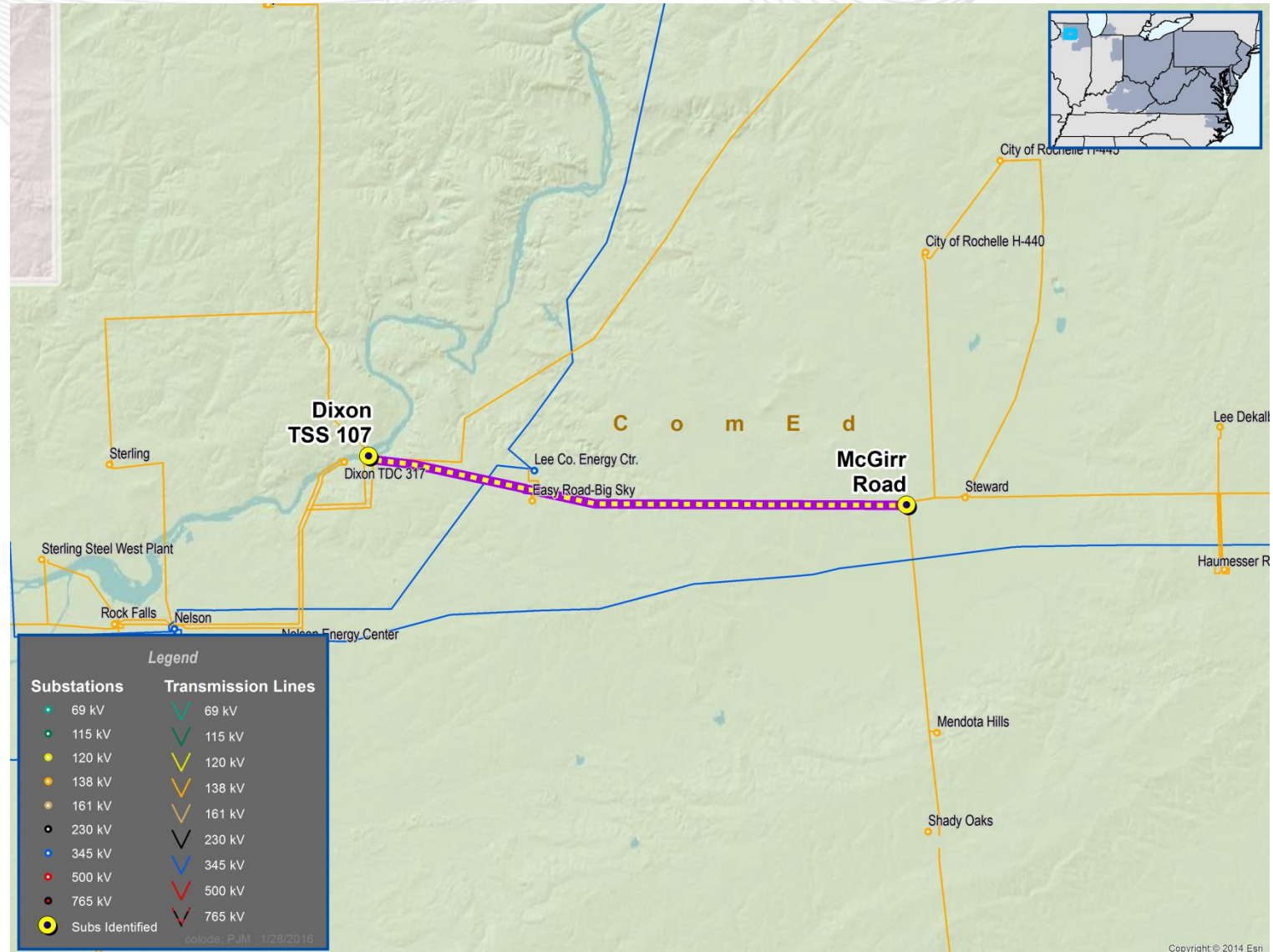
- **Supplemental Project**
- Replace Wayne 345/138/34.5kV TR81 & station conductor. (S1119)
- Old Rating: SE=465 MVA
- New Rating: SE=480 MVA
- Material condition: 42 years old, questionable acoustic test results.
- Estimated Project Cost: \$7.7M
- Projected IS Date: 12/31/2017



