

Subregional RTEP Committee – Western
AMPT Supplemental Projects

Need Number: AMPT-2022-002

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 3/22/2024

Previously Presented: Solution Meeting – 11/17/2023, Need Meeting – 2/18/2022

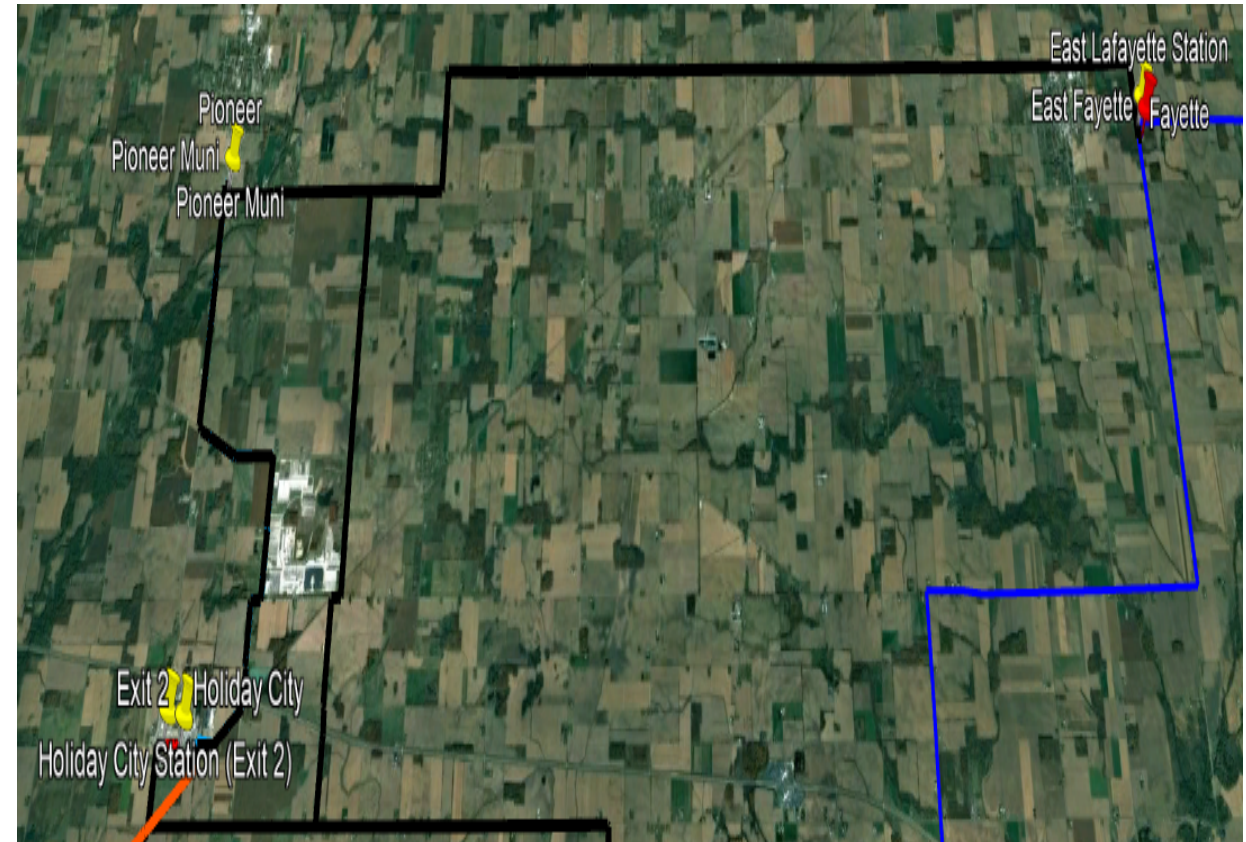
Supplemental Project Driver(s): Customer Service

Specific Assumption Reference(s): AMPT’s “Transmission Facilities Interconnection Requirements” document.

Problem Statement:

The existing interconnection is an approximately 2 mile radial 69 kV tap off ATSI’s East Fayette-Exit 2 69 kV line which supplies the Pioneer 69/12 kV substation.

The current peak load at Pioneer is 8 MW. A 2nd supply is needed per AMPT interconnection requirements criteria. The radial supply presents a single point of failure that jeopardizes reliability for the village.





AMPT Projects in ATSI Transmission Zone M3 Process Pioneer, OH

Need Number: AMPT-2022-002

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 3/22/2024

Previously Presented: Solution Meeting – 11/17/2023,

Supplemental Project Driver(s): Customer Service

Proposed Solution:

AMPT Identified Scope (\$13.9 M)

- **(s3117.1)** At Kexon Substation - Install two (2) additional 69kV circuit breakers and associated substation disconnect switches. These additional breakers will be used to terminate the new Kexon – Snyder #1 and Kexon – East Fayette 69kV lines. **(\$2.1 M)**
- **(s3117.2)** Build approximately 2.5 miles of new double circuit 69kV line using 795 ACSR Drake conductor from Kexon station to a point on the existing AMPT owned Kidston Tap. Rebuild approximately 1 mile of the existing Kidston Tap to a double circuit 69kV line using 795 ACSR Drake conductor from a point on the existing Kidston Tap to a point on the FE owned East Fayette-Snyder 69 kV line. **(\$9.2 M)**
- **(s3117.3)** Extend the existing normally open circuit out of AMPT’s Kidston station to connect into FE’s Snyder 69kV station. This will require the construction of approximately 1 mile of greenfield single circuit 69kV line using 795 ACSR Drake conductor. **(\$2.6 M)**

ATSI Identified Scope (\$12.6 M)

Snyder 69 kV substation

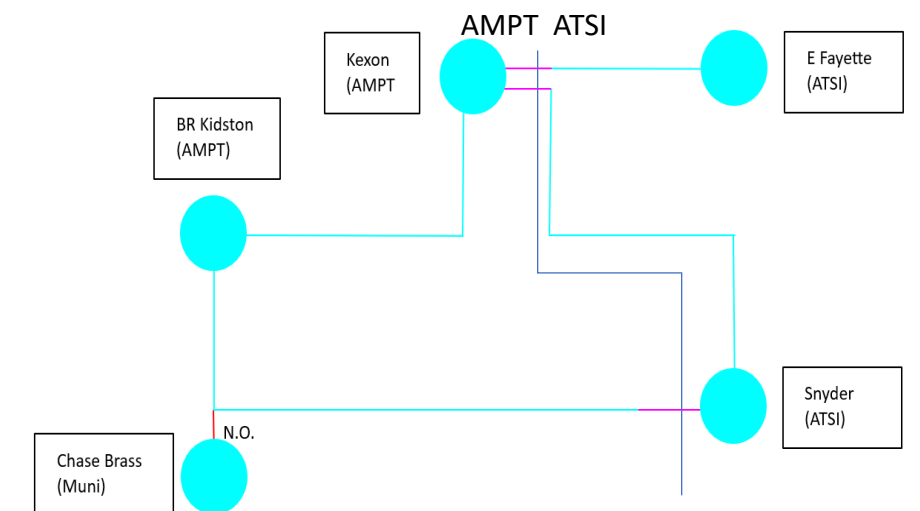
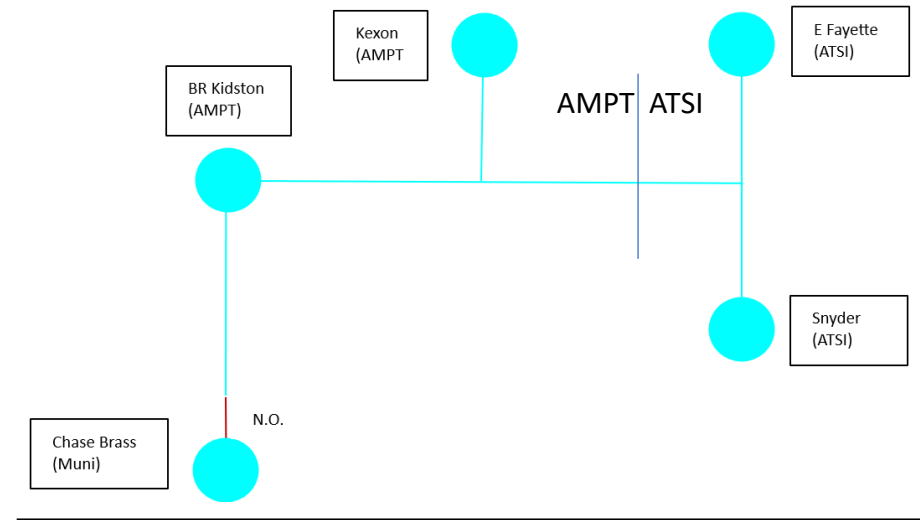
- **(s3117.4)** Expand the Snyder Substation from five to a six-breaker ring bus by adding one 69 kV circuit breaker to accommodate the Kexon-Bruce R. Kidston-Snyder 69 kV Line terminal (i.e., Kexon-Snyder #2) and install a dead-end structure just outside Snyder Substation to provide a termination point for the new line.
- Revise line relay settings to Kexon (formerly E Fayette exit)
- Install standard BES line relay panel with on the new line exit for the Kexon-Snyder #2 69 kV Line

