UI
An Avangrid company

Railroad Corridor Transmission Line Asset Condition Assessment Update

Planning Advisory Committee (PAC) Presentation

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08/21/2024

Today's Presentation

Objective:

- Provide an update on the Fairfield to Congress Segment

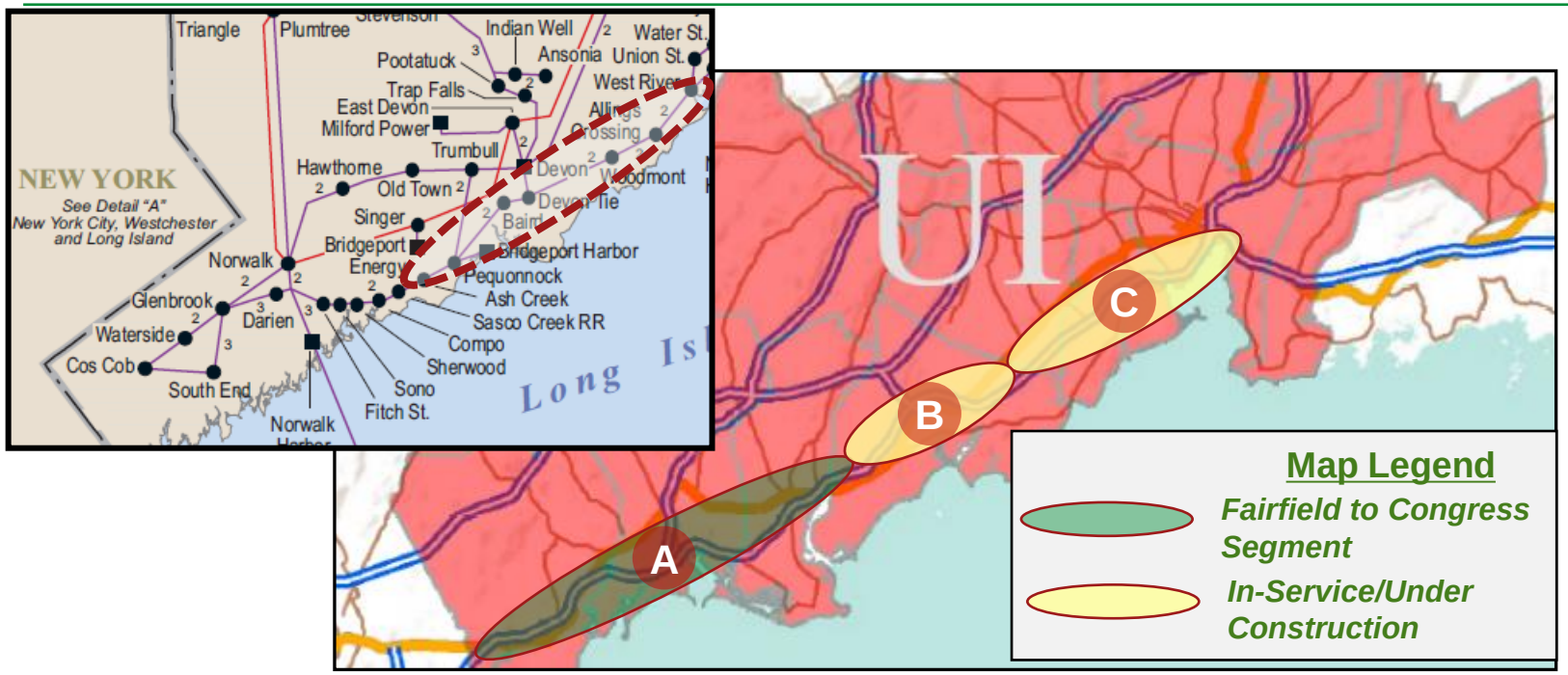
Agenda:

- Background
- Solution Alternatives
- Cost Breakdown

Previous Presentations:

- **June 13, 2018 -** Railroad Corridor Transmission Line Asset Condition Assessment
  - Segments A (Fairfield–Congress), B (Congress-Milvon), C (Milvon-West River)
  - RR Corridor Transmission Line Asset Condition Assessment - 6-13-2018
- **November 15, 2022 –** Railroad Corridor Transmission Line Asset Condition Assessment Update
  - Segment C (Milvon-West River)
  - RR Corridor Transmission Line Asset Condition Assessment Update - 11-15-2022

Background – Geographic



Segment A addresses all known remaining UI 115 kV transmission asset condition concerns along the RR corridor.

These concerns include corrosion loss, corrosion expansion, missing members, and additional loads being applied to structures.

