

Submission of Supplemental Projects for Inclusion in the Local Plan

ComEd Local Plan - 2024

Need Number: ComEd-2023-004

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan
January 8, 2024

Previously Presented:

Solutions Meeting 10/3/2023

Need Meeting 7/11/2023

Project Driver:

Operational Flexibility and Efficiency

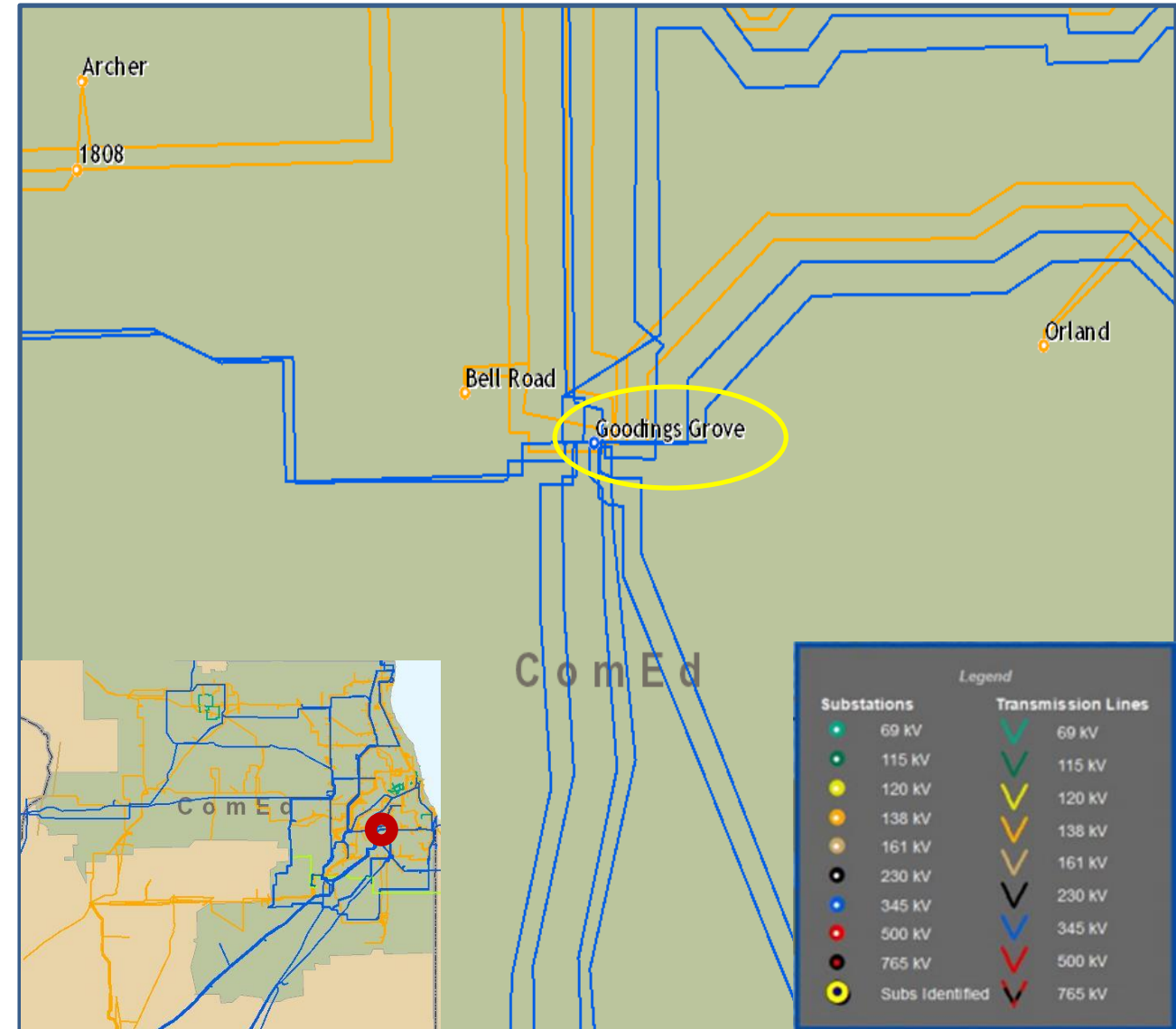
Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

- Enhancing system functionality, flexibility, visibility, or operability
- Transmission infrastructure replacements (EOL/condition/obsolescence) that are consistent with efficient asset management decisions

Problem Statement:

- The 345 kV layout at Goodings Grove consists of a straight bus configuration with three 345 kV bus-ties, four autotransformers, and fourteen 345 kV lines. A single breaker failure can take out seven 345 kV lines and two autotransformers.
- Fourteen of the nineteen breakers are oil circuit breakers ranging in age from 44 to 57 years old and are in deteriorating condition.
- Two of the four autotransformers do not have high-side circuit breakers
- A portion of the 345 kV bus is strain bus
- A fault on Tr. 81 or Tr.83 will temporarily interrupt 3 lines.
- The existing fault current at Goodings Grove is nearing 60kA.



Need Number: ComEd-2023-004

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan January 8, 2024

Selected Solution:

Replace 345 kV open air straight bus with GIS in a breaker and half configuration (34 Circuit Breakers) at Goodings Grove with 80kA capability.

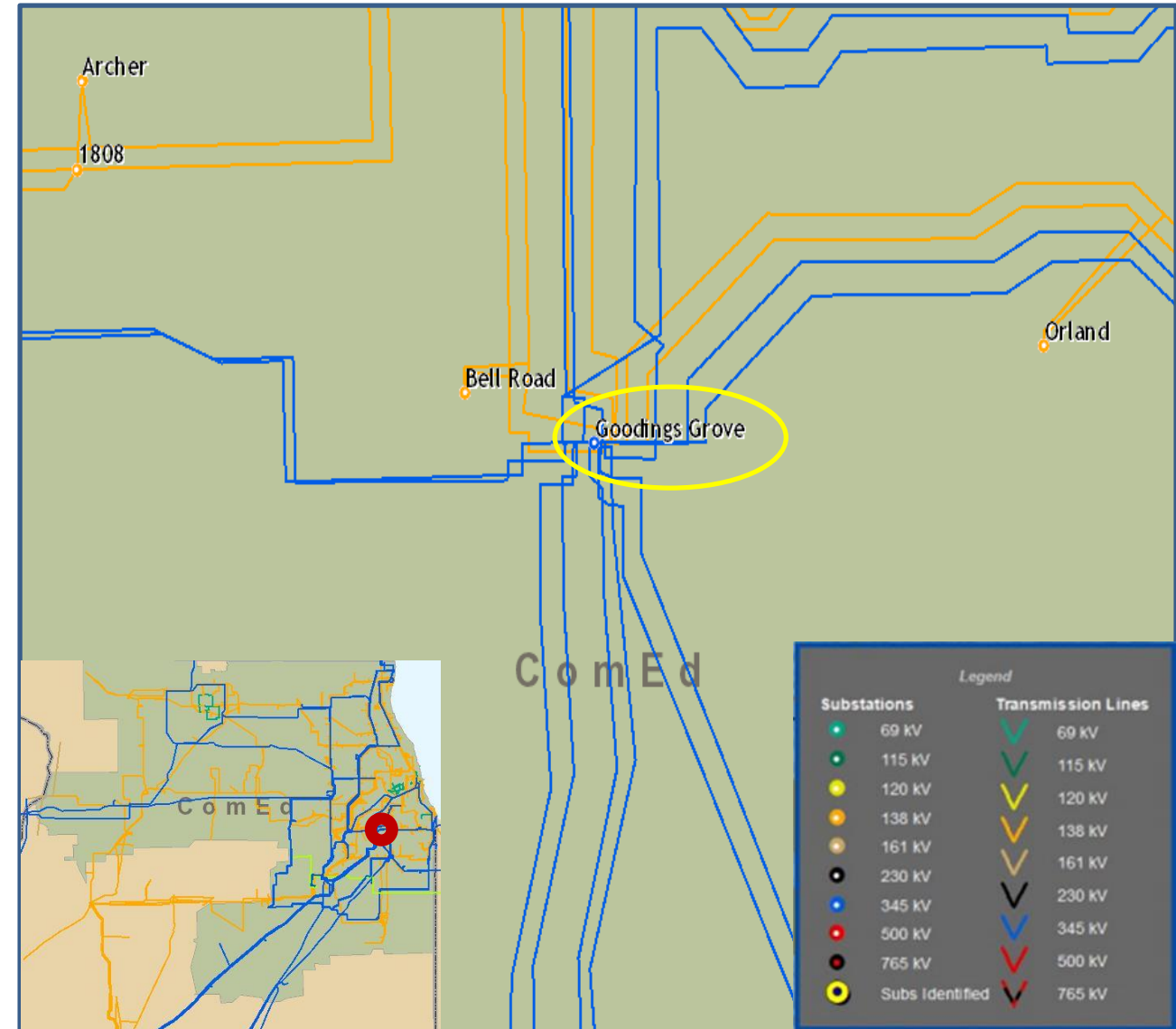
Estimated transmission cost: \$264M

Projected In-Service: 12/31/28

Supplemental Project ID: s3011

Project Status: Conceptual

Model: 2028 RTEP



Need Number: ComEd-2023-007

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan January 8, 2024

Previously Presented:

Solutions Meeting 10/3/2023

Need Meeting 9/5/2023

Project Driver:

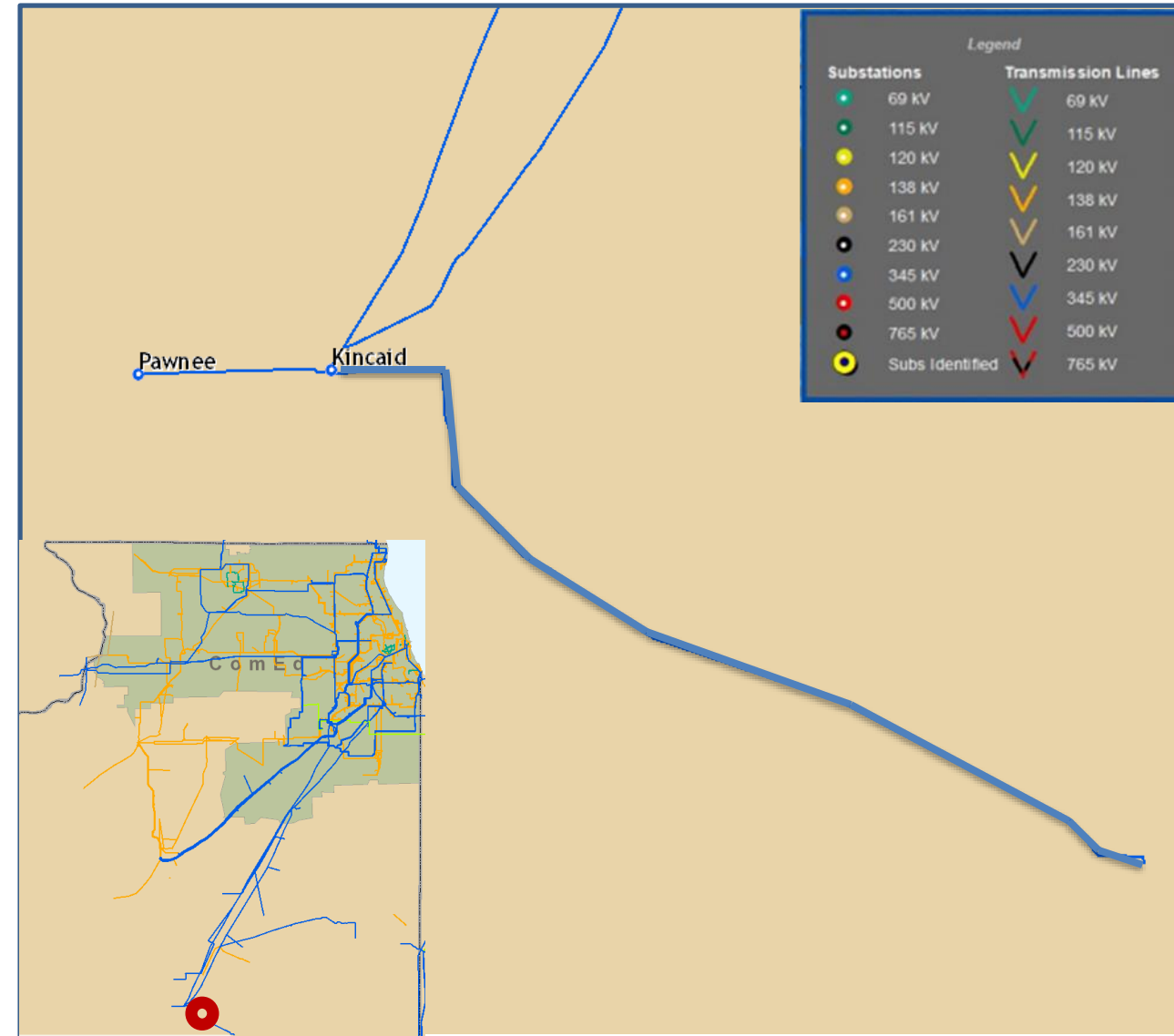
Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

- Transmission infrastructure replacements (EOL/condition/obsolescence) that are consistent with efficient asset management decisions

Problem Statement:

- 345 kV line 2105 Kincaid – Pana(Ameren) is a 26.4 mile line with 2338 ACAR and 2156 ACSR conductor on 56-year-old wood H-frame structures.
- The wood components are at end-of-life, with many plank arms deteriorating which lead to dropping conductor. In 2022, there were outages on the line due to broken crossarms on clear weather days.
- Several of the wood poles and components are also suffering from woodpecker damage.
- The line has significant stretches of tangent structures without modern anti-cascade provisions.
- Inspections identified multiple locations of corona damaged 9-inch insulators on this line.
- L2105 contains small static wire and is a poor performer against lightning which has caused static wire failure in the past.



Need Number: ComEd-2023-007

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan January 8, 2024

Selected Solution:

Rebuild approx. 26.4 miles with new structures, OPGW, and 2-1277 ACAR conductor.