Stryker

- **(s3117.5)** Install 2nd 138/69 kV transformer, adjust all 69 & 138 kV relays as required, integrate the new transformer protection to the system.
- Install one 138 kV bus tie breaker

East Fayette-Snyder 69 kV Line

- **(s3117.6)** Split the E Fayette-Snyder 69 kV Line between structure # 191 & 192 to loop in the AMPT Kexon Substation.
- Revise relay settings at E Fayette and Snyder substations
- Install a jumper between the new E. Fayette-Kexon & Snyder-Kexon #1 69 kV Line with inline normally open SCADA controlled switch





AMPT Projects in ATSI Transmission Zone M3 Process Pioneer, OH

Need Number: AMPT-2022-002

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 3/22/2024

Previously Presented: Solution Meeting – 11/17/2023,

Supplemental Project Driver(s): Customer Service

Ancillary Benefits:

Solution provides reliability improvements for n-1-1 contingency on non-BES ATSI owned facilities (both voltage and thermal).

Alternatives Considered:

- Build a 138/69kV yard at Kexon and construct a 16 mile 138kV line from the existing East Fayette 138kV station to the new Kexon 138kV station. **(\$31 M)**

Less cost effective than the proposed solution for the reasons noted above.

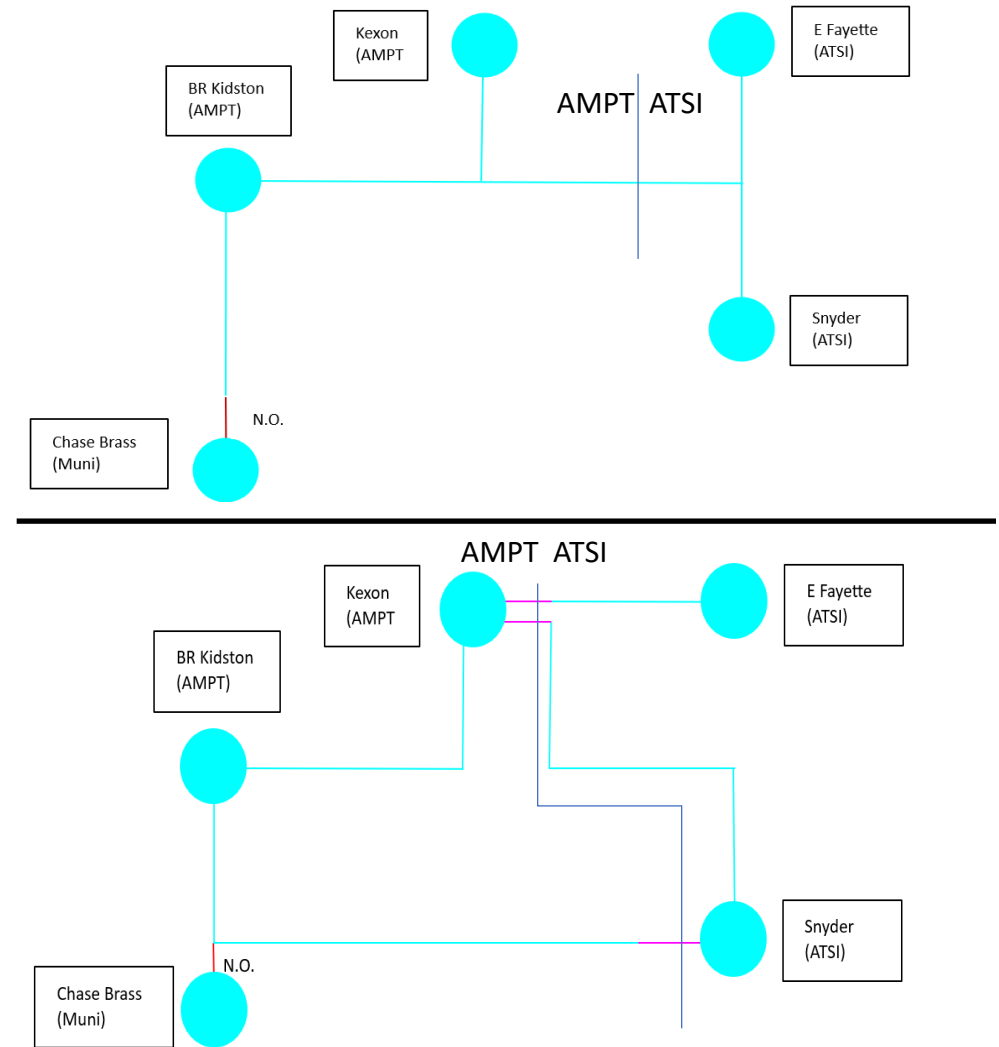
Total Estimated Transmission Cost: \$26.5 M

Projected In-Service: 5/31/2027

Supplemental Project ID: s3117.1 (AMPT); s3117.2 (AMPT), s3117.3 (AMPT), s3117.4 (ATSI); s3117.5 (ATSI), s3117.6 (ATSI),

Project Status:

- Conceptual (AMPT), Conceptual (ATSI)