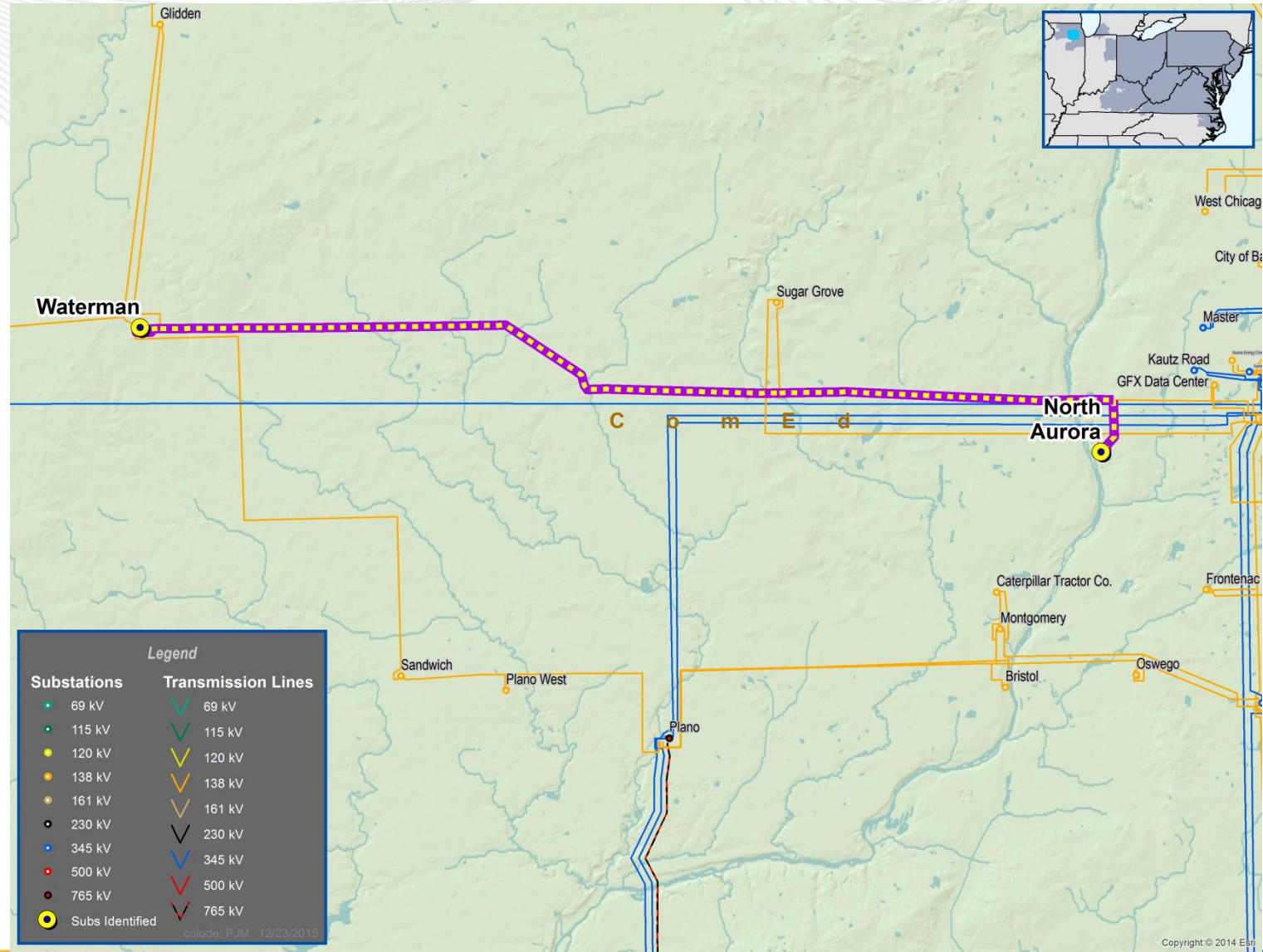


# ComEd Transmission Area

- **Supplemental Project**
- Replace the Dixon – McGirr Road 138 kV line (line #10714) CB at Dixon. (S1120)
- Old Rating: SN/SE=351/442MVA
- New Rating: SN/SE=351/449 MVA
- Material condition: 61 years old
- Estimated Project Cost: \$2M
- Projected IS Date: 6/31/2017