	SN/SE (MVA)	WN/WE (MVA)
Old rating	1201/1201	1497/1497
New rating	1679/1793	1793/1793

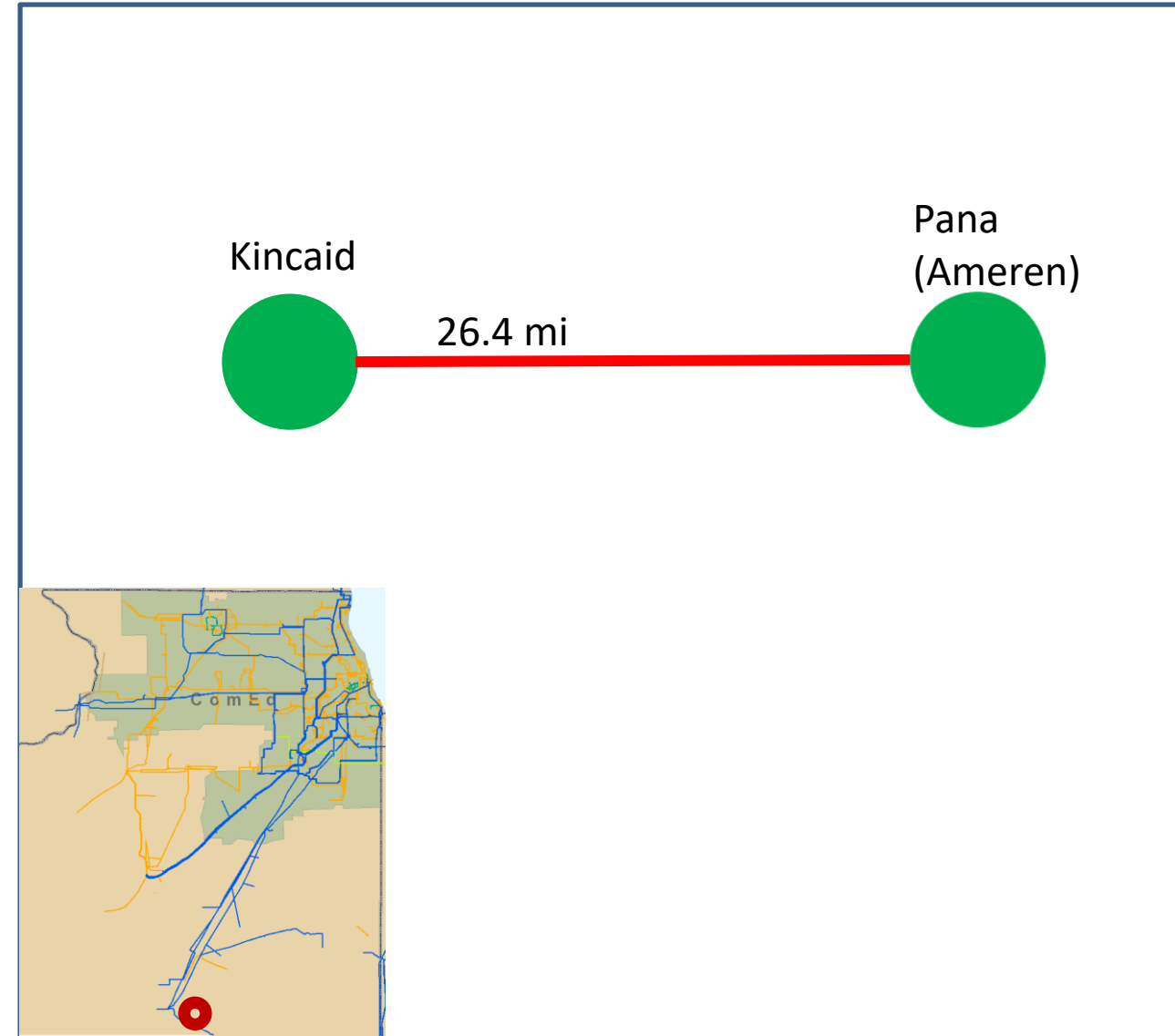
Estimated transmission cost: \$149M

Projected In-Service: 12/31/26

Supplemental Project ID: s3012

Project Status: Conceptual

Model: 2028 RTEP



Need Number: ComEd-2023-006

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan February 27, 2024

Previously Presented:

Solution Meeting 9/15/2023

Need Meeting 8/18/2023

Project Driver:

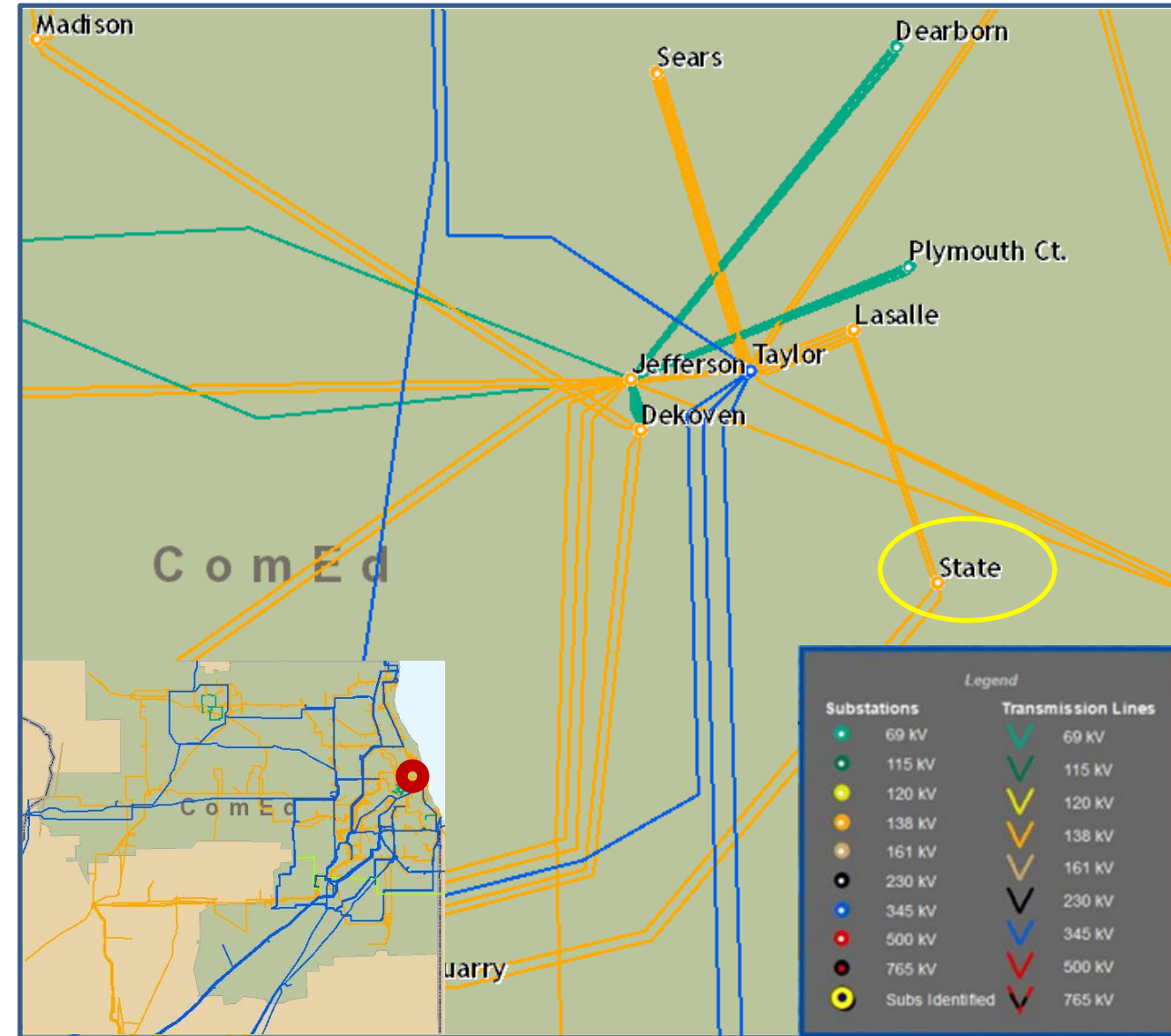
Customer Service

Specific Assumption Reference:

- Transmission System configuration changes due to new or expansion of existing distribution substations

Problem Statement:

ComEd Distribution has a need for an additional 138-12 kV transformer at State substation.



Need Number: ComEd-2023-006

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan February 27, 2024

Selected Solution:

Install a new 50 MVA 138-12 kV distribution transformer and 138 kV BT 4-5 CB at State substation.

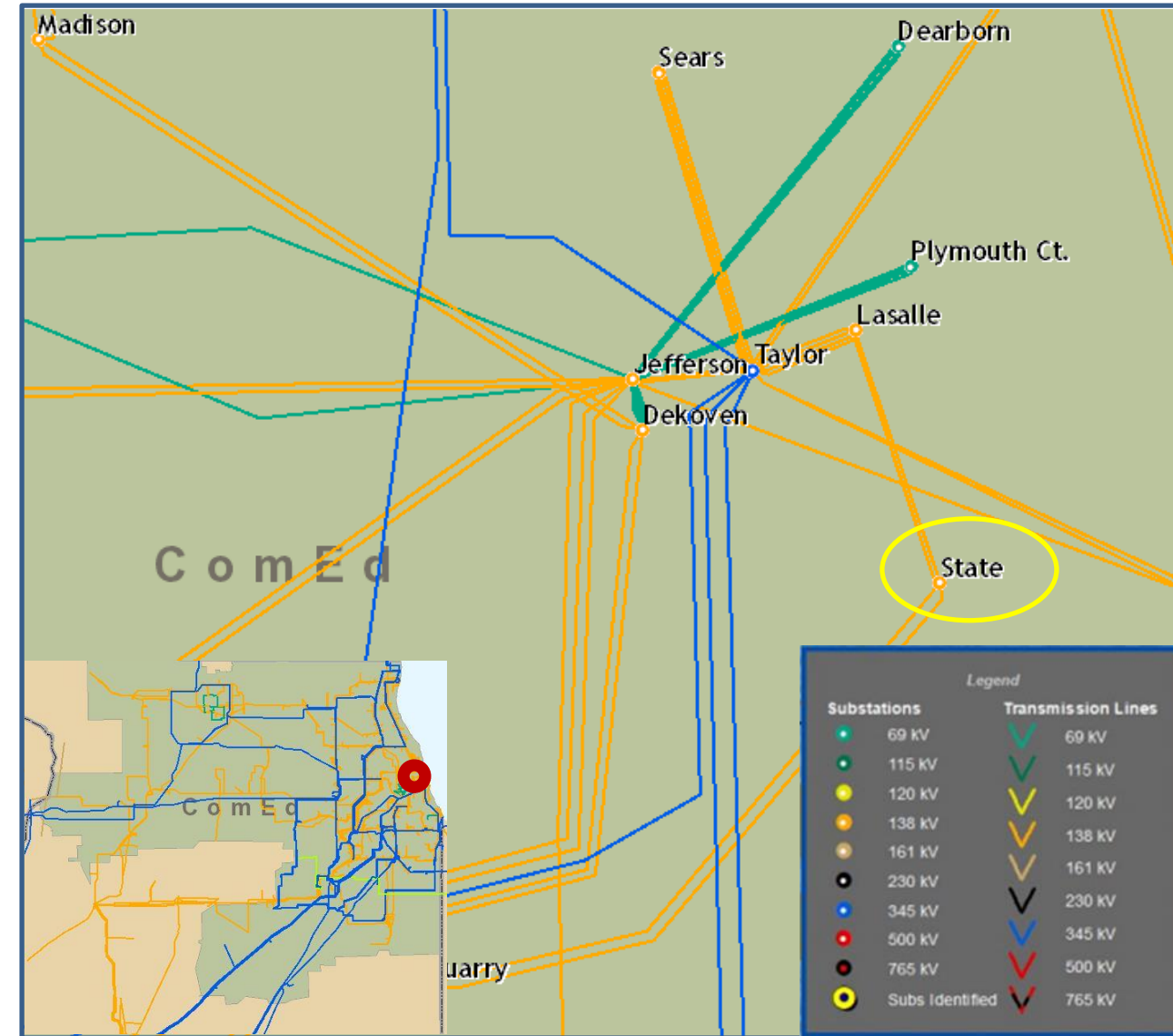
Estimated transmission cost: \$2M

Projected In-Service: 6/1/24

Supplemental Project ID: s3155

Project Status: Engineering

Model: 2027 RTEP



Need Number: ComEd-2023-010

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan February 27, 2024

Previously Presented:

Solution Meeting 10/31/2023

Need Meeting 10/3/2023

Project Driver:

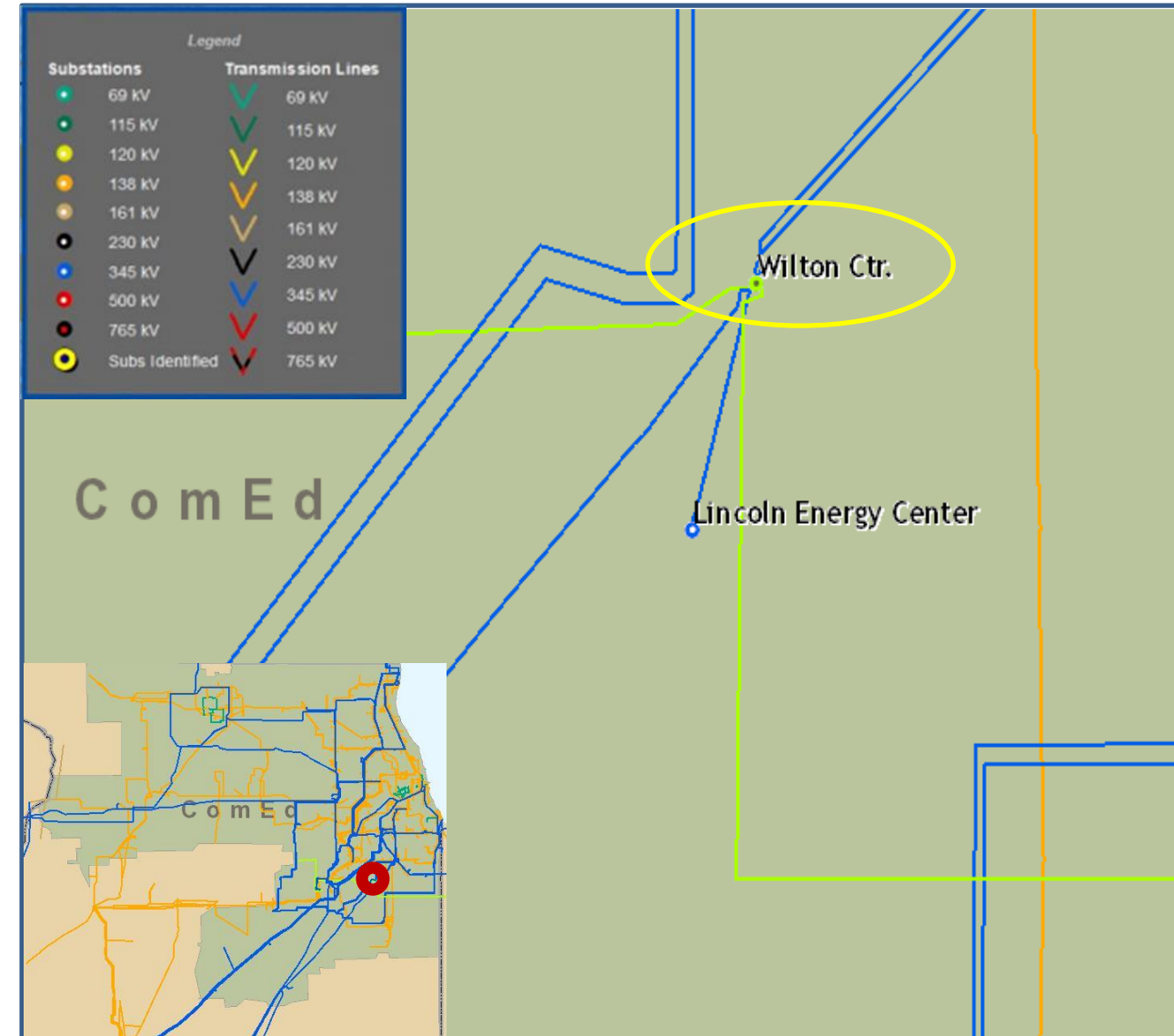
Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

- Transmission infrastructure replacements (EOL/condition/obsolescence) that are consistent with efficient asset management decisions

Problem Statement:

- 345 kV oil circuit breakers BT2-3, BT3-4, BT4-5, BT5-6, BT6-7 at Wilton Center substation were installed in 1970. They are in deteriorating condition, lack replacement parts, and have elevated maintenance cost.



Need Number: ComEd-2023-010

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan February 27, 2024

Selected Solution:

Replace existing 345 kV oil BT2-3, BT3-4, BT4-5, BT5-6, BT6-7 CBs with new 345 kV SF6 CBs.