Need Number: AMPT-2023-002

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 3/22/2024

Previously Presented: Solution Meeting – 1/19/2024, Need Meeting – 4/21/2023

Supplemental Project Driver(s): Customer Service

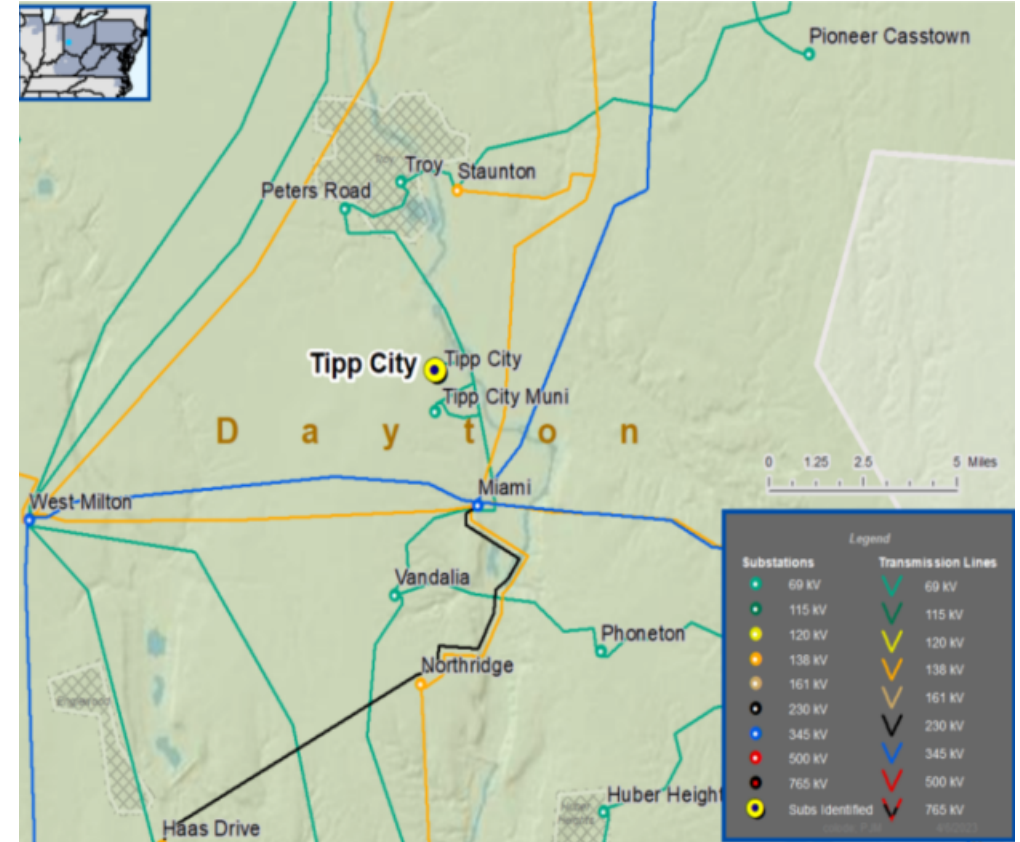
Specific Assumption Reference(s): AMPT’s “Transmission Facilities Interconnection Requirements” document.

Problem Statement:

New Customer Connection – The City of Tipp City has submitted a request for a new 69kV service point near the AMPT owned 69kV tap, which is served off AES’ 6692 69kV line.

The request was made to support new load increases in the area that totals approximately 10MW.

The City has requested an in-service date of 6/1/2025.





AMPT Projects in DAY Transmission Zone M3 Process Tipp City, OH

Need Number: AMPT-2023-002

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 3/22/2024

Previously Presented: Solution Meeting – 1/19/2024

Supplemental Project Driver(s): Customer Service

Proposed Solution:

AMPT Identified Scope (\$1.24M)

Tower 69kV Substation

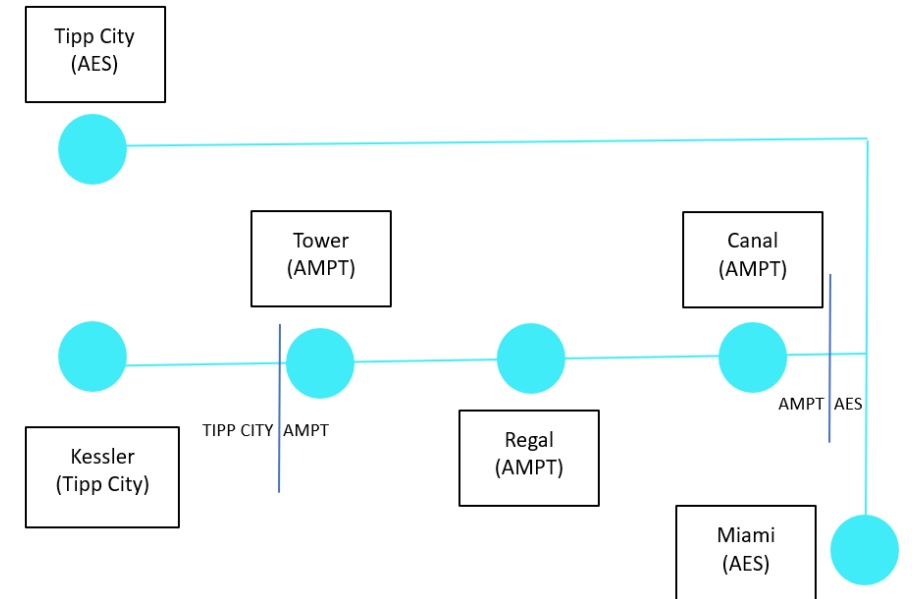
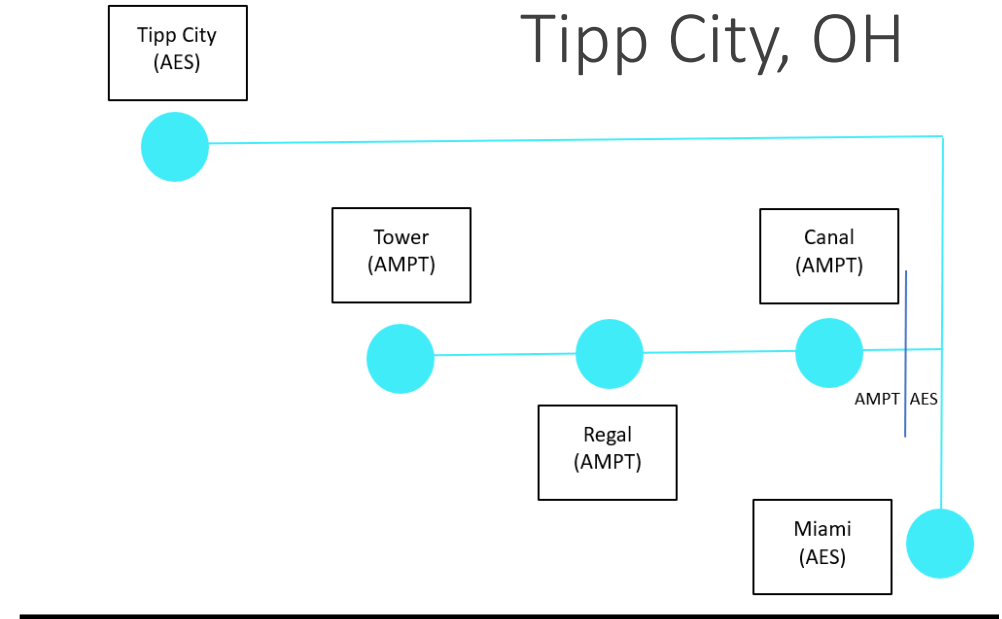
- Install new line relays, RTU, and CCVT's for the new 69kV line terminal.
- Perform necessary work to terminate new 69 kV line to Tower station.

Projected In-Service: 6/1/2025

Supplemental Project ID: s3217.1 (AMPT);

Project Status:

- Engineering (AMPT)



Need Number: AMPT-2023-001

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 3/22/2024

Previously Presented: Solution Meeting – 1/19/2024, Need Meeting – 3/17/2023

Supplemental Project Driver(s): Operational Flexibility & Efficiency, Customer Service

Specific Assumption Reference(s): AMPT Transmission Facilities Interconnection Requirements Document

Problem Statement:

Reliability: Improve overall system protection coordination; including the elimination of a three-terminal 69 kV line.

Operational Performance: Improve operational switching capabilities and flexibility for system maintenance and restoration.

New Customer Connection – The City of Piqua has a need for a new 69/12 kV substation off AMPT’s 69 kV Tap.





AMPT Projects in DAY Transmission Zone M3 Process Piqua, OH

Need Number: AMPT-2023-001

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 3/22/2024

Previously Presented: Solution Meeting – 1/19/2024

Supplemental Project Driver(s): Customer Service

Proposed Solution:

AMPT Identified Scope (\$5.6 M) (s3216.1)

Hardin 69 kV Substation Build a new 69/12 kV substation with two (2) 69 kV breakers with line terminals looking toward AES new station and Piqua Sub 5 and accommodate one (1) 69/12 kV transformer for the City of Piqua.

- The 69/12 kV transformer and associated 12 kV equipment costs are distribution costs not included as part of the transmission costs.