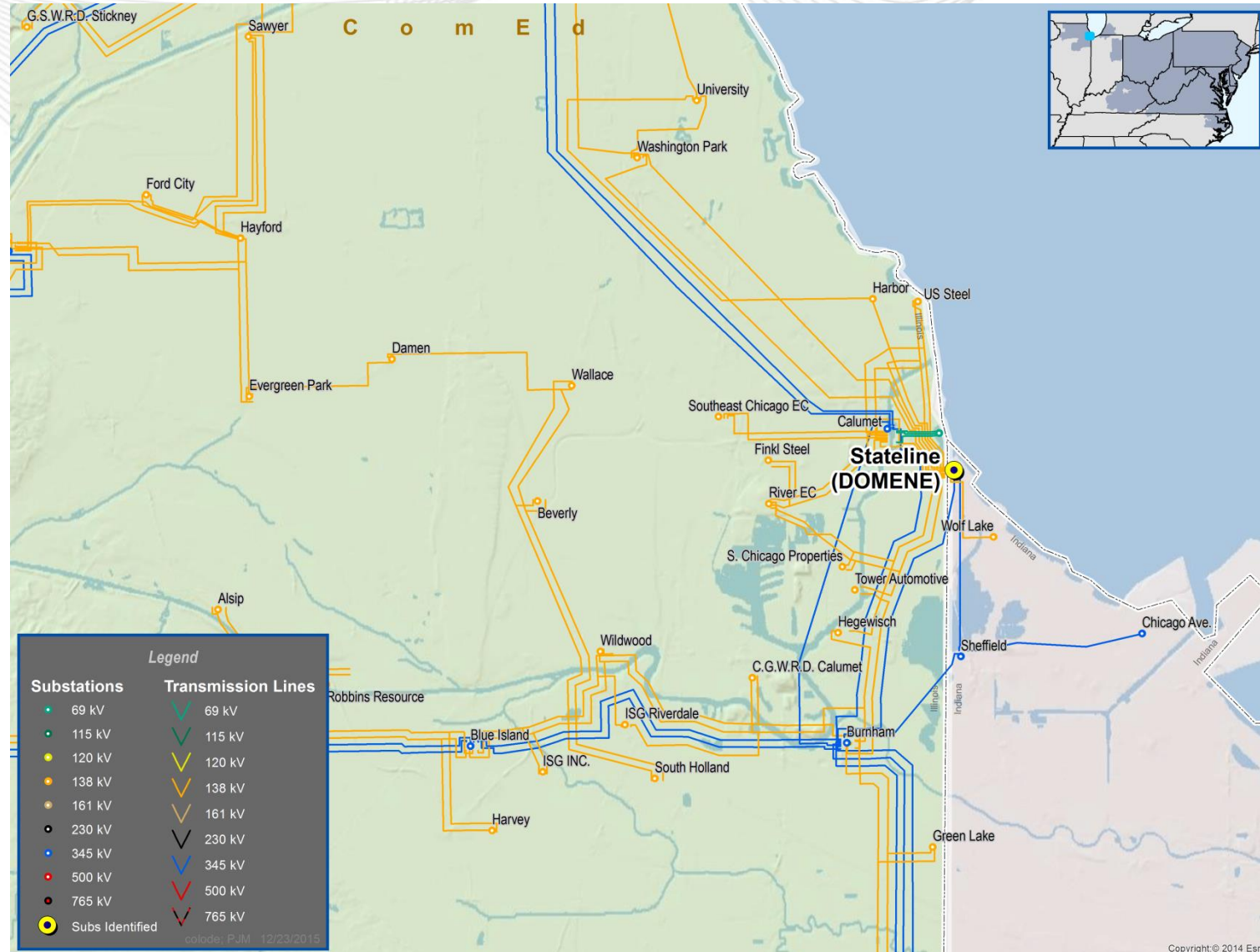
- **Supplemental Project**
- rebuild portions of 138 kV line 11106 for 19.4 miles from North Aurora to Waterman. (S1121)
- North Aurora - Sugar grove
  - Old Rating: SN/SE=208/264 MVA
  - New Rating: SN/SE=351/449 MVA
- Sugar grove - Glidden Tap
  - Old Rating: SN/SE=208/264 MVA
  - New Rating: SN/SE=376/483 MVA
- Glidden Tap - Waterman
  - Old Rating: SN/SE=208/264 MVA
  - New Rating: SN/SE=292/321 MVA
- Material Condition: Wood pole replacement
- Estimated Project Cost: \$24.8M
- Projected IS Date: 2/26/2016