Existing Breaker Ratings: 2000 A, 50 kA

New Breaker Ratings: 3000 A, 63 kA

345 kV Wilton – Loretto Line		
	SN/SE (MVA)	WN/WE (MVA)
Old Rating	1364/1528	1590/1781
New Rating	1679/2058	2091/2340

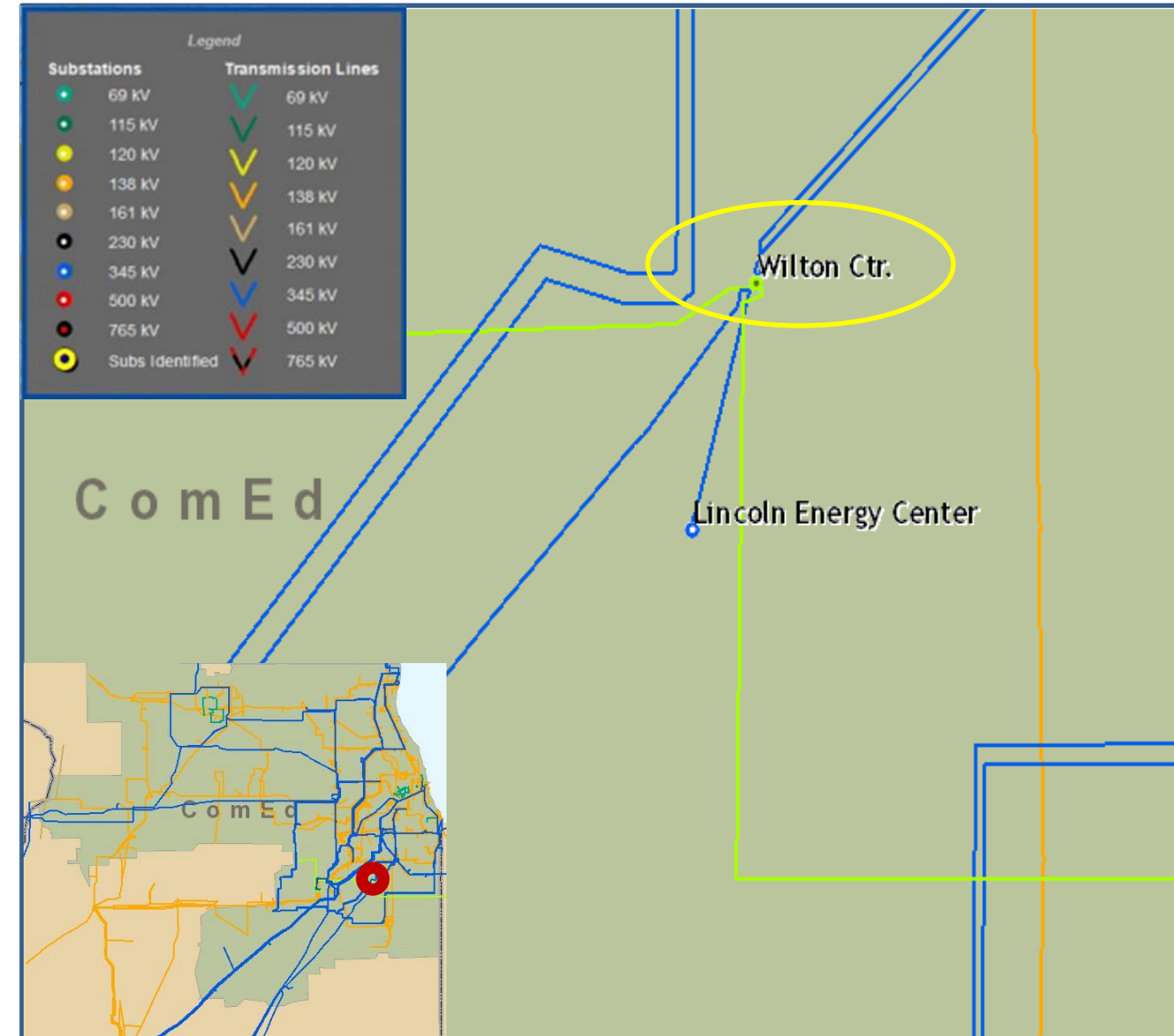
Estimated transmission cost: \$12.7M

Projected In-Service: 12/31/24

Supplemental Project ID: s3156

Project Status: Engineering

Model: 2028 RTEP



Need Number: ComEd-2023-011

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan February 27, 2024

Previously Presented:

Solution Meeting 10/31/2023

Need Meeting 10/3/2023

Project Driver:

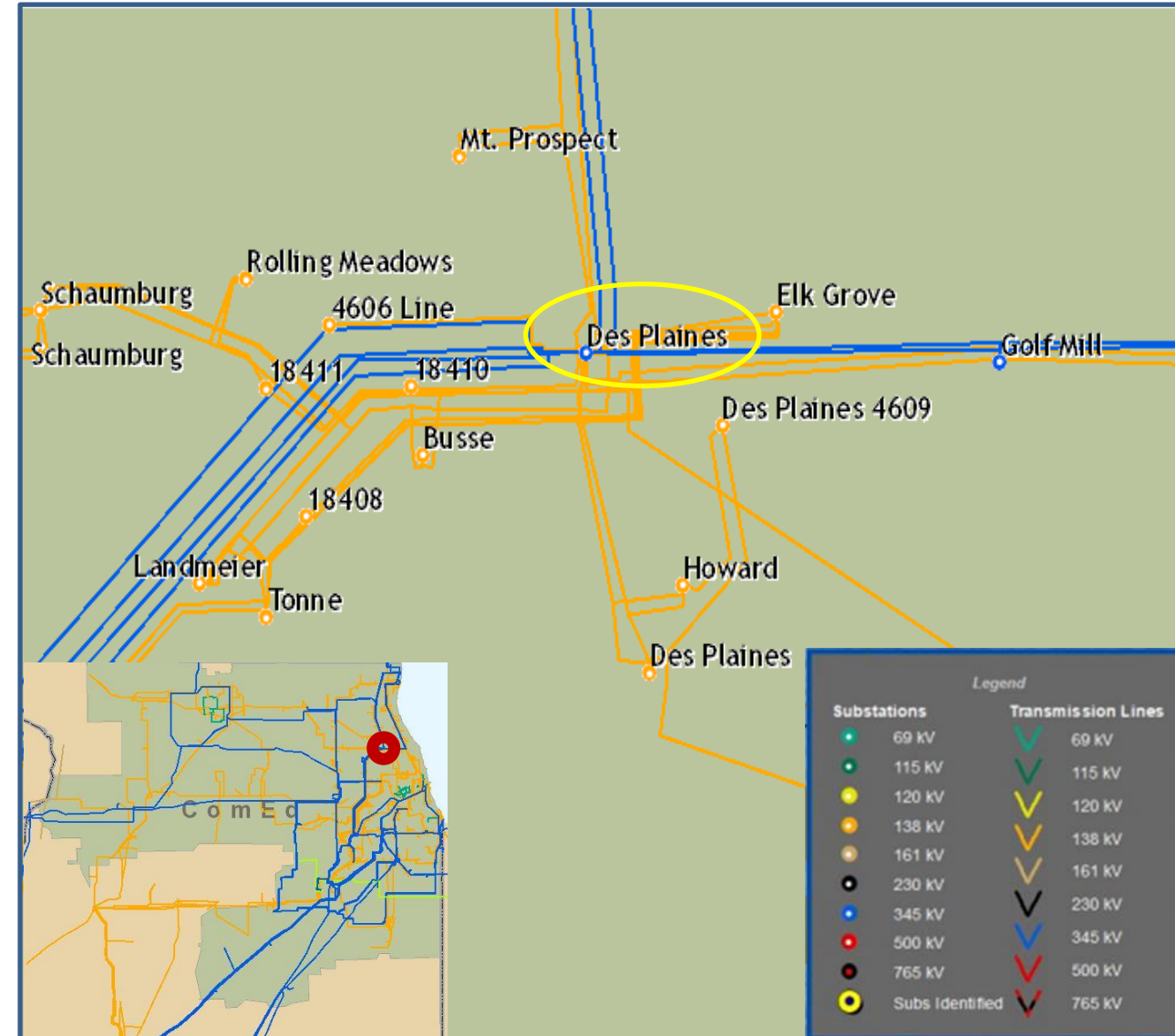
Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

- Transmission infrastructure replacements (EOL/condition/obsolescence) that are consistent with efficient asset management decisions

Problem Statement:

- 345 -138 kV autotransformer 83 was installed in 1993. It is one of five similar transformers purchased by ComEd. Two have failed in service and one other is being replaced on supplemental project S2266.
- Undersized core allows for overexcitation during loading causing overheating of metal, partial discharge, and circulating currents.
- Due to the hydrogen levels, the transformer must be taken out of service periodically and degasified.
- 138 kV TR 83 CB was installed in 1974. It is deteriorating condition, has a lack of replacement parts, and has elevated maintenance costs.



Need Number: ComEd-2023-011

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan February 27, 2024

Selected Solution:

Replace 345/138 kV autotransformer with a new standard autotransformer. Replace tertiary capacitor bank with a new 138 kV capacitor bank on new 138 kV bus. Replace 138 kV TR 83 oil CB with a new 138 kV SF6 CB.

TR 83	SN/SE (MVA)	WN/WE (MVA)
Old Rating	400/465	400/465
New Rating	420/480	420/480

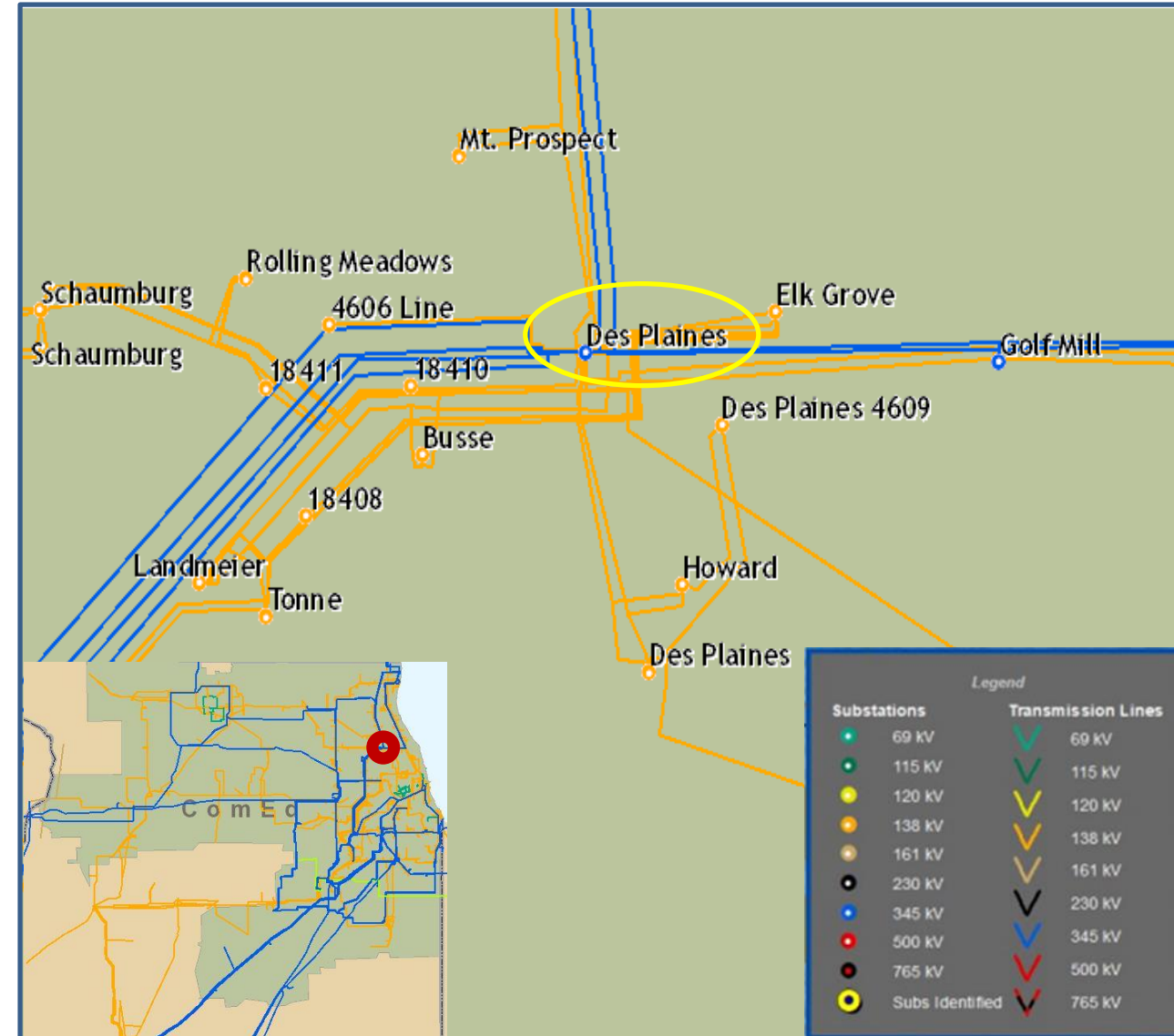
Estimated transmission cost: \$24.1M

Projected In-Service: 12/31/25

Supplemental Project ID: s3157

Project Status: Engineering

Model: 2028 RTEP



ComEd Transmission Zone M-3 Process Franklin Park L3705 Phase Shifting Transformer

Need Number: ComEd-2023-012

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan July 10, 2024

Previously Presented:

Solution Meeting 4/19/2024

Need Meeting 11/17/2023

Project Driver:

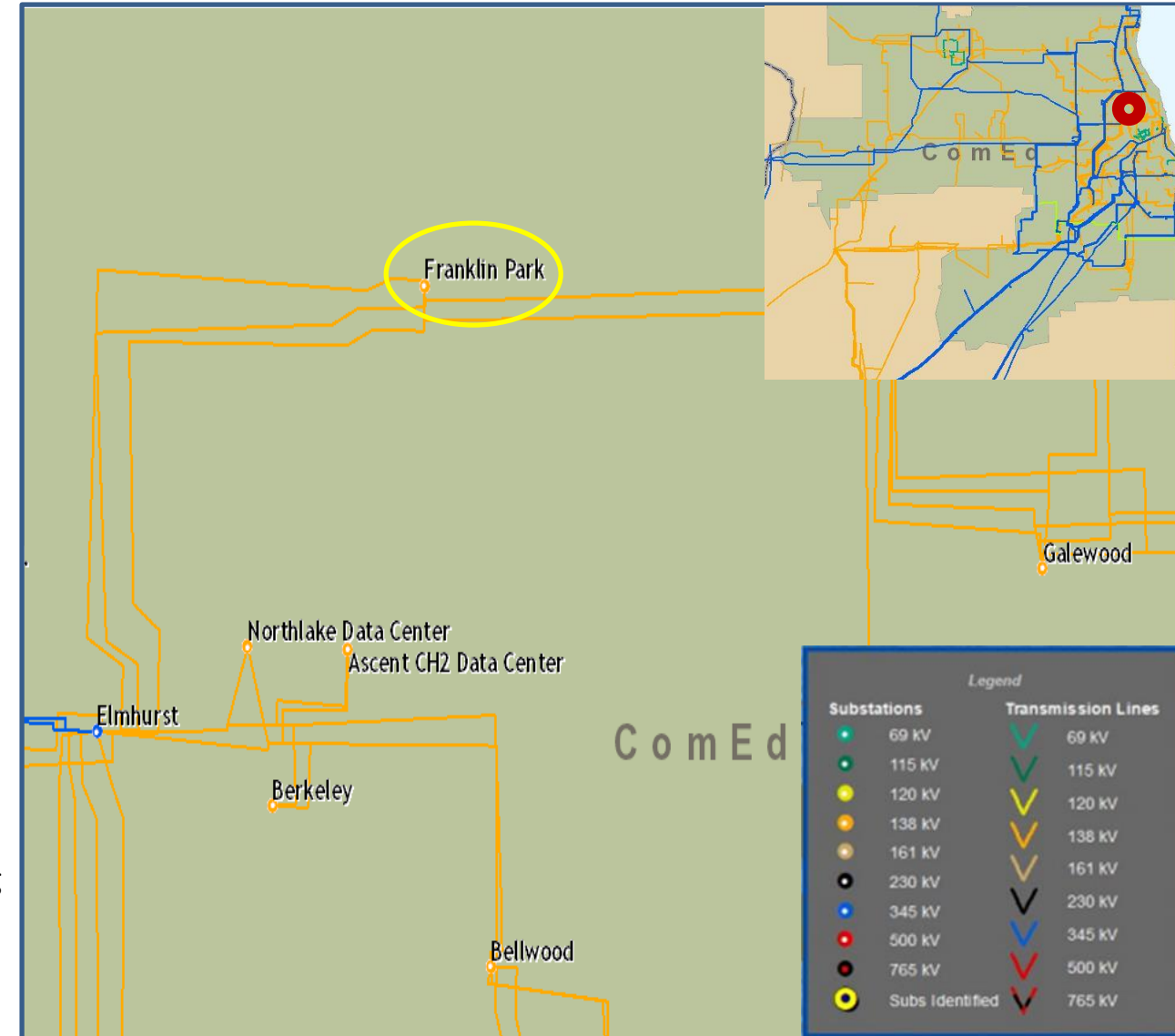
Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