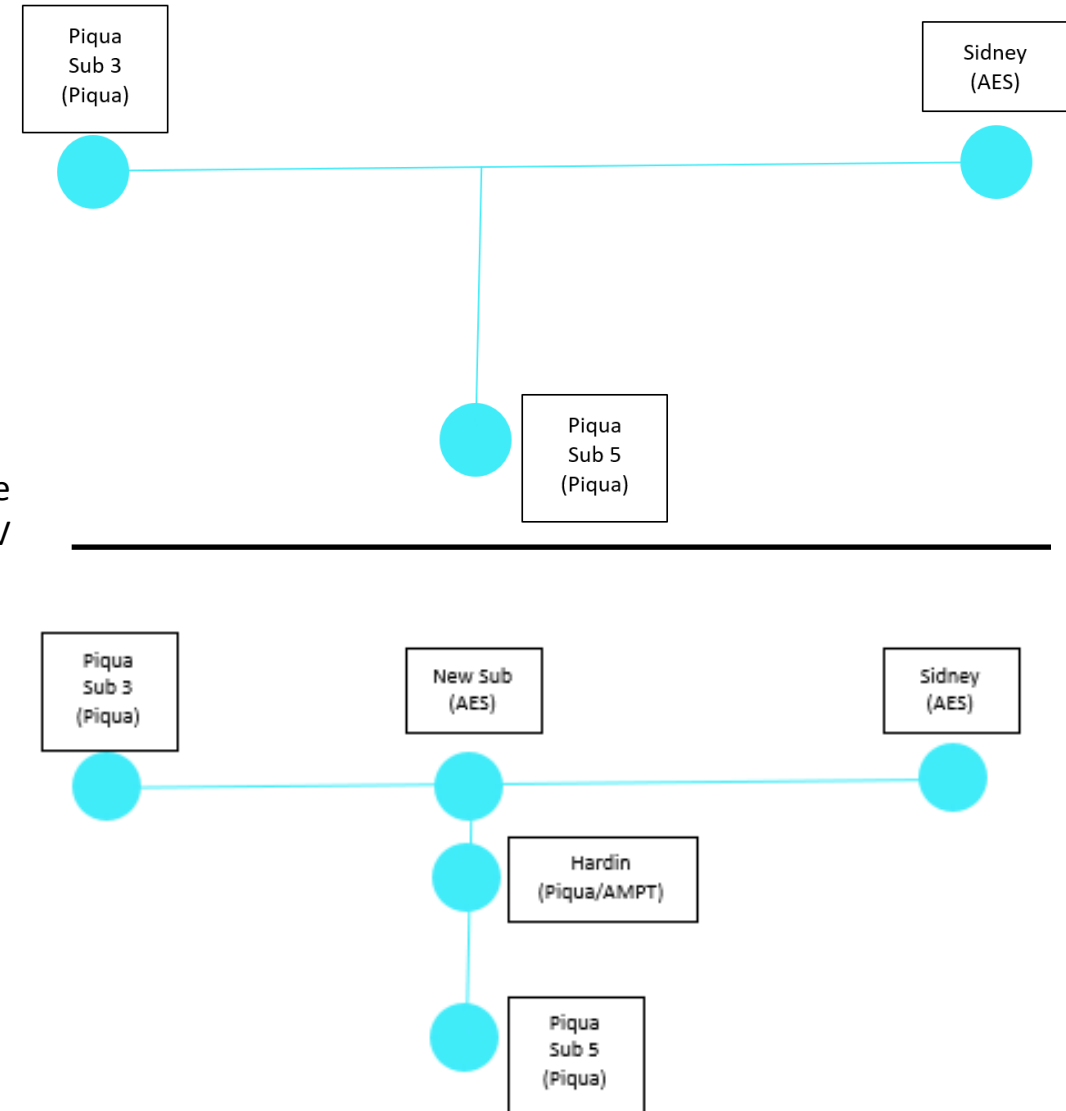
Piqua Sub 5 69kV Substation

- Upgrade line panel at Piqua Sub 5 looking toward the new Hardin sub.

AES Identified Scope (\$9.2 M) (s3216.2)

New Piqua #6 69 kV Substation

- Replace the existing line tap to the Piqua #5 substation with a new 69kV 3 breaker ring.





AMPT Projects in DAY Transmission Zone M3 Process Piqua, OH

Need Number: AMPT-2023-001

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 3/22/2024

Previously Presented: Solution Meeting – 1/19/2024

Supplemental Project Driver(s): Customer Service

Alternatives Considered:

No alternatives considered for this project.

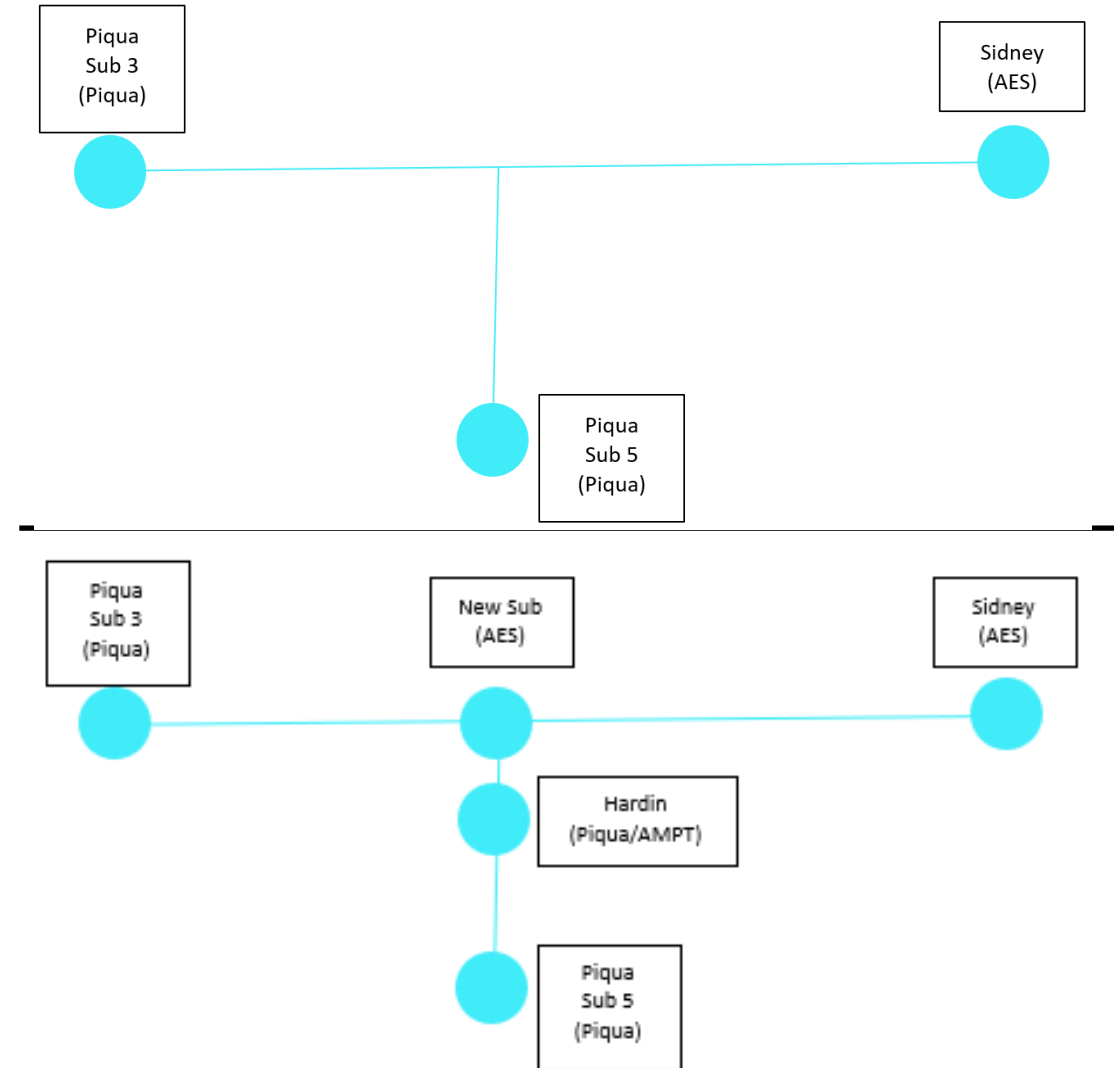
Total Estimated Transmission Cost: \$14.8 M