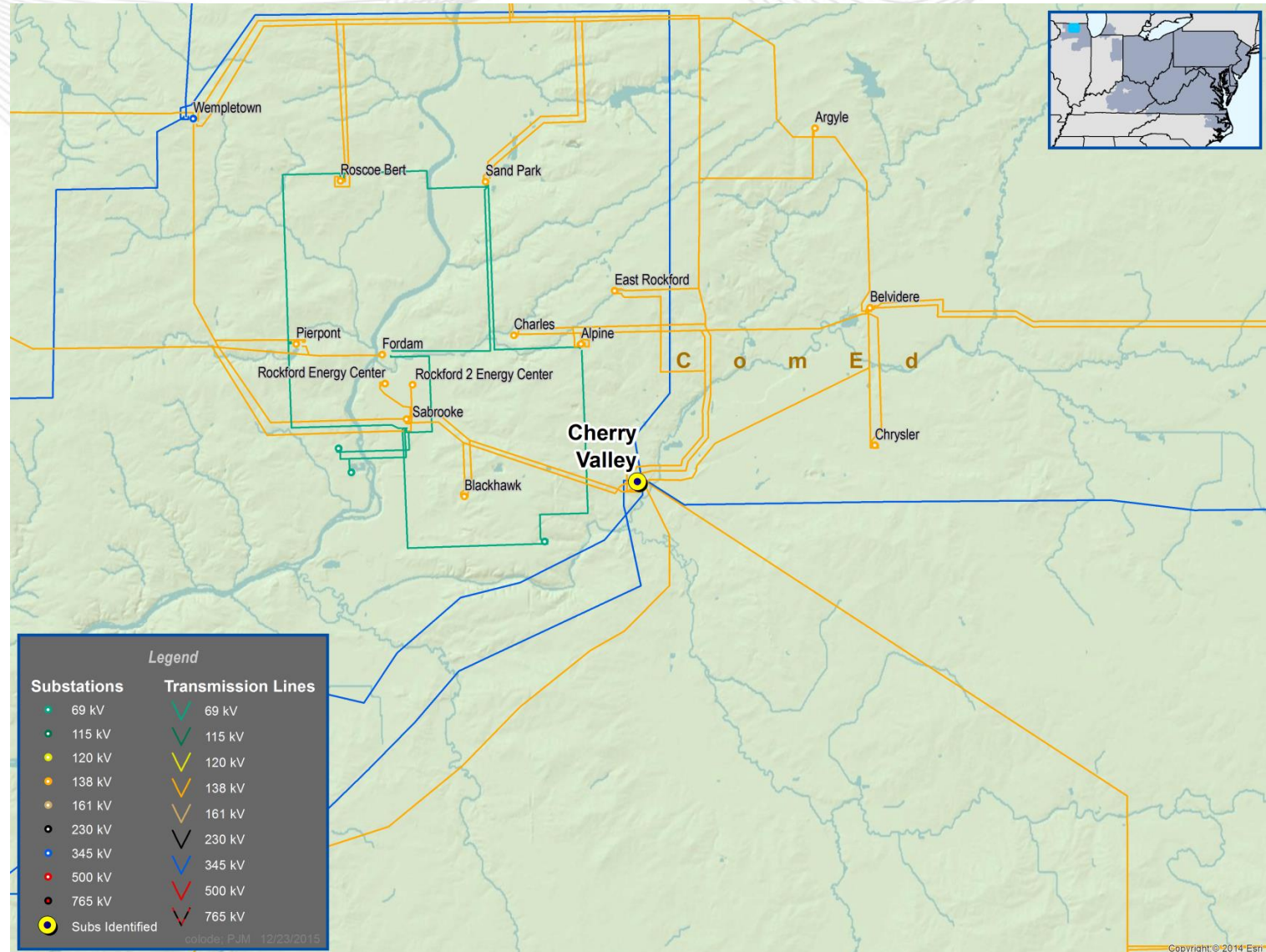
# ComEd Transmission Area

- **Supplemental Project**
- Replace State Line 138KV PAR on line 0702 with 300 MVA  $\pm 15$  deg. unit. (S1122)
- No rating change
- Material Condition
- Estimated Project Cost: \$8.3M
- Projected IS Date: 12/31/2016