- Transmission infrastructure replacements (EOL/condition/obsolescence) that are consistent with efficient asset management decisions

Problem Statement:

- The L3705 Franklin Park – Natoma 138 kV phase shifting transformer is 48 years old and is in deteriorating condition with lack of replacement parts.
- L3705 shares Bus 1 at Franklin Park with distribution transformer 76.
- The unit was rewound in 1987 due to a through-fault failure.
- The unit has also had cooling failure issues and is an FOA cooling unit which requires de-energization after one hour upon loss of all cooling or loss of aux power if cooling is not restored.



ComEd Transmission Zone M-3 Process Franklin Park L3705 Phase Shifting Transformer

Need Number: ComEd-2023-012

Process Stage:

Submission of Supplemental Project for inclusion in the Local Plan July 10, 2024

Selected Solution:

- Replace the L3705 138 kV phase shifting transformer.
- Install a new 138 kV BT1-8 CB

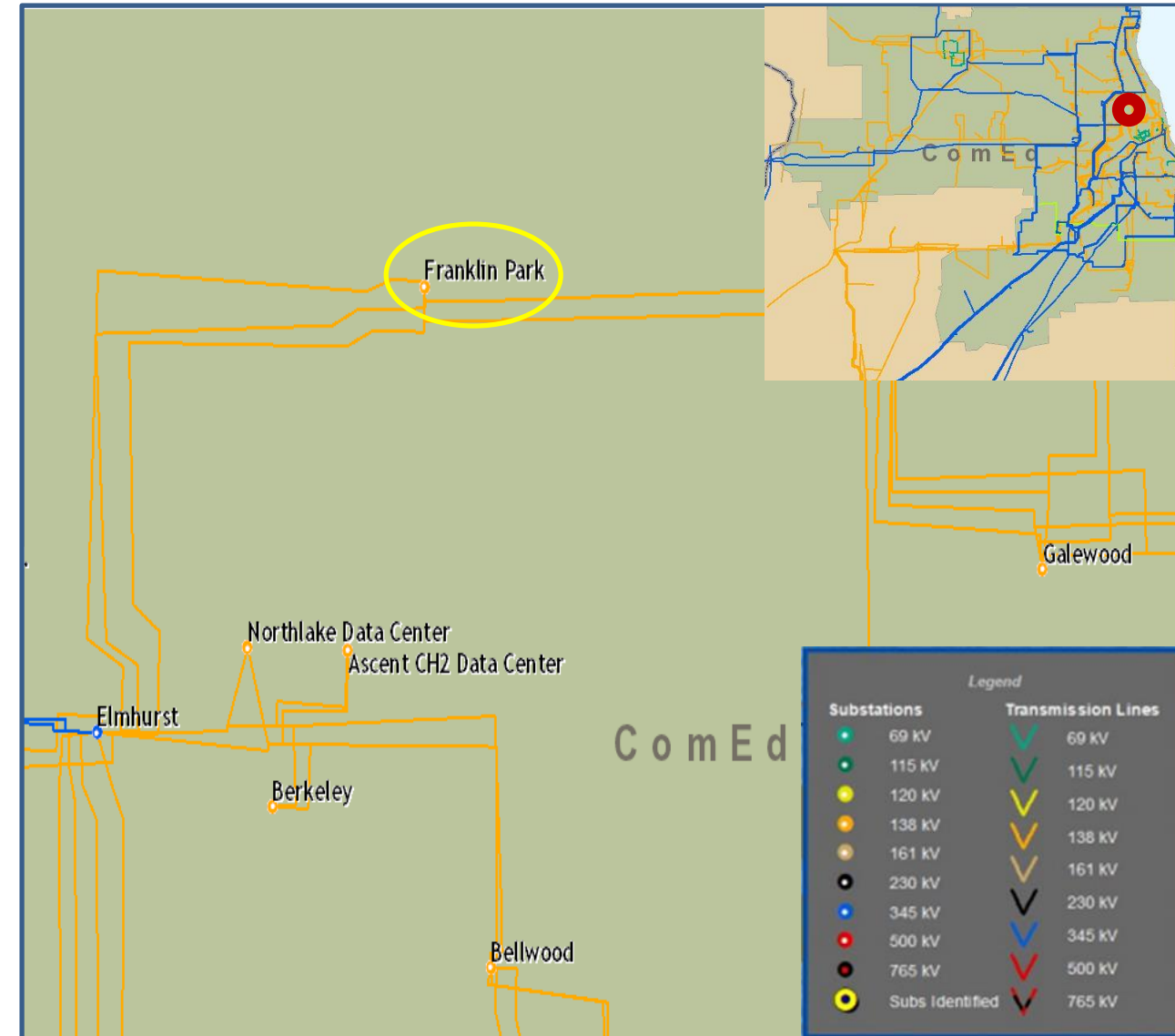
Estimated transmission cost: \$11.8M

Supplemental Project ID: s3341

Projected In-Service: 12/31/25

Project Status: Engineering

Model: 2028 RTEP



Need Number: ComEd-2024-001

Process Stage:

Submission of Supplemental Project for inclusion in the Local Plan
July 10, 2024

Previously Presented:

Solution Meeting 2/6/2024

Need Meeting 1/9/2024

Project Driver:

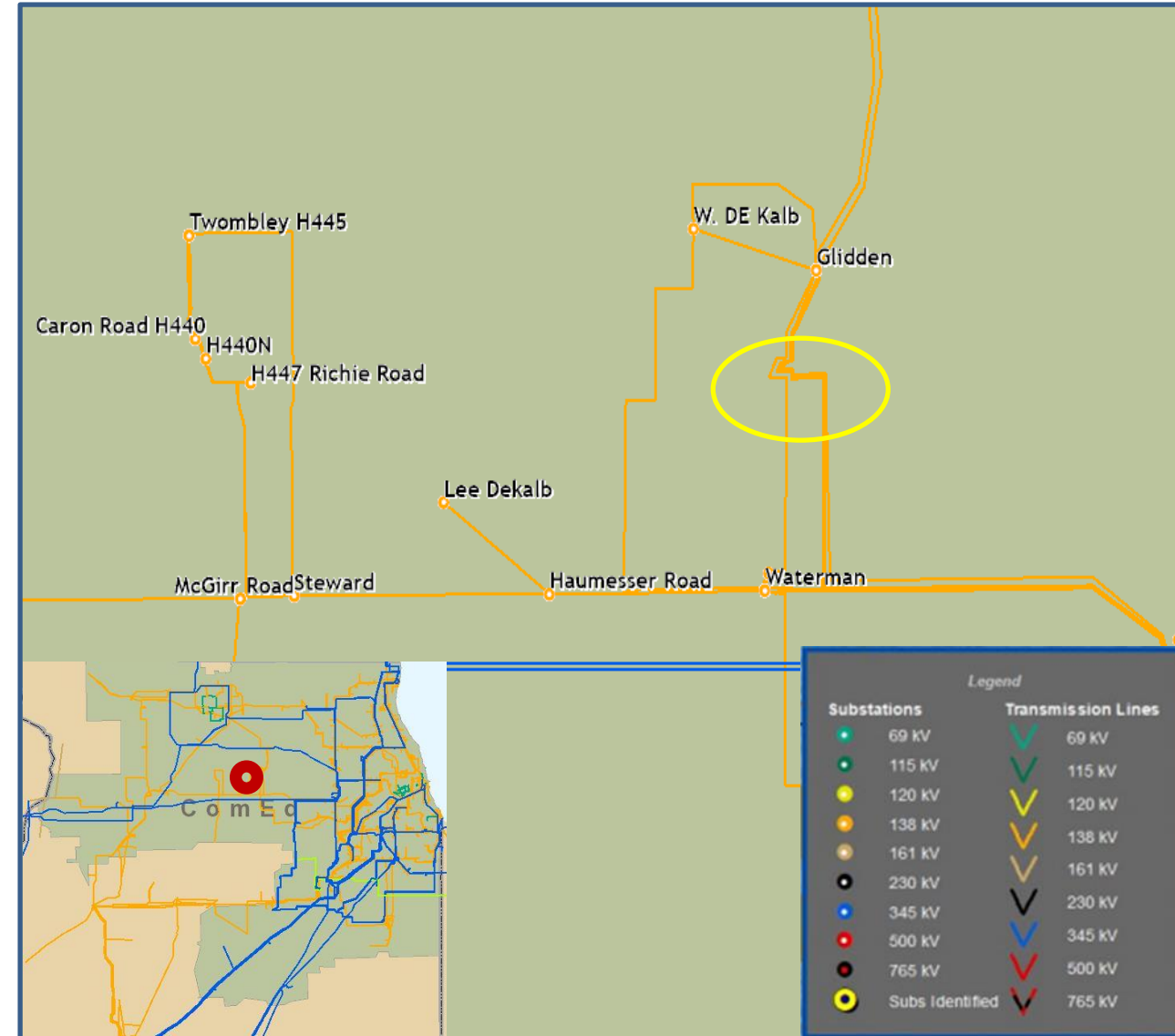
Customer Service

Specific Assumption Reference:

- New transmission customer interconnections or modification to an existing customer

Problem Statement:

- A new customer is looking for transmission service in the Dekalb area. Initial loading is expected to be 53 MW in June 2027, 160 MW in 2028, with an ultimate load of 210 MW.
- ComEd Distribution Capacity Planning requested additional capacity in the Dekalb area to accommodate load growth of 15 MW. Existing distribution facilities do not have enough capacity to accommodate this load growth.



Need Number: ComEd-2024-001

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan July 10, 2024

Selected Solution:

- Cut into existing 345kV line 15502 and extend 2 lines 6 miles each to a new Keslinger substation 345 kV breaker-and-a-half bus by 12/31/2026
- Provide four radial 345kV leads to customer owned transformers
- Cut into existing 138 kV lines 8309 and 11307 and extend 4 lines 0.7 miles to a new Keslinger substation 138 kV breaker-and-a-half bus by 12/31/2027
- Connect two new 138/34 kV distribution transformers at Keslinger.
- Install 2 new 345/138 kV transformers at Keslinger

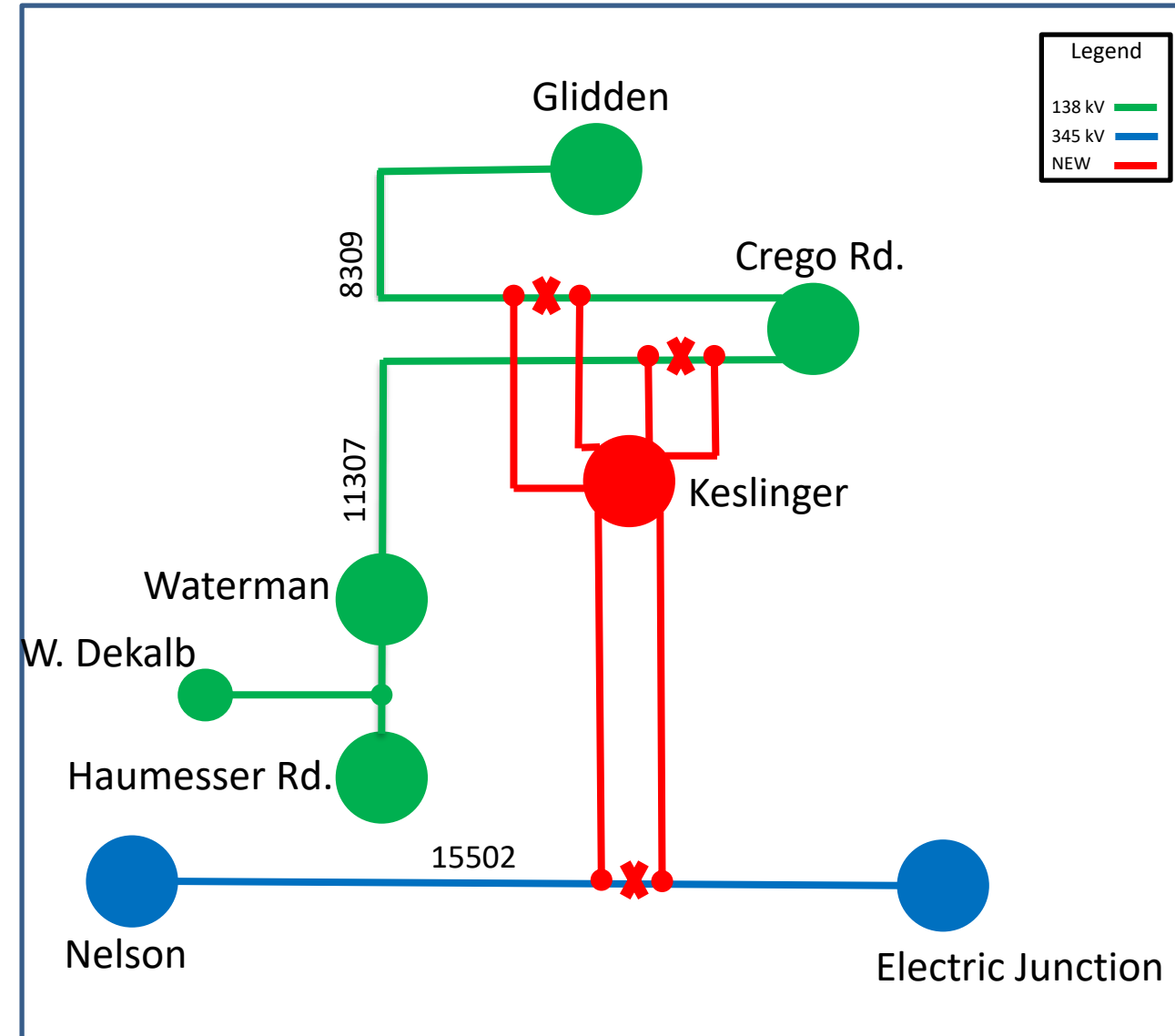
Estimated transmission cost: \$175M

Supplemental Project ID: s3342.1, s3342.2

Projected In-Service: 12/31/27

Project Status: Conceptual

Model: 2028 RTEP



Need Number: ComEd-2024-007

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan July 10, 2024

Previously Presented:

Solution Meeting 3/15/2024

Need Meeting 2/16/2024

Project Driver:

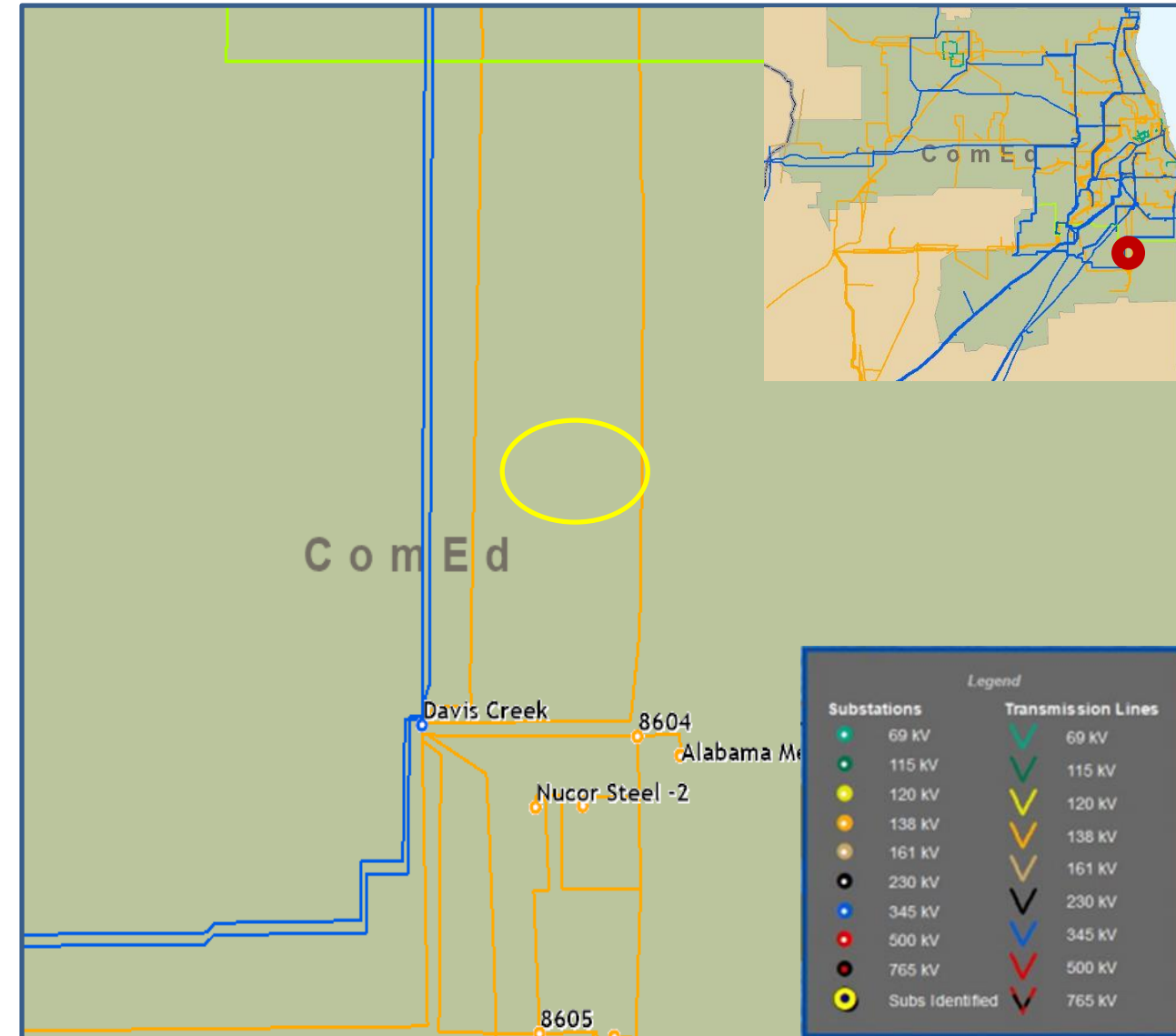
Customer Service

Specific Assumption Reference:

- New transmission customer interconnections or modification to an existing customer

Problem Statement:

New customer is looking for transmission service in the Manteno area. Initial loading is expected to be 34 MW in 2024, 113 MW in 2028, with an ultimate load of 113 MW.



Need Number: ComEd-2024-007

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan July 10, 2024

Selected Solution:

- **Phase 1**
 - Tap existing 138 kV line 0901 and extend a new 1.1 mile line to a new 138/13.2 kV transformer by 12/2024.

Estimated Transmission Cost: \$0M

- **Phase 2**
 - Cut into existing 138 kV 0901 and 0902 lines and extend two 1.1 mile circuits and two 0.7 mile circuits to a new 138 kV breaker-and-a-half substation.
 - New substation will have eleven 138 kV CBs and supply four 138/12.5 kV distribution transformers.

Estimated Transmission Cost: \$64M

Projected In-Service: (Phase 1) 12/31/2024 , (Phase 2) 12/31/2027

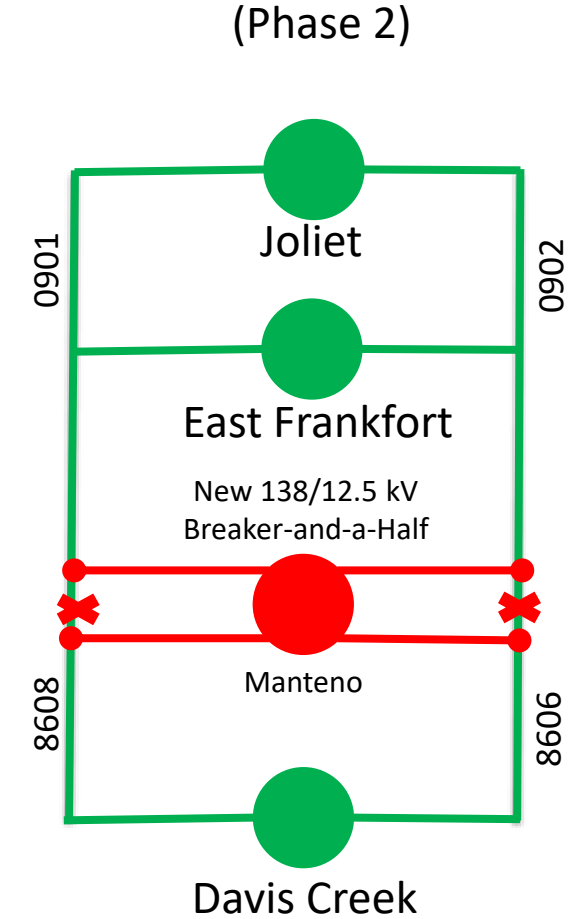
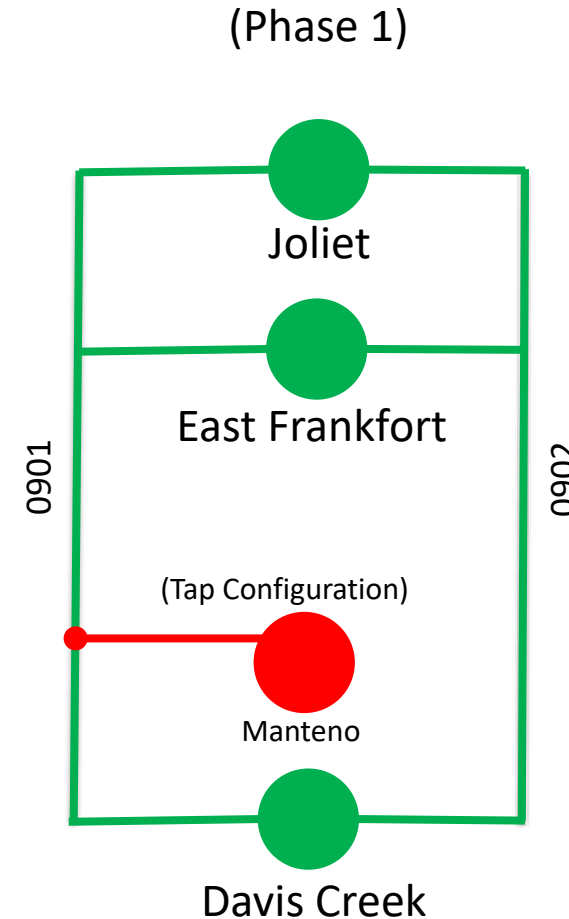
Supplemental Project ID: s3343.1, s3343.2

Project Status:

Phase 1: Engineering

Phase 2: Conceptual

Model: 2028 RTEP



Need Number: ComEd-2024-008

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan July 10, 2024

Previously Presented:

Solution Meeting 4/19/2024

Need Meeting 3/15/2024

Project Driver:

Operational Flexibility and Efficiency

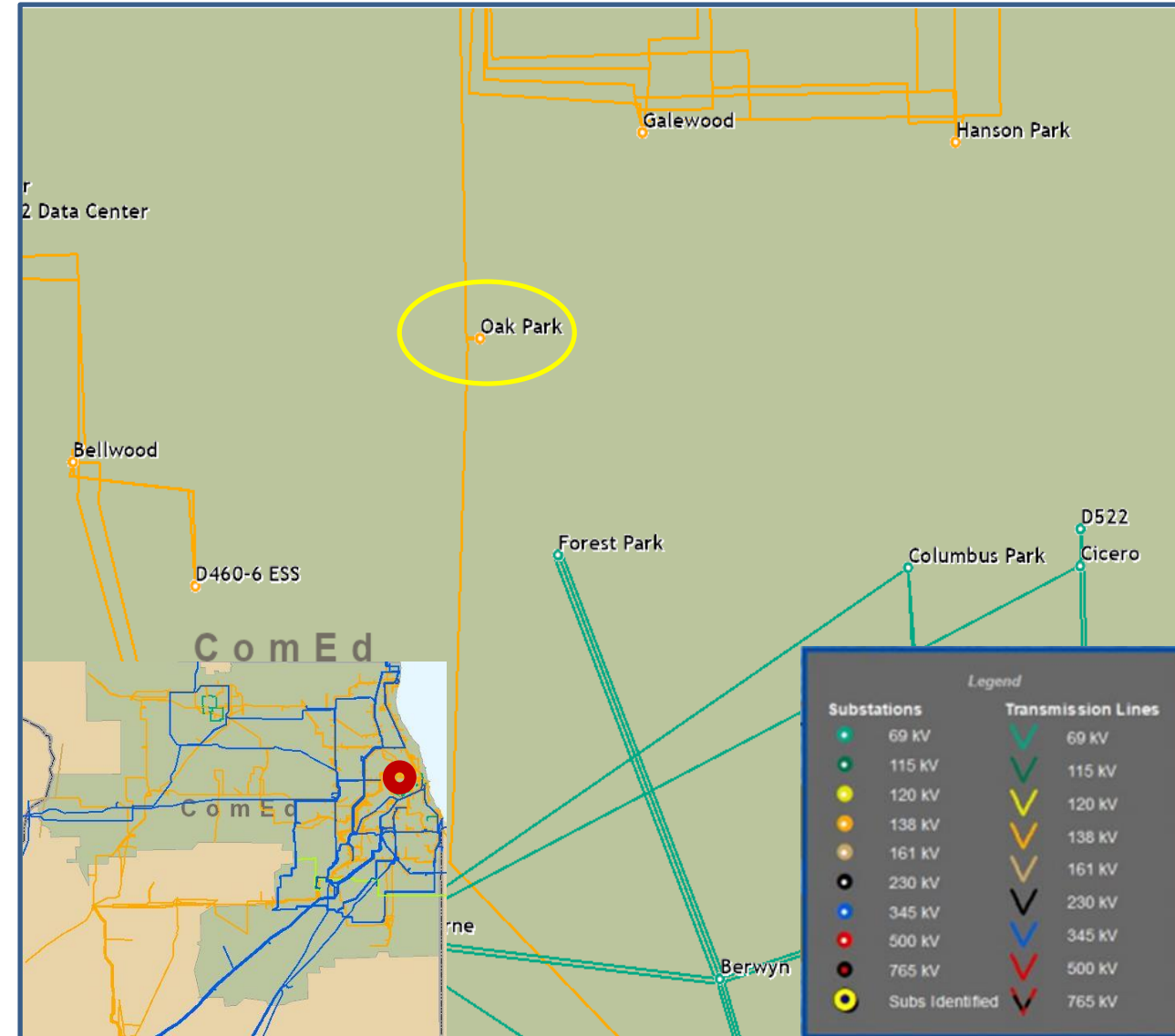
Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

- Enhancing system functionality, flexibility, visibility, or operability
- Transmission infrastructure replacements (EOL/condition/obsolescence) that are consistent with efficient asset management decisions

Problem Statement:

Oak Park substation is currently a ring bus with three 138-12 kV distribution transformers, fed by two – 138 kV lines. There is one oil BT CB, three BT circuit switchers, and two BT disconnect switches on the 138 kV bus. Failure of BT 5-6 CB drops the entire station.