Projected In-Service: 12/1/2027

Supplemental Project ID: s3216.1 (AMPT); s3216.2 (AES);

Project Status:

- Conceptual (AMPT), Conceptual (AES)



AMPT Projects in ATSI Transmission Zone: Supplemental Napoleon, OH

Need Number: AMPT-2023-005

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 8/12/2024

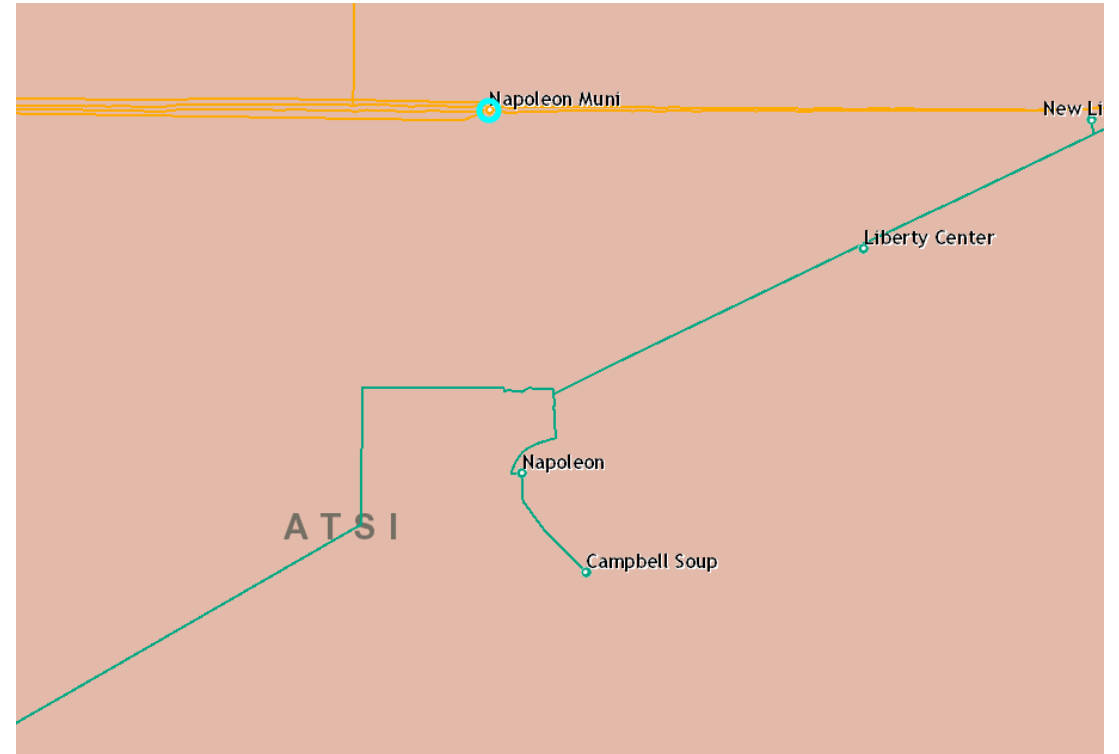
Previously Presented: Solutions Meeting – 03/15/2024, Needs Meeting was held 9/15/2023

Supplemental Project Driver(s): Operational Flexibility & Efficiency, Customer Service

Specific Assumption Reference(s): AMPT Transmission Interconnection Document

Problem Statement:

At the AMPT Sullivan 138/69 kV Substation (Shown as “Napoleon Muni”), a breaker failure (NERC P2-4 or P4-2 outage) of 138 kV CB “1”, 138 kV CB “4”, or 69 kV CB “WBT” will interrupt both 138 kV sources from the substation, interrupting service to the entire Napoleon municipality (approximately 43 MW load at peak).



AMPT Projects in ATSI Transmission Zone: Supplemental Napoleon, OH

Need Number: AMPT-2023-005

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 8/12/2024

Previously Presented: Solutions Meeting – 03/15/2024

Supplemental Project Driver(s): Operational Flexibility & Efficiency, Customer Service

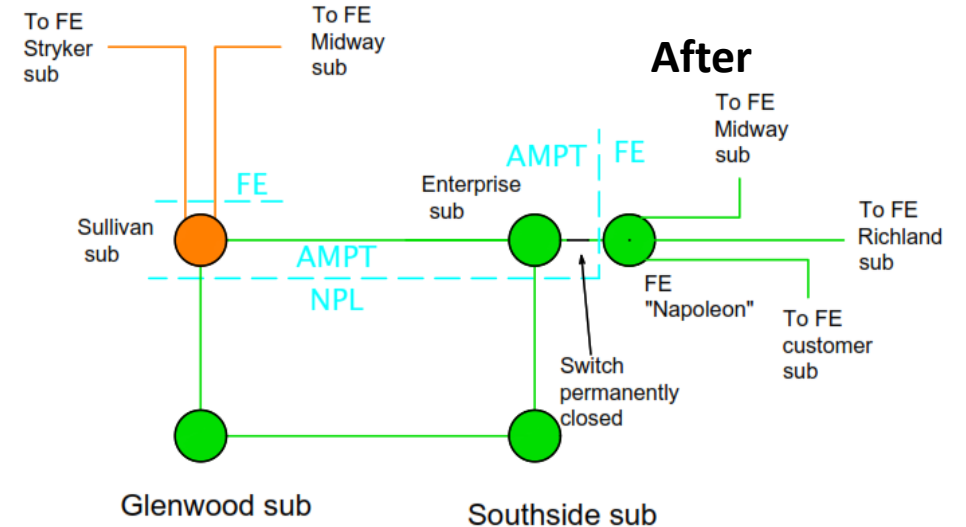
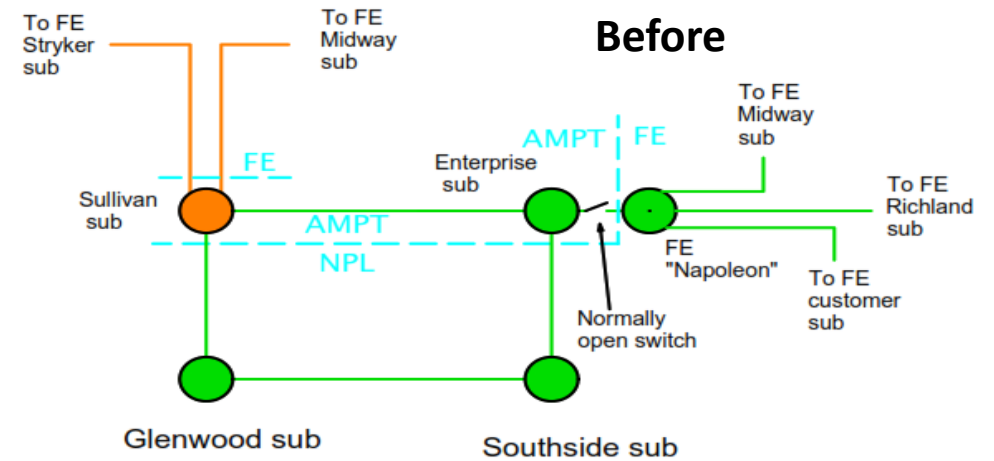
Proposed Solution:

Enterprise Substation

- Reconstruct Enterprise sub from the existing single breaker/single bus design to a five-breaker ring bus design. Install five (5) 2000 A 69 kV circuit breakers with associated CB disconnects. Change the status of the Enterprise – FE Napoleon 69 kV line to normally closed and network operation. Update (remote terminal) relay settings at Sullivan Substation.
- Napoleon Power & Light (NPL) will also rebuild their distribution sub; The 69-12 kV transformer and associated 12 kV work are distribution costs and not included as part of overall project costs.