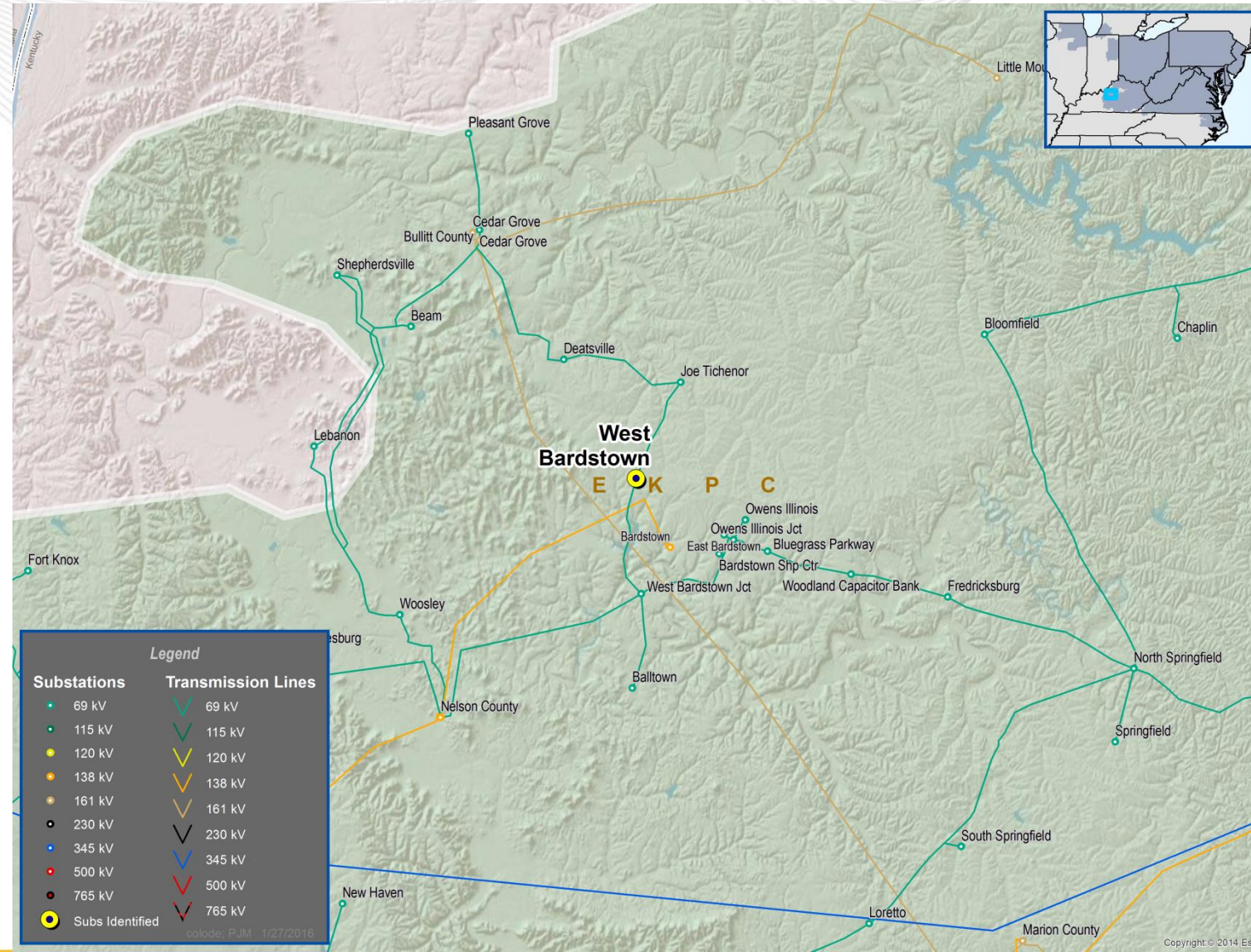




- **Supplemental Project**
- Cherry Valley – Replace 345/138kV TR82 high-side MOD with a circuit switcher, upgrade secondary conductor, replace 138 kV BT2-3 (S1123)
- Old Rating: SN/SE=392/465 MVA
- New Rating: SN/SE=400/465 MVA
- Material Condition
- Estimated Project Cost: \$8.3M
- Projected IS Date: 12/31/2016



- **Supplemental Project**
- Rebuild the South Bardstown-West Bardstown 69 KV line section (3.0 miles) and re-conductor from 1/0 to 556.5 MCM ACTW conductor. (S1135)
- An assessment of the existing 1/0 conductor shows poor and degrading conductor condition.
- Estimated Project Cost: \$0.7M
- Projected IS Date: 12/1/2017



# Questions?

Email: [RTEP@pjm.com](mailto:RTEP@pjm.com)

# Revision History

- Slide #7: Replaced “two 138/13kV transformers” with “two 138/69/13kV transformers ”
- Slide #9: Changed “S1128” to “S1129 ”