Need Number: ComEd-2024-008

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan July 10, 2024

Selected Solution:

- Replace the existing oil BT CB.
- Install 3 new SF6 BT CBs to create a ring bus.
- Swap bus position of L19209 and distribution TR72

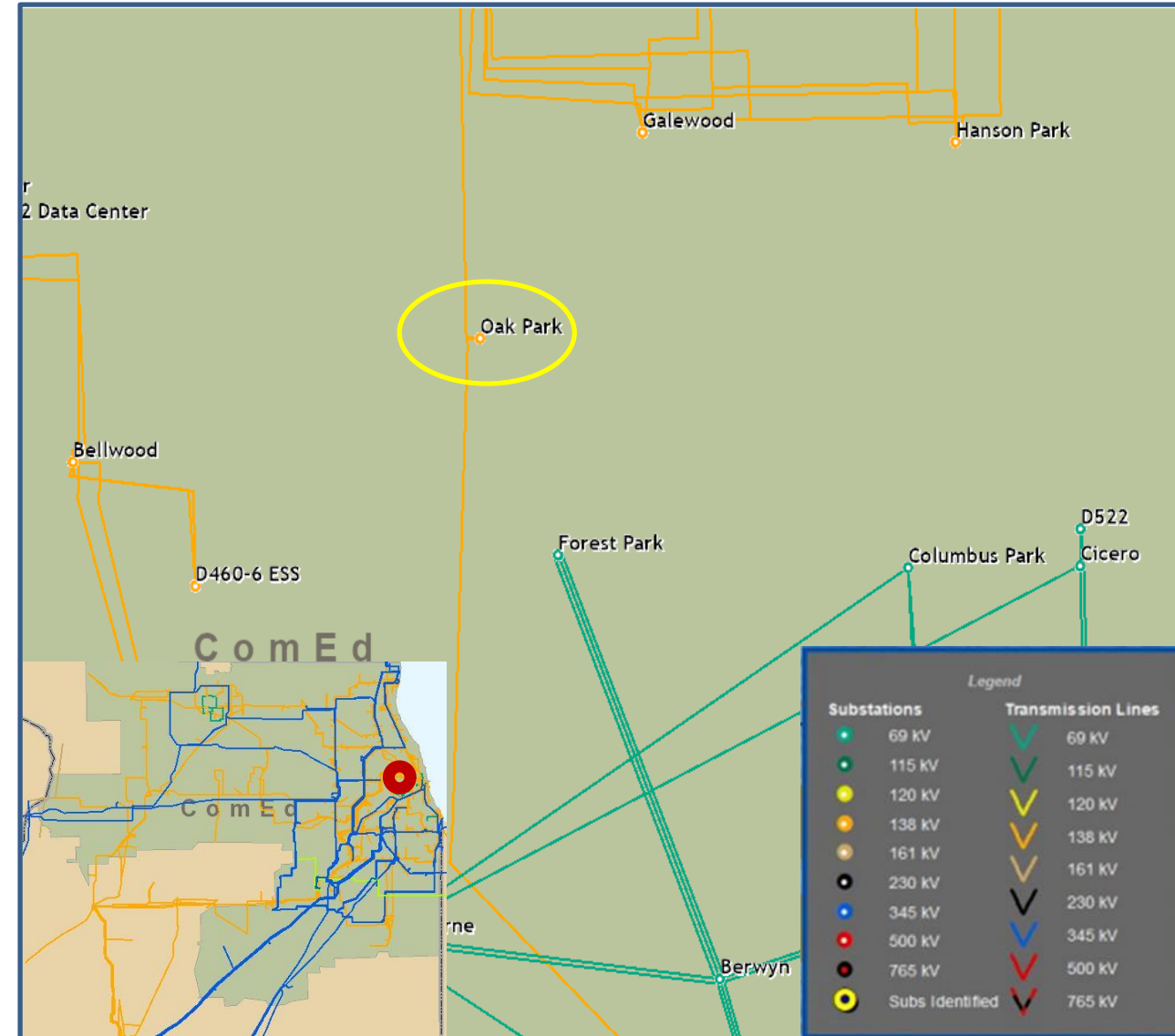
Estimated transmission cost: \$24M

Supplemental Project ID: s3344

Projected In-Service: 12/31/26

Project Status: Engineering

Model: 2028 RTEP



Need Number: ComEd-2024-009

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan July 10, 2024

Previously Presented:

Solution Meeting 4/19/2024

Need Meeting 3/15/2024

Project Driver:

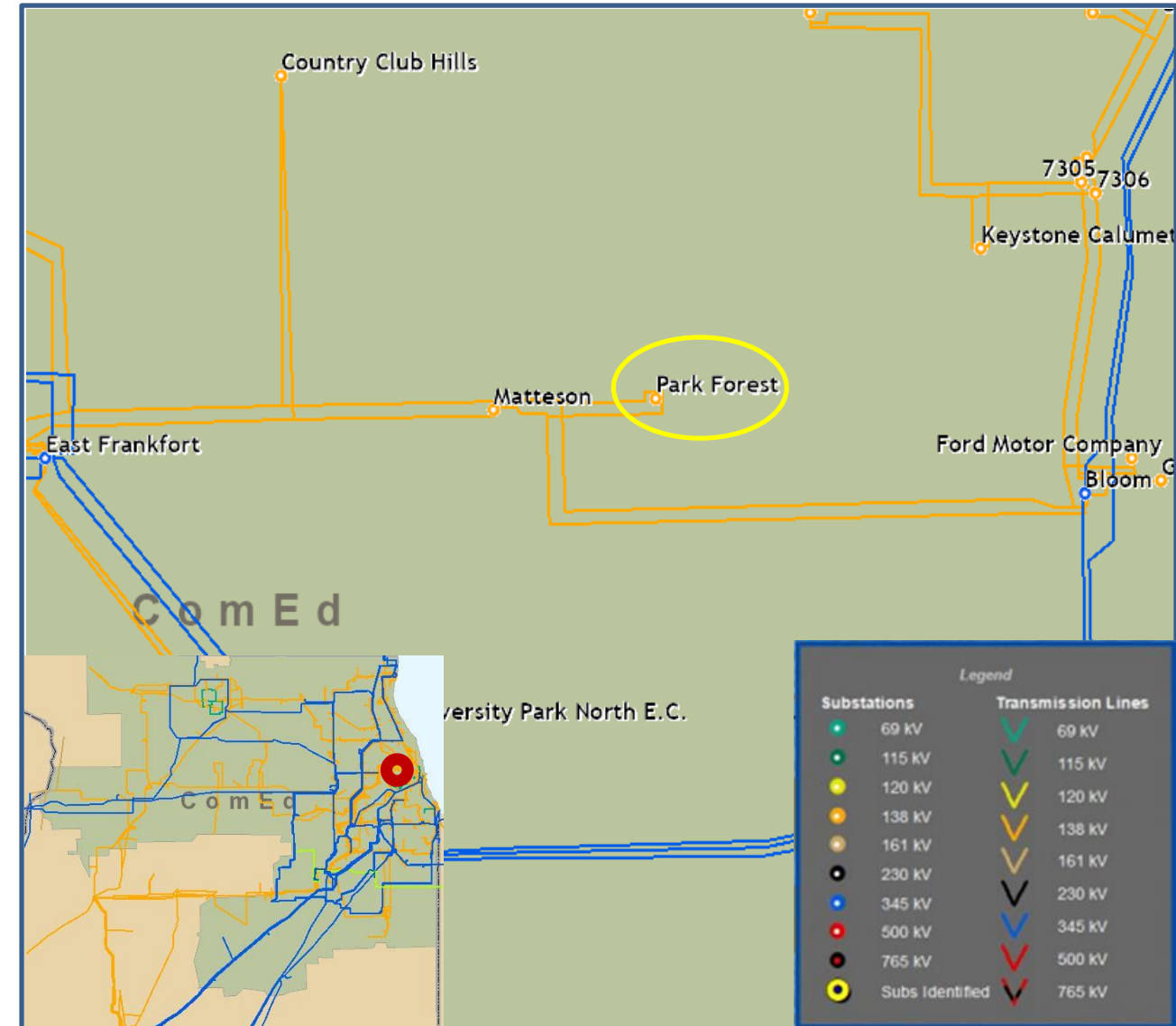
Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

- Transmission infrastructure replacements (EOL/condition/obsolescence) that are consistent with efficient asset management decisions

Problem Statement:

- 138 kV line 17904 disconnect at TDC 457 Park Forest is 54 years old and is in deteriorating condition with lack of replacement parts.
- This switch has had a history of hot spots, and repairs are no longer possible.



Need Number: ComEd-2024-009

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan July 10, 2024

Selected Solution:

- Replace 138 kV line 17904 disconnect at TDC 457 Park Forest

Existing Disconnect Ratings: 1200 A

New Disconnect Ratings: 3000 A

138 kV Matteson-Park Forest Line	SN/SE (MVA)	WN/WE (MVA)
Old Rating	324/374	384/423
New Rating	351/449	421/500

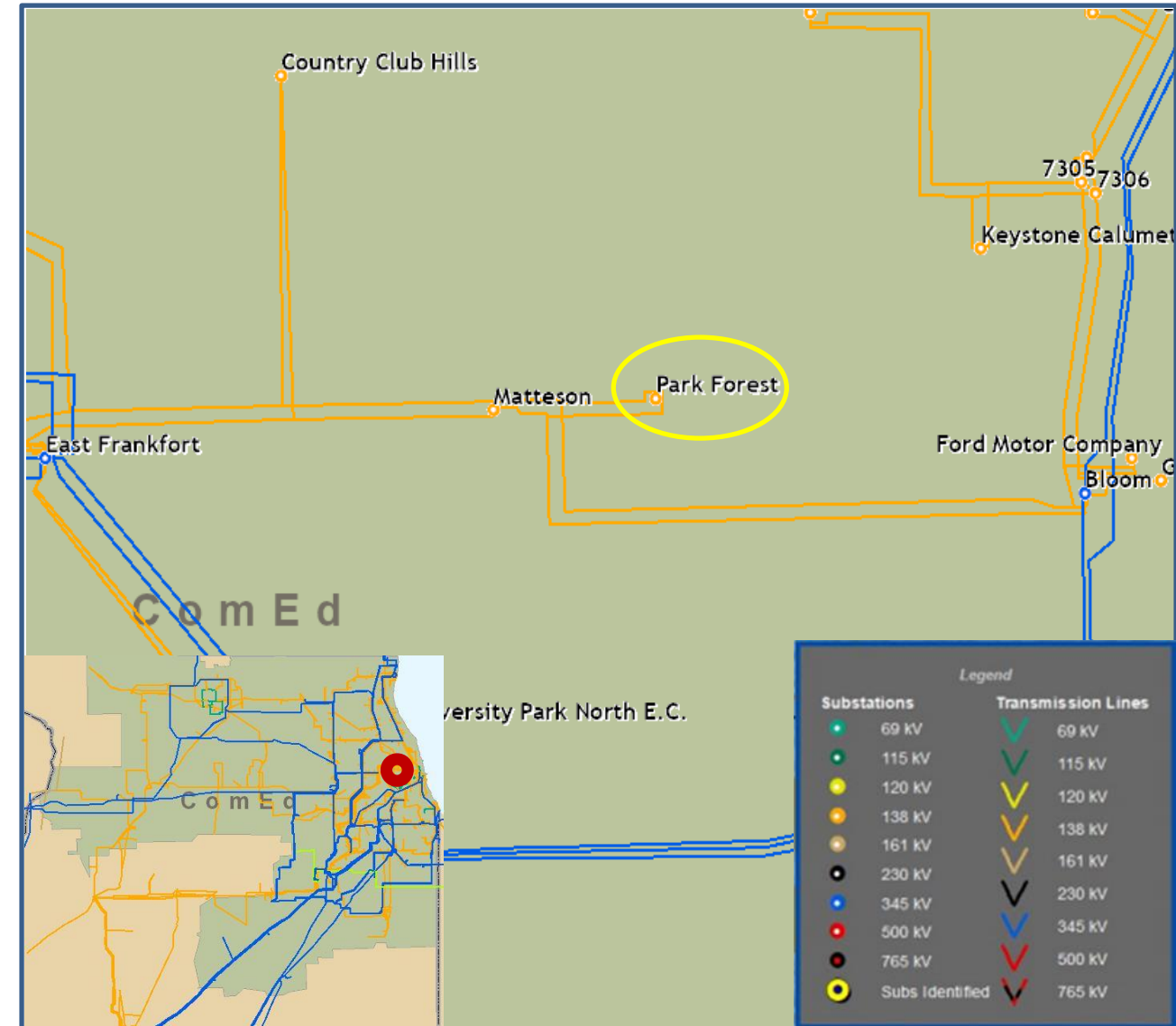
Estimated transmission cost: \$0.5M

Supplemental Project ID: s3345

Projected In-Service: 12/31/25

Project Status: Conceptual

Model: 2028 RTEP



Need Number: ComEd-2024-010

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan July 10, 2024

Previously Presented:

Solution Meeting 4/30/2024

Need Meeting 4/2/2024

Project Driver:

Operational Flexibility and Efficiency

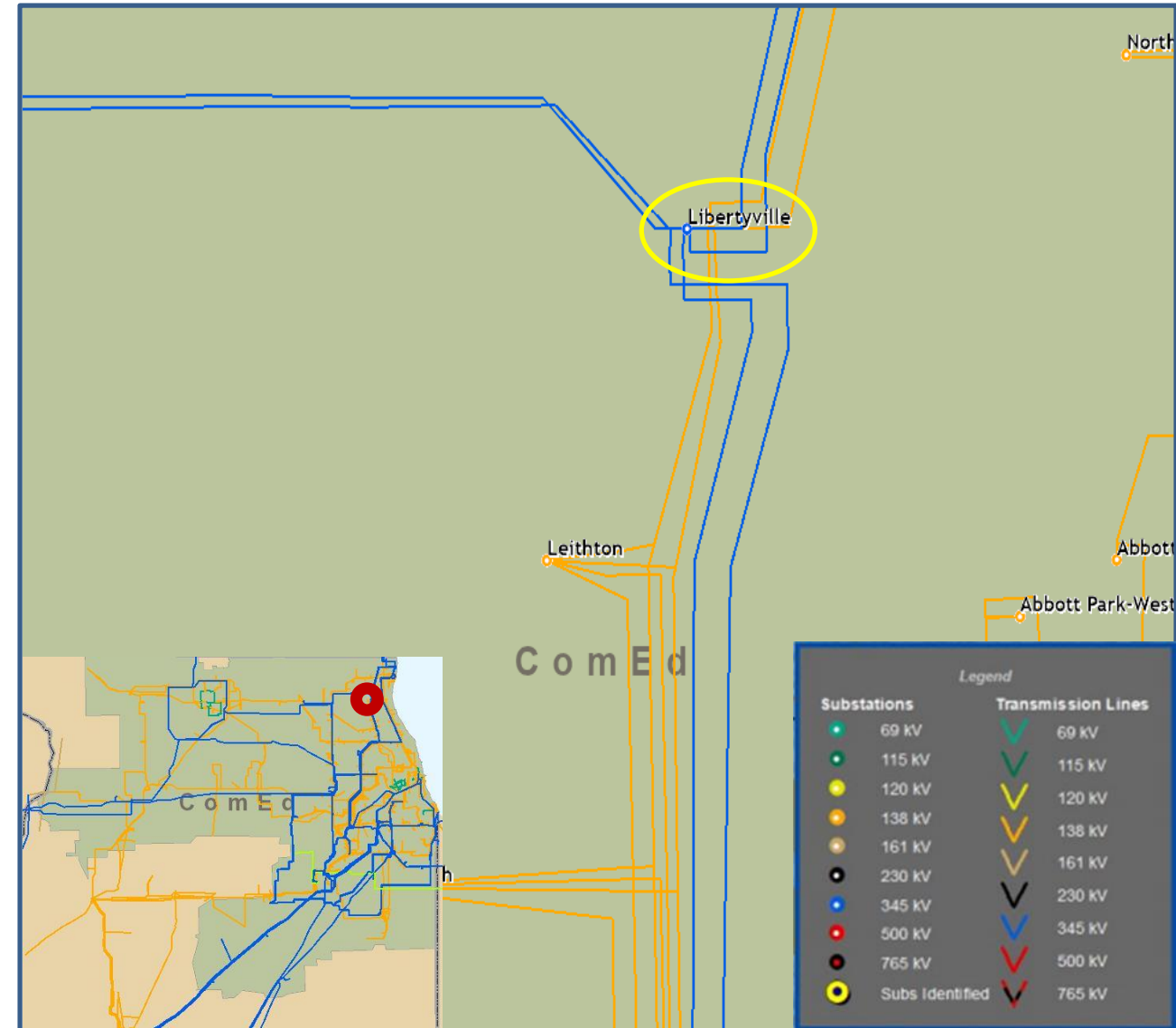
Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

- Enhancing system functionality, flexibility, visibility, or operability
- Transmission infrastructure replacements (EOL/condition/obsolescence) that are consistent with efficient asset management decisions

Problem Statement:

- Libertyville 345 kV bus is currently a straight bus with two oil CBs and three SF6 CBs connecting six lines and two 345/138 kV transformers. Multiple transmission facilities are disconnected for various single, failed CB, bus, or tower contingencies.
- The transformers do not have high side CBs
- The two 345 kV oil CBs are 55 years old. They are in deteriorating condition and have a lack of replacement parts.