AMPT Estimated Project Direct Cost: \$11.5M

AMPT In-Service Date: 8/1/2026, **AMPT Project Status:** Engineering



AMPT Projects in ATSI Transmission Zone: Supplemental Napoleon, OH

Need Number: AMPT-2023-005

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 8/12/2024

Previously Presented: Solutions Meeting – 03/15/2024

Proposed Solution – FE Portion:

- Convert the FE Napoleon 69 kV straight bus into a four-breaker ring bus
- Provide a line termination point for the AMPT 69 kV line (Enterprise Substation exit).
- Upgrade the existing revenue metering equipment, including the CTs & PTs
- Revise relay settings at Napoleon, Richland, and Midway substations

Transmission Ratings: Napoleon (FE) – Enterprise (AMPT) 69 kV Line

- Before the Project: N/A
- After the Project: 111 / 131 / 125 / 159 MVA (SN/SE/WN/WE)

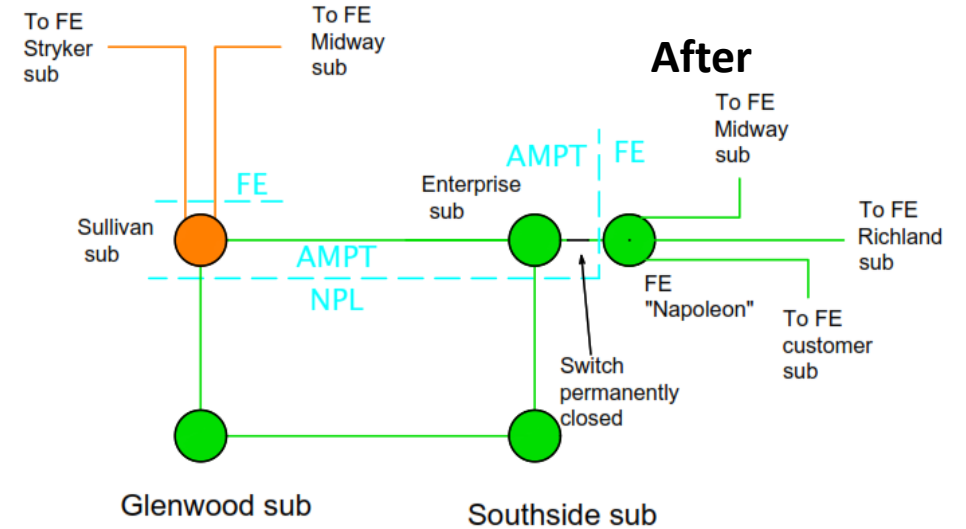
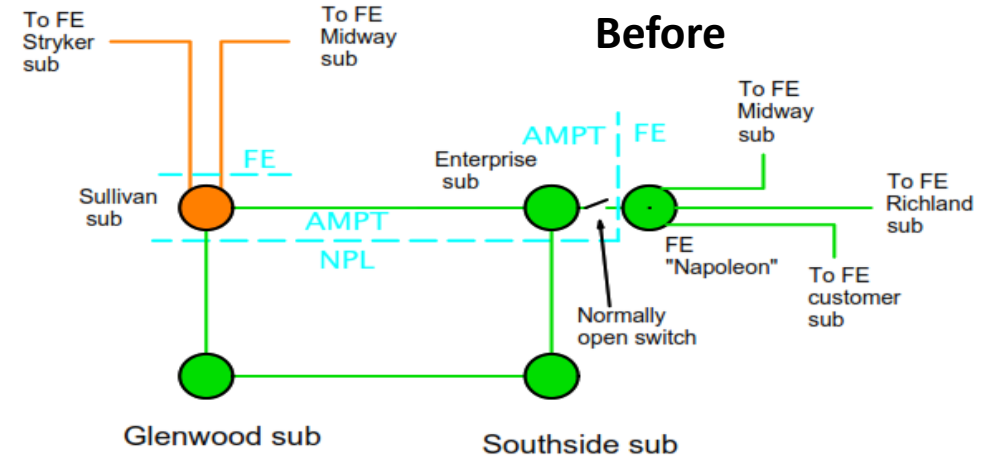
Ancillary Benefits:

Solution also provides reliability improvements for a 69 kV bus fault at FE Napoleon Substation and reduces load loss under contingency (~17 MW).

FE Estimated Project Direct Cost: \$7.1M

FE in-service date: 10/02/2026

FE Project Status: Conceptual



AMPT Projects in ATSI Transmission Zone: Supplemental Napoleon, OH

Need Number: AMPT-2023-005

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 8/12/2024

Previously Presented: Solutions Meeting – 03/15/2024

Supplemental Project Driver(s): Operational Flexibility & Efficiency, Customer Service

Alternatives Considered:

- Expanding Sullivan Substation was investigated. There is inadequate land available at/near Sullivan to expand the substation further, after the reinforcements assigned to AMPT to accommodate a new IPP (N8359.1).
- A new greenfield substation was investigated but not chosen due to higher cost of developing a new greenfield sub, costs for new transmission and ROW, cost of substation land acquisition, and potentially adverse property owner impact due to constructing a new substation in close proximity to other existing substations.

Napoleon's long-term needs involve reinforcing nearer to their load center at Enterprise Substation. Energizing the existing normally open 69 kV source from FE Napoleon Substation meets the long-term needs of the city.

Total Estimated Transmission Cost: \$18.6 M

Supplemental Project ID: s3352.1 (AMPT); s3352.2 (FE);

Projected In-Service: 8/1/2026 (AMPT), 10/02/2026 (FE)

Project Status: Engineering (AMPT), Conceptual (FE)

Need Number: AMPT-2023-003

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 8/12/2024

Previously Presented: Solution Meeting – 12/15/2023, Need Meeting – 4/21/2023

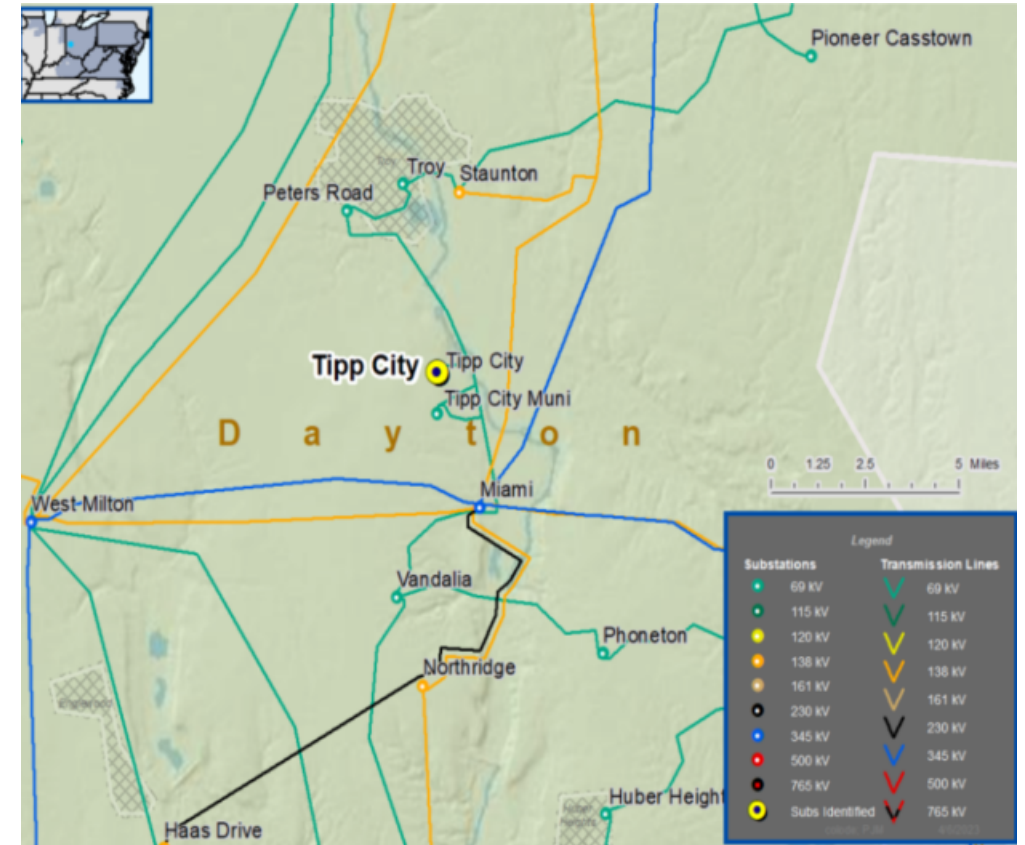
Supplemental Project Driver(s): Customer Service

Specific Assumption Reference(s): AMPT’s “Transmission Facilities Interconnection Requirements” document.

Problem Statement:

The existing AMPT interconnection at Tipp City Muni is a radial 69kV tap off AES’ 6692 69kV line. Three AMPT stations (Canal, Tower, and Regal) are served off the AMPT owned 69kV tap. The radial supply presents a single point of failure that jeopardizes reliability for the city.

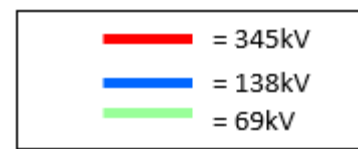
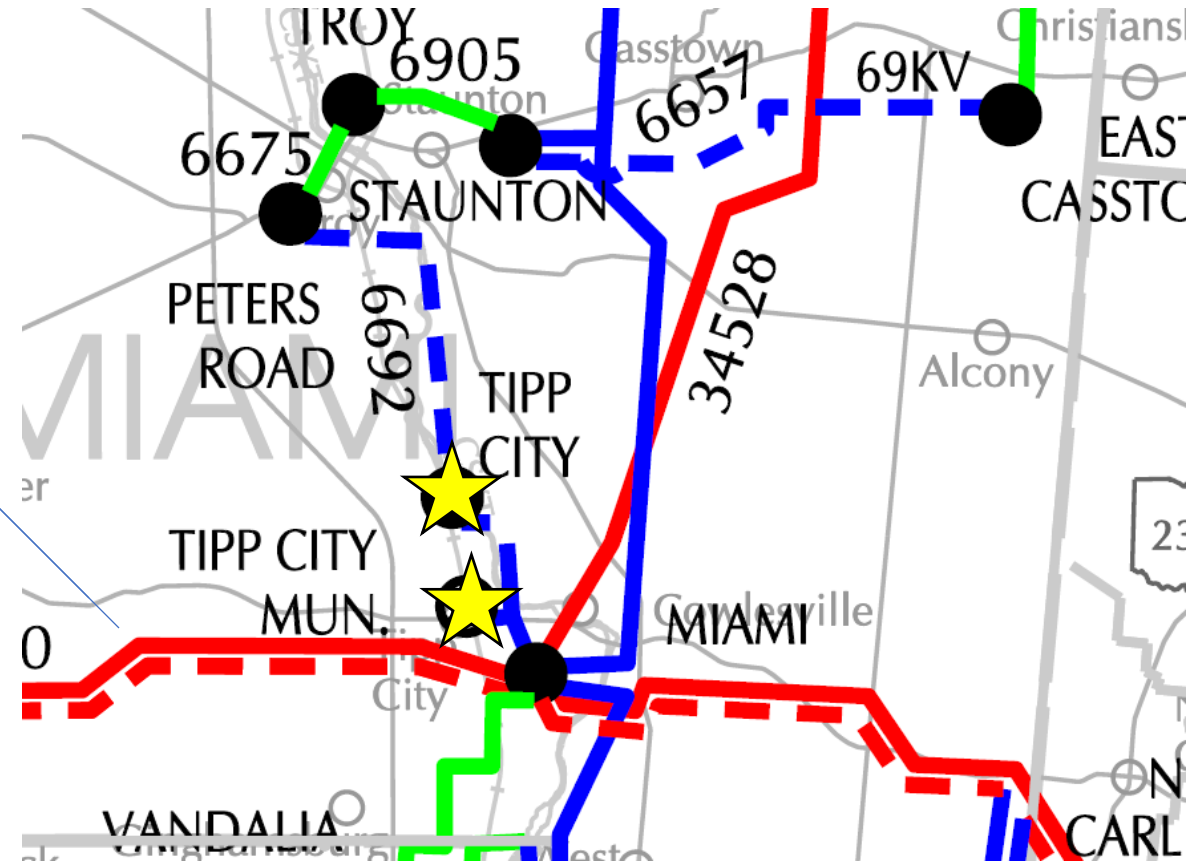
The current peak load at Tipp City Muni is 35MW. AMPT’s Transmission Facilities Interconnection Requirements specify looped facilities for loads exceeding 5MW or 35MW-mile thresholds.



- **Need Number:** Dayton-2023-004
- **Process Stage:** Submission of Supplemental Project for Inclusion in the Local Plan – 8/12/2024
- **Previously Presented:** Need Meeting 04/21/2023
- **Project Driver:** Operational Flexibility and Efficiency
- **Specific Assumption Reference:** Dayton Local Plan Assumptions (Slide 5)

• **Problem Statement:**

- The existing 6692 Miami – Peters Road 69kV transmission line currently serves three tapped loads: Tipp City Municipal (35MW currently with potential to increase to 40MW in the future), Tipp City AES Ohio (6MW) and Peters Rd AES Ohio (14MW).
- A fault occurring anywhere on this line will result in both loads and a transformer at Peters Road tripping. Tipp City municipal has requested an upgrade to remedy this issue.
- 6692 is an 8.2 mile wood pole construction line built in 1970. The line has experienced 6 outages over the past 10 years.





AMPT Projects in DAY Transmission Zone M3 Process

Tipp City, OH

Need Number: AMPT-2023-003 & Dayton-2023-004

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 8/12/2024

Previously Presented: Solution Meeting – 2/16/2024

Supplemental Project Driver(s): Customer Service

Proposed Solution:

AMPT Identified Scope (\$ 15.3 M)

Construct New Kessler – AES Tipp City line (\$ 12.1 M)

- Build approximately 4.5 miles of new single circuit 69kV line using 795 ACSR Drake conductor from the future Tipp City Kessler station to AES's Tipp City station.

Canal 69kV Substation (\$ 1.44 M)

- Install new line relays and CCVT's for both 69kV line terminals

Tower 69kV Substation (\$ 1.24 M)

- Install new line relays and CCVT's for line Tower – Canal line terminal.

Kessler 69kV Substation (\$.45 M)

- Install new RTU, security system, and update relay settings.

AES Identified Scope (\$ 24.3 M)

AES Ohio Tipp City 69kV Ring Bus:

- Upgrade AES Tipp City sub to 4 breaker ring bus and enable interconnection with the new Kessler-Tipp City (AMP-T) 69kV line.