Need Number: ComEd-2024-010

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan July 10, 2024

Proposed Solution:

- Replace the 345 kV oil BT 1-2 and BT 2-3 CBs with new SF6 CBs
 - Old Rating 2000 A, 40 kA
 - New Rating 3000 A, 63 kA
- Install 5 new 345 kV BT CBs and extend bus to create a double ring bus configuration
- Install 2 new 345 kV CBs on the high side of the 345/138 kV transformers

Facility	Summer Normal	Summer Emergency	Winter Normal	Winter Emergency
	(MVA)	(MVA)	(MVA)	(MVA)
Existing				
Libertyville-Zion Station 345 kV	1201	1201	1476	1497
Libertyville-Prospect Hgts. 345 kV	1201	1201	1476	1497
Proposed				
Libertyville-Zion Station 345 kV	1201	1201	1497	1497
Libertyville-Prospect Hgts. 345 kV	1201	1201	1497	1497

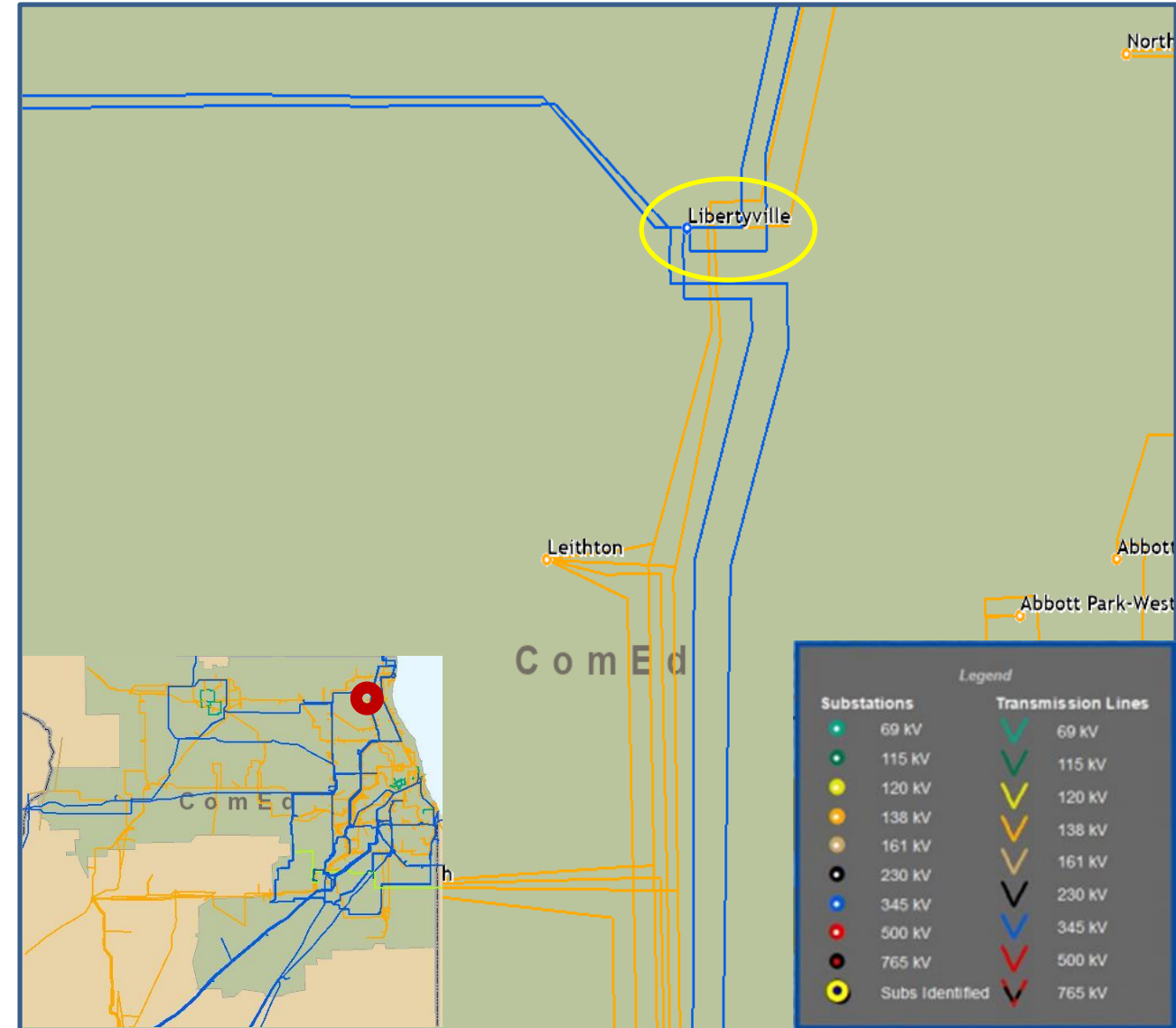
Estimated transmission cost: \$35M

Supplemental Project ID: s3346

Projected In-Service: 12/31/27

Project Status: Conceptual

Model: 2028 RTEP



Need Number: ComEd-2024-011

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan July 10, 2024

Previously Presented:

Solution Meeting 5/17/2024

Need Meeting 4/19/2024

Project Driver:

Operational Flexibility and Efficiency

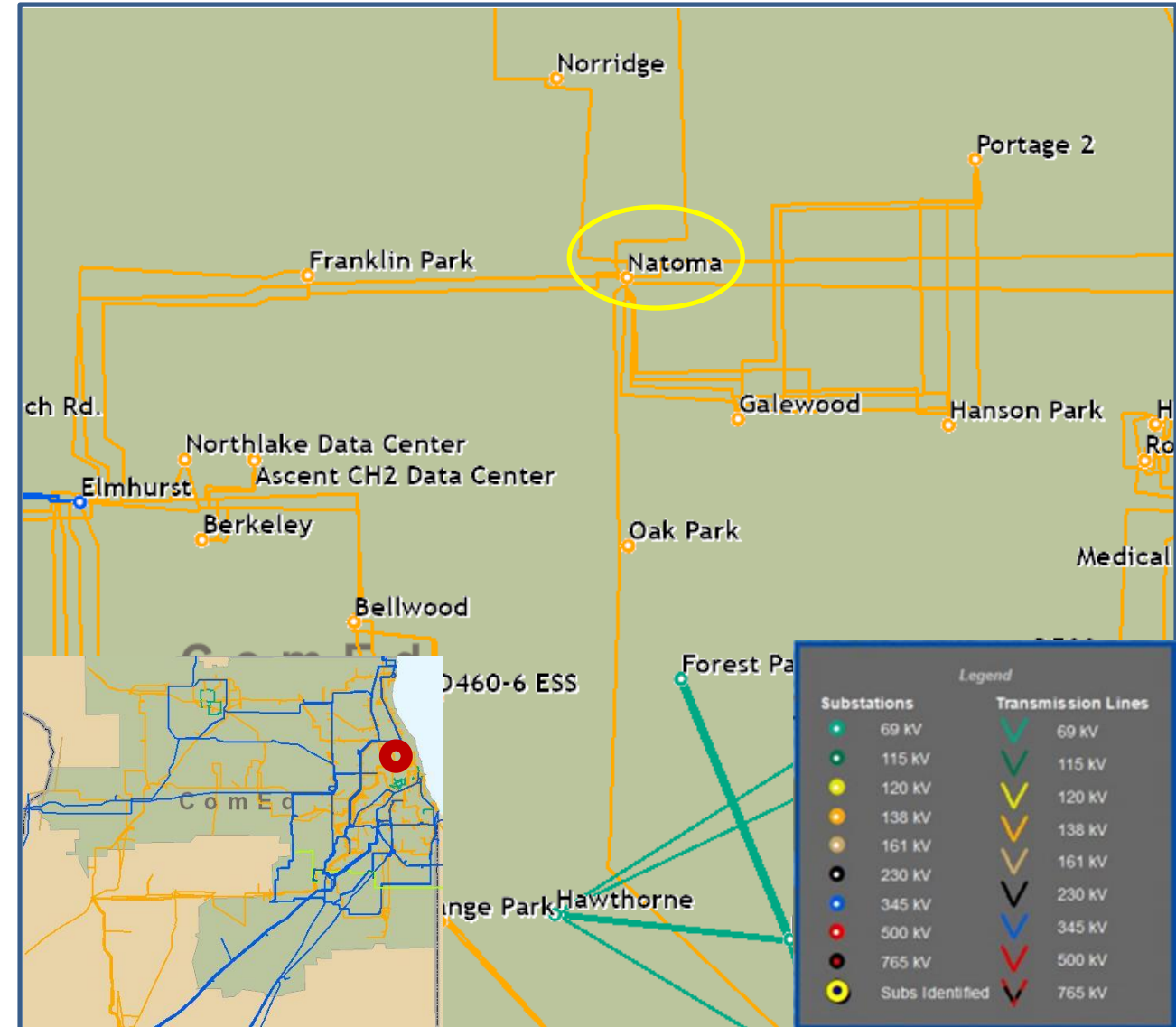
Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

- Enhancing system functionality, flexibility, visibility, or operability
- Transmission infrastructure replacements (EOL/condition/obsolescence) that are consistent with efficient asset management decisions

Problem Statement:

- Natoma substation is currently a double ring bus with two 138-12 kV distribution transformers and eleven 138 kV lines. The distribution transformers each share a bus position with a line.
- 138 kV oil circuit breakers BT1-2, BT1-212, BT1-9, BT4-5, BT8-9 at Natoma substation were installed in 1970. They are in deteriorating condition, lack replacement parts, and have elevated maintenance costs.



Need Number: ComEd-2024-011

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan July 10, 2024

Selected Solution:

- Replace 138 kV BT1-2, BT1-212, BT1-9, BT4-5, BT8-9 oil CBs with new SF6 CBs
- Install a new BT CB 729 between Bus 280 and Bus 278
- Move 138/12 kV transformer from Bus 2 to Bus 3

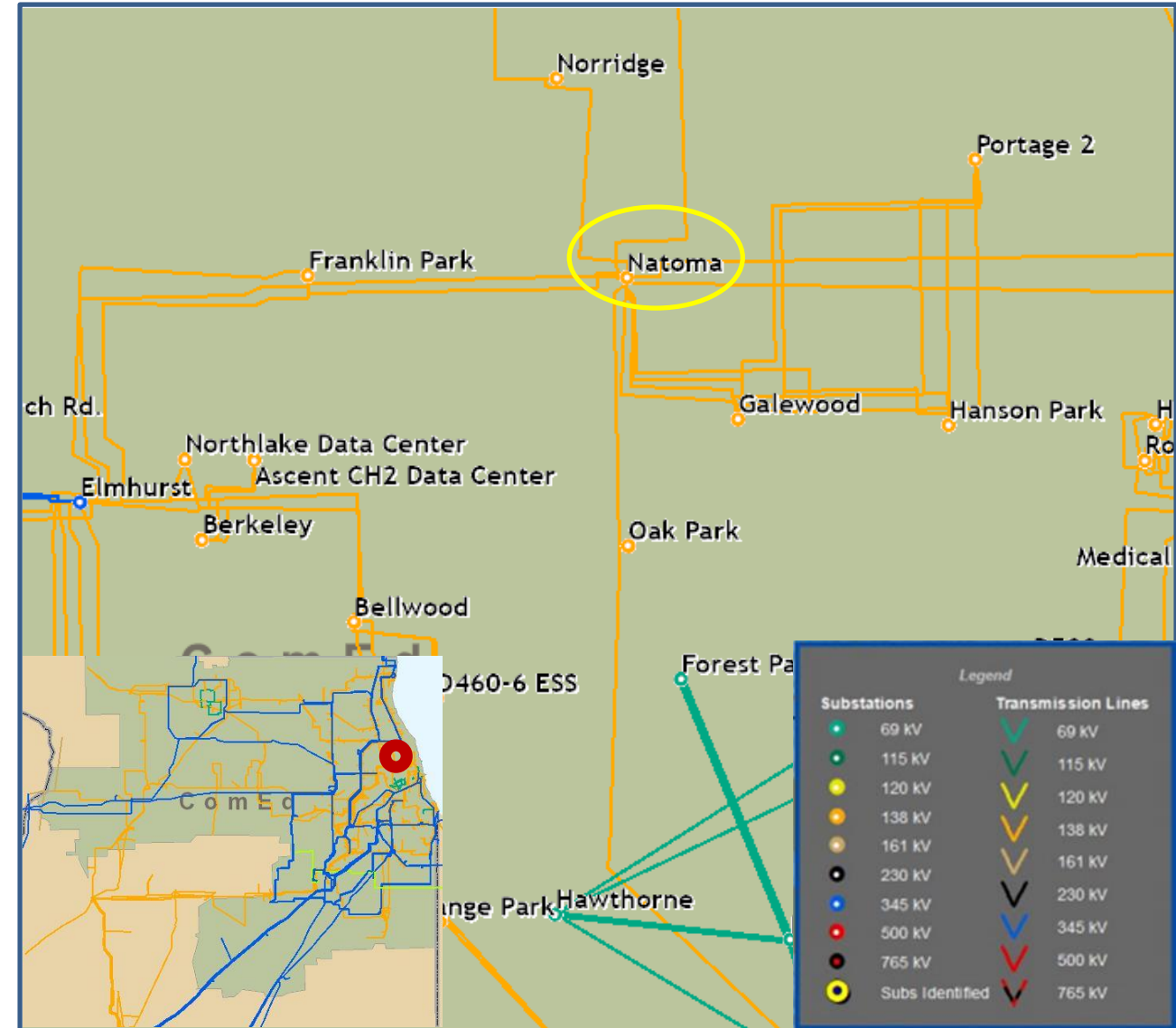
Estimated transmission cost: \$22M

Supplemental Project ID: s3347

Projected In-Service: 12/31/25

Project Status: Conceptual

Model: 2028 RTEP



Need Number: ComEd-2024-012

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan July 10, 2024

Previously Presented:

Solution Meeting 5/17/2024

Need Meeting 4/19/2024

Project Driver:

Operational Flexibility and Efficiency

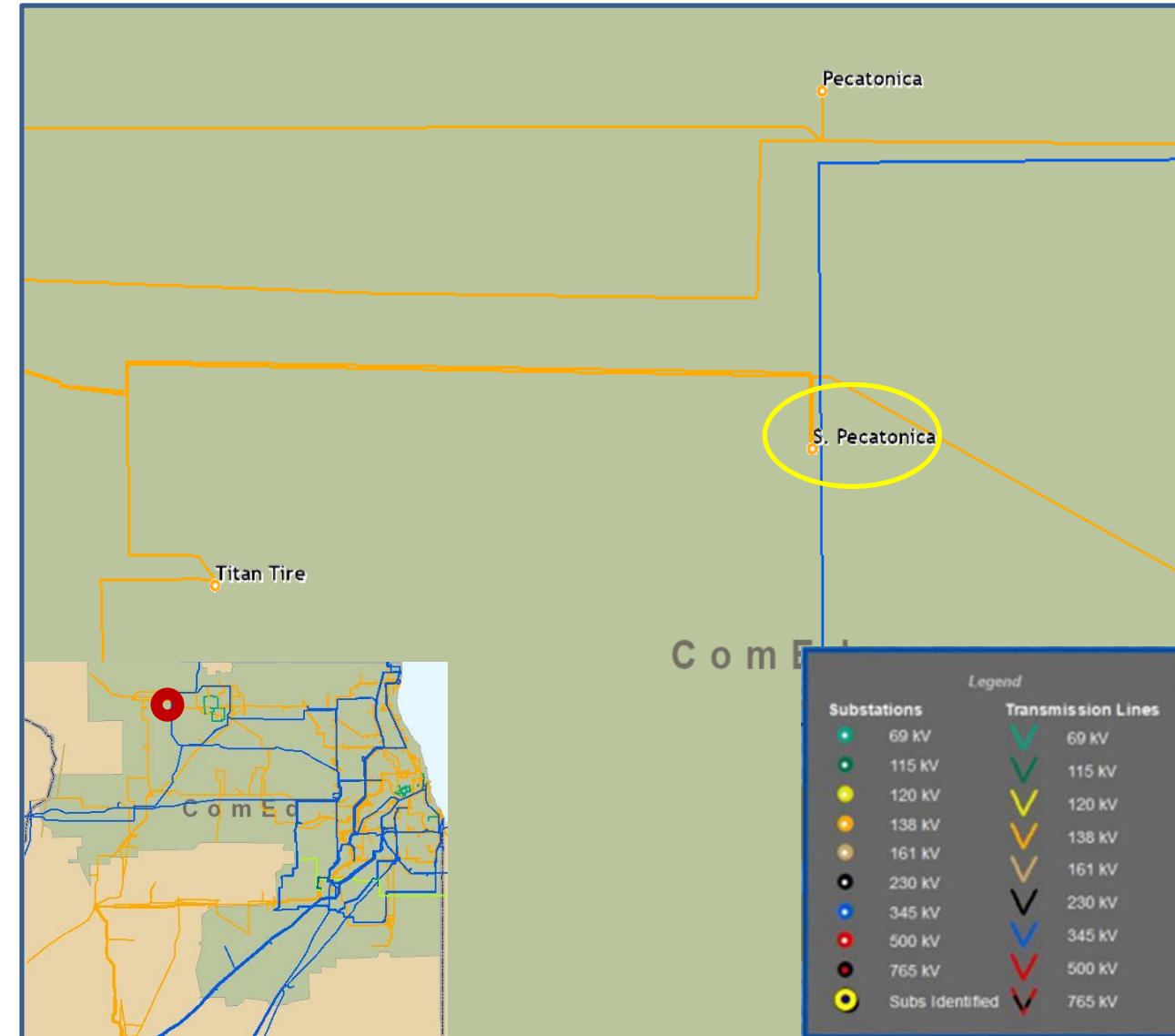
Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