Estimated Cost: \$7.8M, ISD 6/30/2027

Construct new Miami-Canal 69kV T-line:

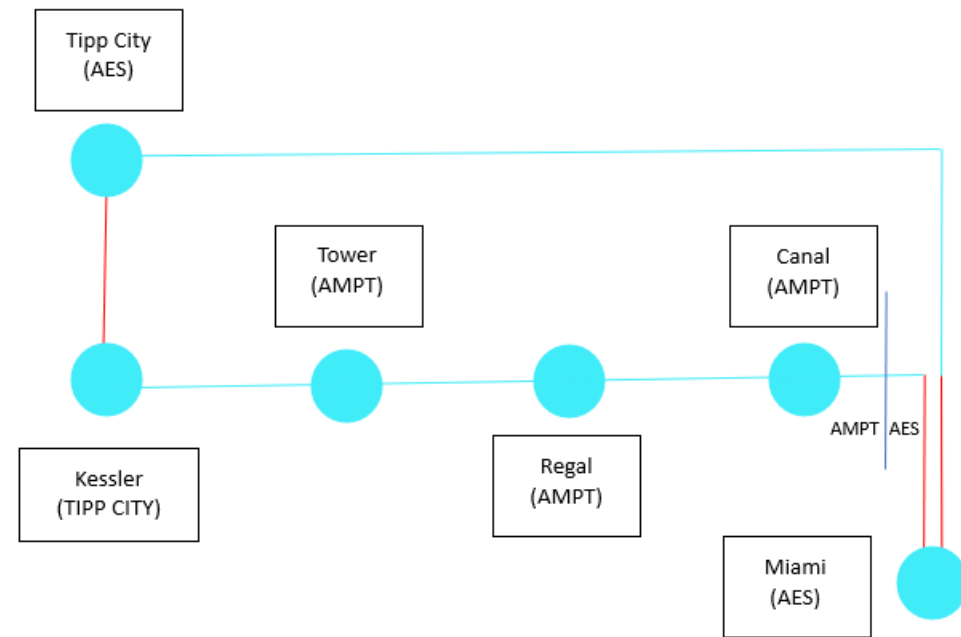
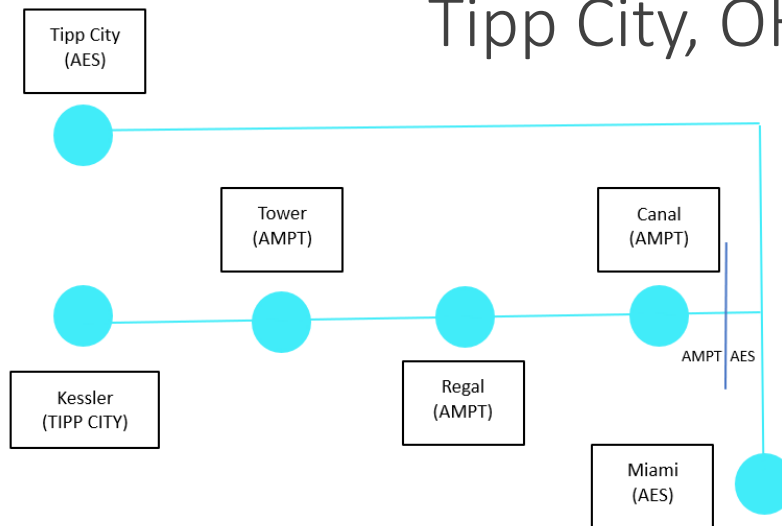
- Rebuild 2.0 miles of the existing 6692 line from AES Ohio Miami sub to AMP-T's Canal tap, from single circuit line to double circuit Miami-Canal. Demo existing line tap.

Estimated Cost: \$5.5M, ISD 6/30/2028

Miami Substation Upgrades:

- Add one additional breaker, a 2nd 138/69kV transformer, replace five 69kV breakers & four 138kV breakers.

Estimated Cost: \$12M, ISD 6/30/2028





AMPT Projects in DAY Transmission Zone M3 Process

Need Number: AMPT-2023-003 & Dayton-2023-004

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 8/12/2024

Previously Presented: Solution Meeting – 2/16/2024

Supplemental Project Driver(s): Customer Service

Ancillary Benefits:

Solution provides reliability improvements for n-1-1 contingency on non-BES AES owned facilities (both voltage and thermal).

Alternatives Considered:

- Build a 69kV circuit from Kessler – AES Miami for approximately X miles. AES to expand the Miami station to accommodate a new 69 kV line terminal.
- This alternative was not chosen because it is a longer line length than the preferred option, this line route presented more siting challenges, higher costs, and the AES Miami station is space constrained to accommodate another 69 kV line. This option also did not address AES' needs to reinforce at their Tipp City substation.

• **Total Estimated Transmission Cost: \$39.6M**

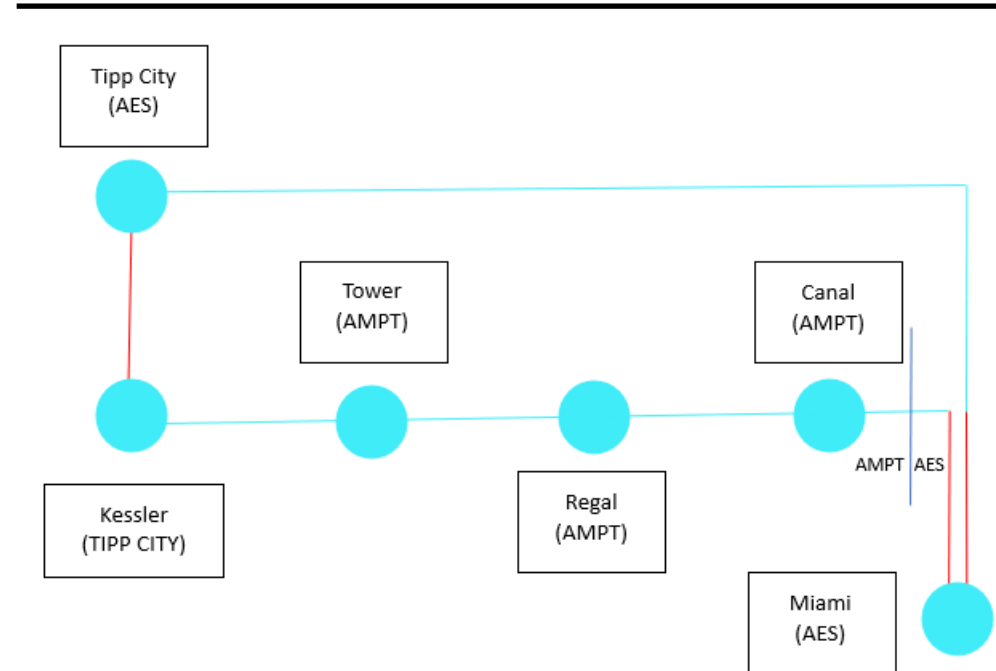
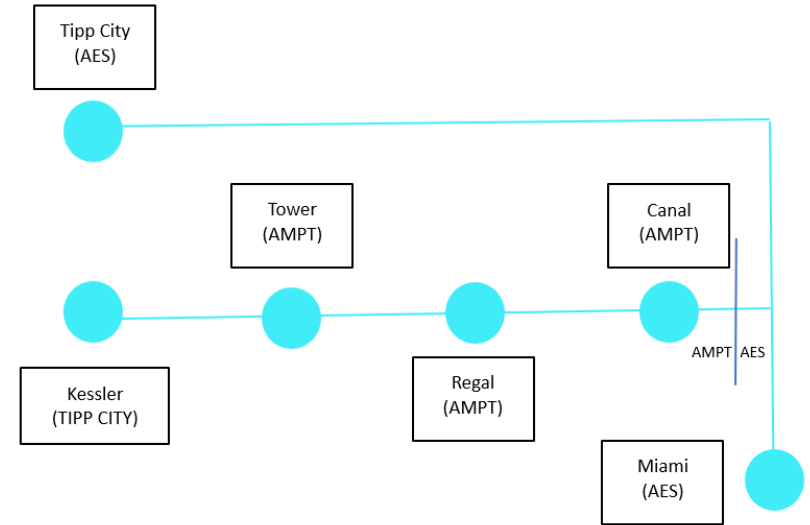
• **Supplemental Project ID: s3351.1 (AMPT); s3351.2 (AES);**

Projected In-Service: 6/30/2028

Model: 2023 RTEP – 2028 Summer Case

Project Status:

- Conceptual (AMPT), Conceptual (AES Ohio)



Revision History

2/22/2024 – V1 – Original version posted to pjm.com (s3117)

3/22/2024 – V2 – Adding sub ID's for s3117 (.1, .2, .3, .4, .5 and .6) and addition of s3216.1 & s3216.2

8/12/2024 – V3 – Adding sub ID's for s3351.1 and s3352.1