- Enhancing system functionality, flexibility, visibility, or operability
- Transmission infrastructure replacements (EOL/condition/obsolescence) that are consistent with efficient asset management decisions

Problem Statement:

- TDC390 S Pecatonica is a single radial tap off of 138kV L19414 to a fused 138/12 kV transformer feeding 13 MW.
- 138kV L19414 is 41.3 miles long and currently has 5 tapped stations: TSS121 Freeport, ESSB-427, TSS162 Pierpont, TDC390 S. Pecatonica and TSS165 Fordham.
- 138kV L19414 has had 14 transmission outages in the last 10 years, 5 of those outages in the last 2 years.



Need Number: ComEd-2024-012

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan July 10, 2024

Selected Solution:

- Cut 138 kV L19414 Sabrooke-Lancaster into a new 138 kV, 3-breaker ring

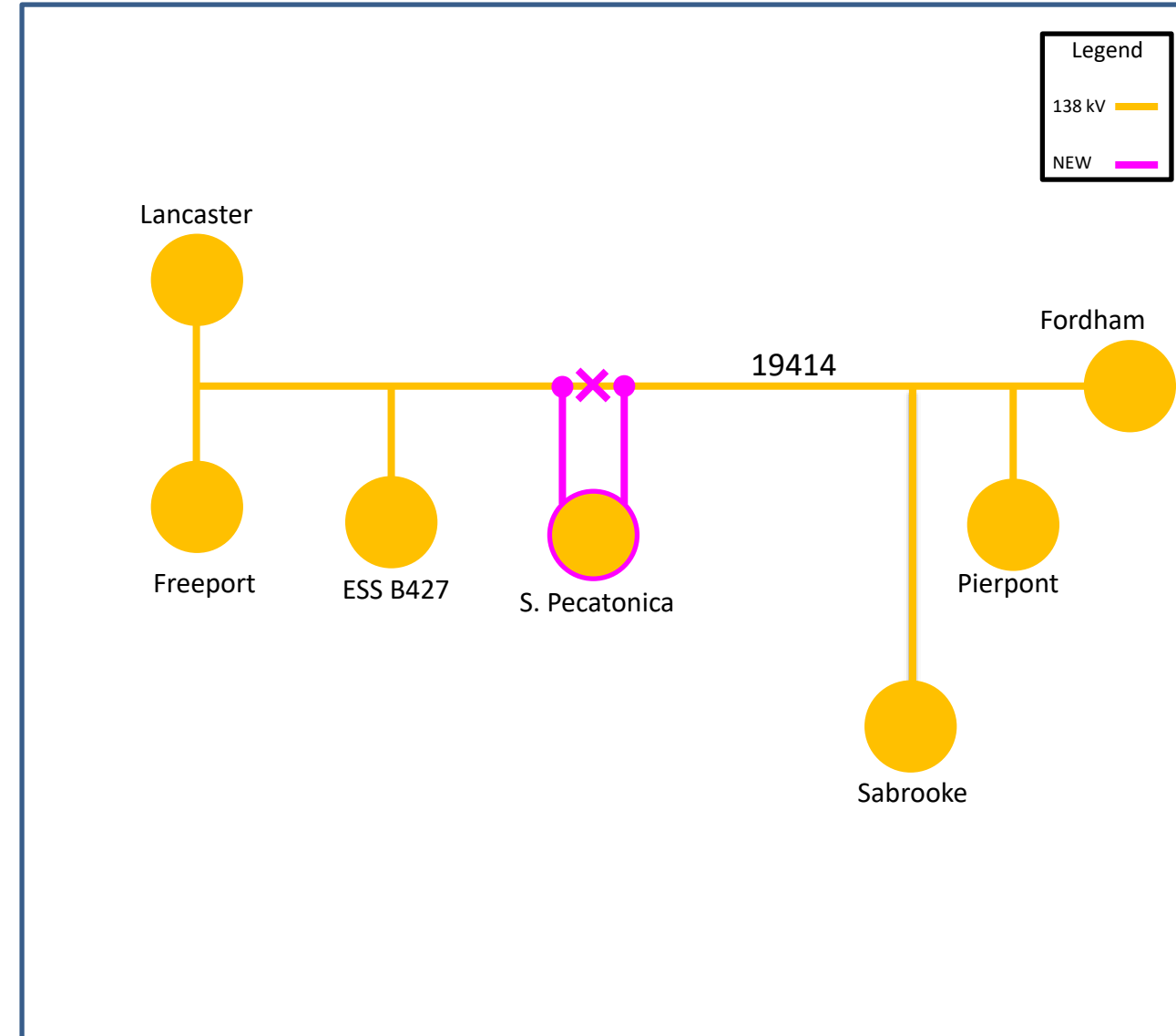
Estimated transmission cost: \$38.5M

Supplemental Project ID: s3348

Projected In-Service: 12/31/26

Project Status: Conceptual

Model: 2028 RTEP



Need Number: ComEd-2024-006

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan September 11, 2024

Previously Presented:

Need Meeting 1/19/2024

Solutions Meeting 6/14/2024

Project Driver:

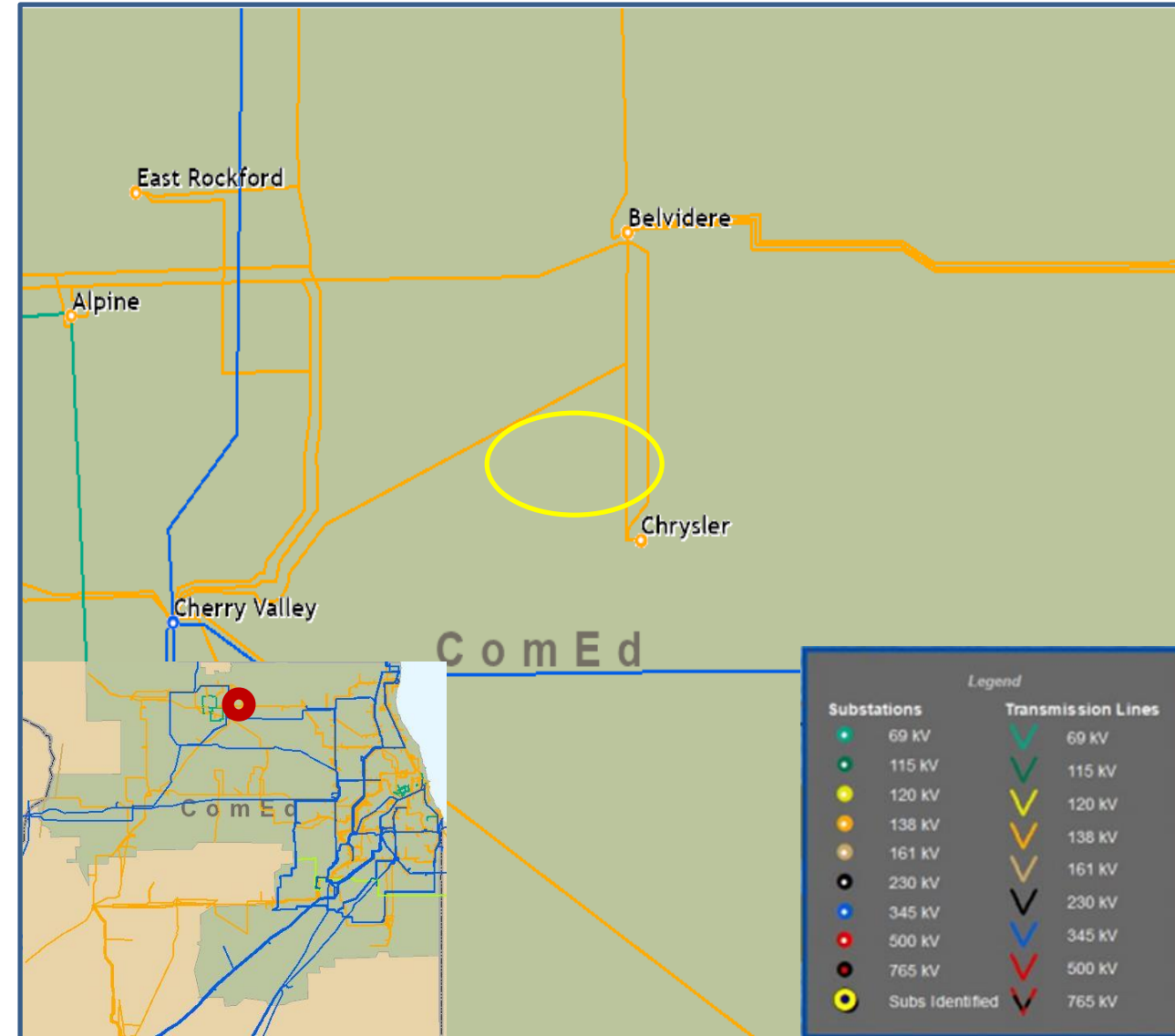
Customer Service

Specific Assumption Reference:

- New transmission customer interconnections or modification to an existing customer

Problem Statement:

New customer is looking for transmission service in the Belvidere area. Initial loading is expected to be 42 MW in December 2026, with an ultimate load of 42 MW.



Need Number: ComEd-2024-006

Process Stage:

Submission of Supplemental Project for inclusion in the Local Plan September 11, 2024

Selected Solution:

- 138kV service will be installed from overhead high voltage distribution lines L15623 and L15624. Four wood double circuit poles will be replaced with steel poles and three new poles will be installed
- Customer substation will be double ring bus configuration with six 138 kV CBs and two 60MVA, 138/34 kV transformers.

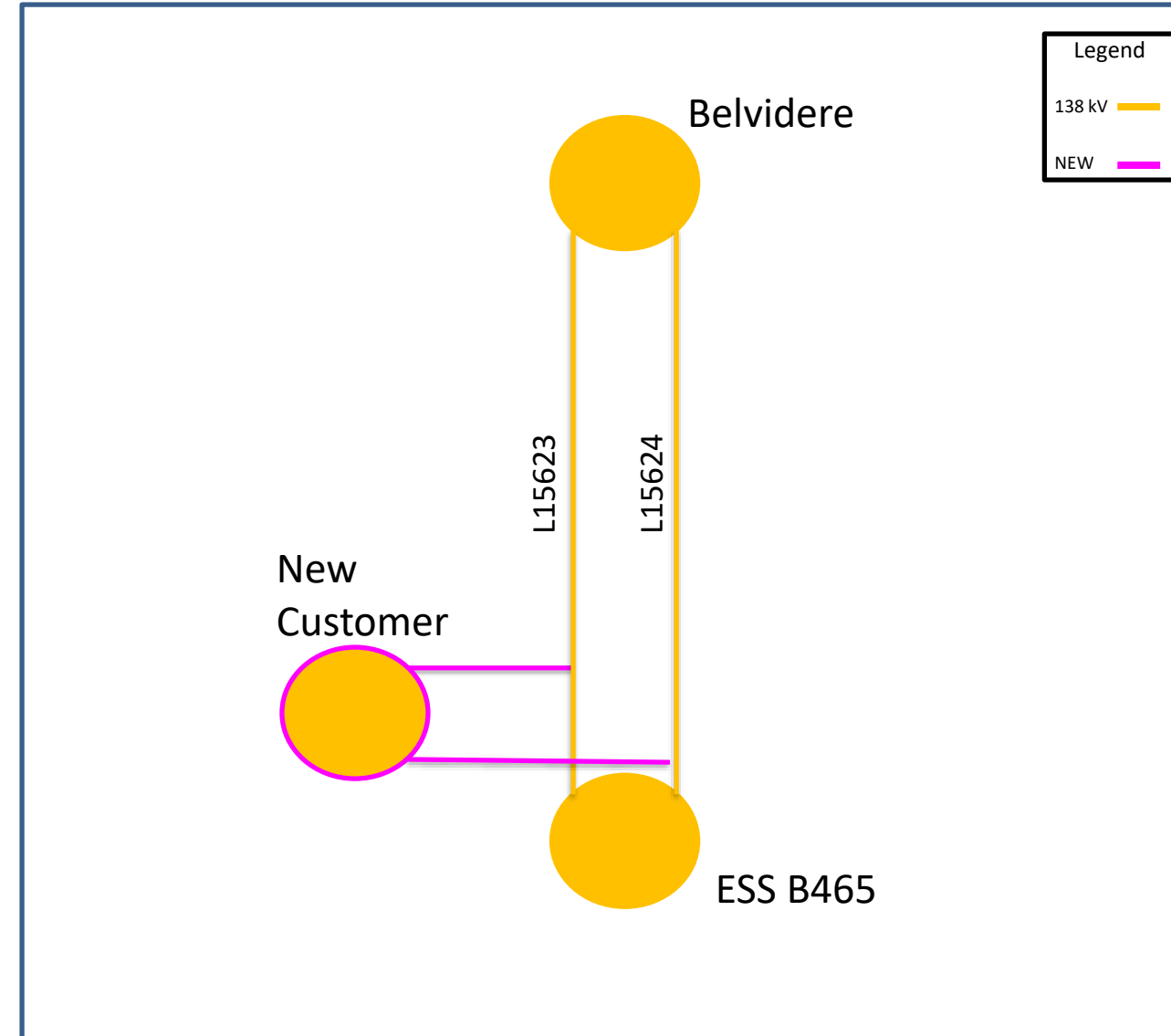
Estimated transmission cost: \$0M

Supplemental Project ID: s3392.1

Projected In-Service: 12/31/26

Project Status: Engineering

Model: 2028 RTEP



Revision History

1/8/2024 – V1 Added slides #1-5, s3011-s3012

3/4/2024 – V2 Added slides #6-11, s3155- s3157

7/15/2024 – V3 Added slides #12-27, s3341-s3348

9/13/2024 – V4 Added slides #28-29, s3392