Map ID	Line Segment	Circuit ID's	Circuit Mileage
A	**Fairfield *(UI/ES Transition)* – Congress**	**91001, 1430, 1130, 8809A/B**	**10.5**
B	Congress – Milvon (IN-SERVICE)	8809A/B, 88006A/B, 88005A/B	12.4
C	Milvon – West River (UNDER CONSTRUCTION)	88005A/B, 8804A/B, 88003A/B	19.0

Segments already presented & received TCA approval

Field Condition Summary: Structures > 100 Years Old

Structures have failed asset condition assessments and structural analysis

Corrosion Loss

- Cross-arm angle support steel loss
- Cross-arm plate support steel loss
- Steel reduction on lattice members (e.g. post, truss, support components)

Corrosion Expansion

- Angle, lattice and plate interface connections

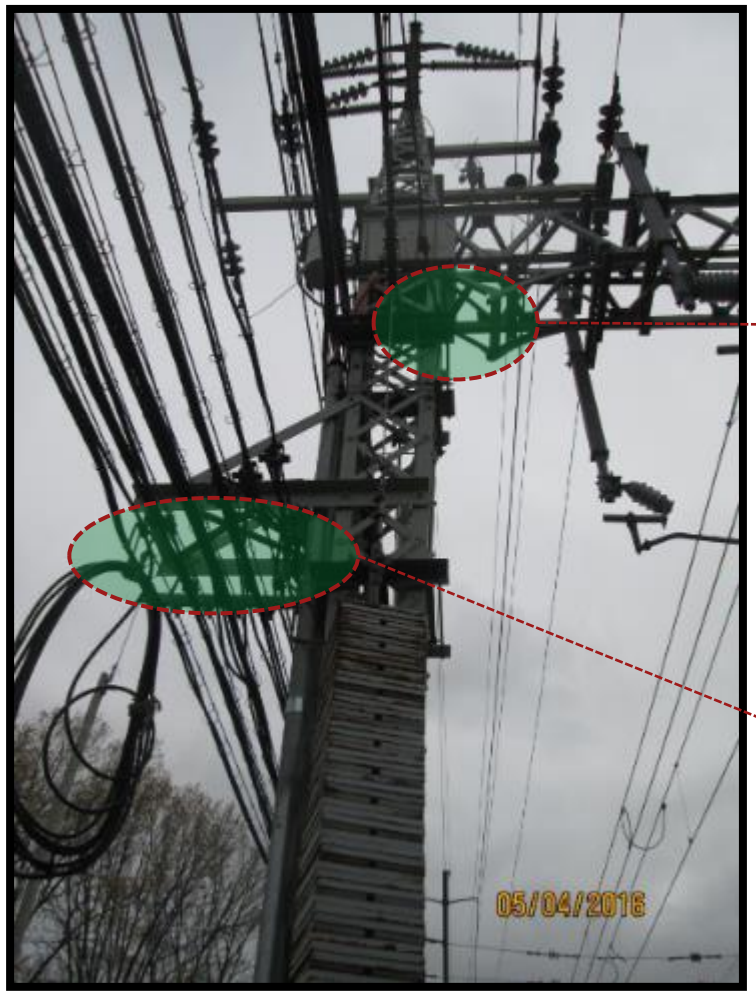
Missing Members

- Truss-post arch connections
- Interior x-bracing

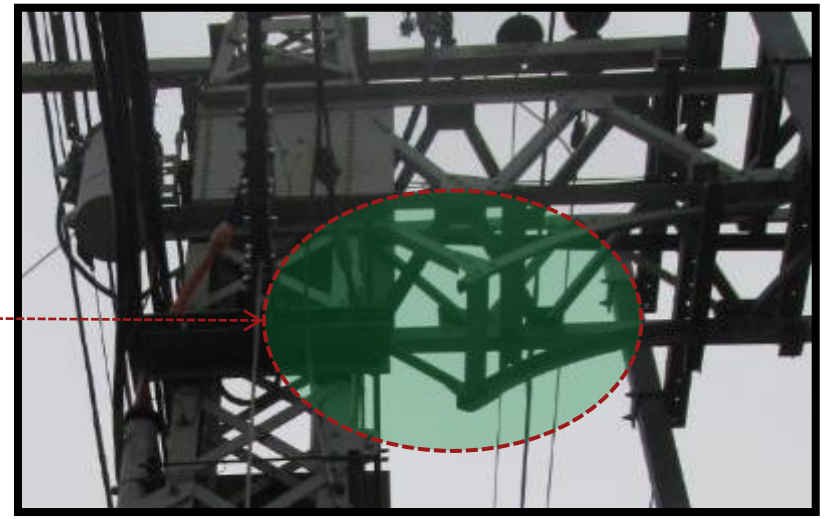
Additional Loads

- Trolley wire frame
- Communication wires
- Pulley tensioning system components

Field Condition Summary: Structures > 100 Years Old



Missing Arch



Additional Loads

Field Condition Summary: Structures > 100 Years Old

Foundational Corrosion Loss

Lattice Corrosion Expansion

Foundational Corrosion Loss

Foundational Corrosion Loss

Change in Design

- The Connecticut Siting Council approved the project's Application under docket 516 on 2/15/24, but they called for the proposed design to change between Ash Creek and the Eversource connection at structure B648 adjacent to Sasco Creek (segment now referred to as Phase 2) as shown below:

Original Design

- Rebuild 1430 Line on single circuit monopoles along the South side of the railroad

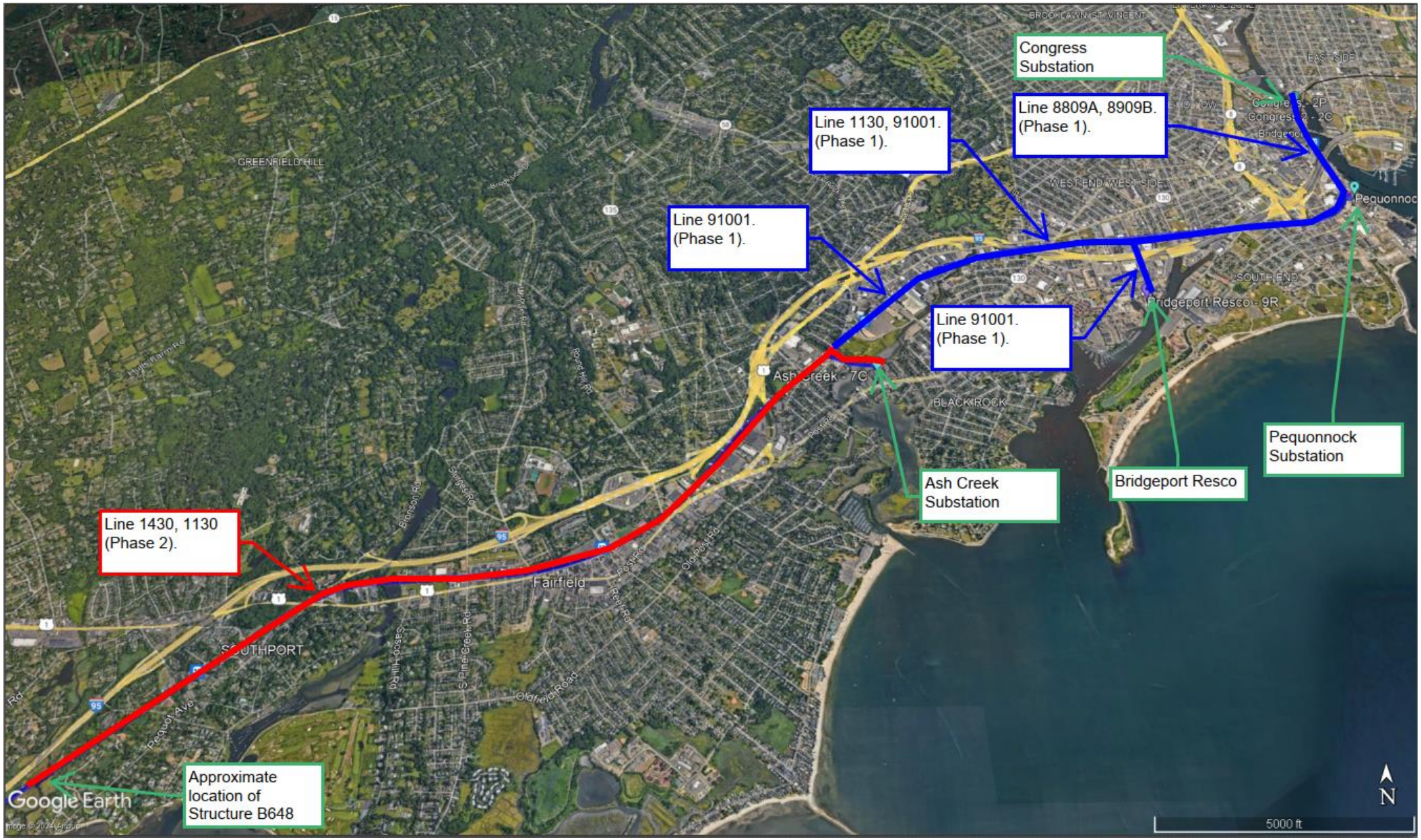
CSC Order

- Rebuild 1430 and 1130 Lines on double circuit monopoles along the North side of the railroad (4 miles out of the total 10.5 miles for Segment A)

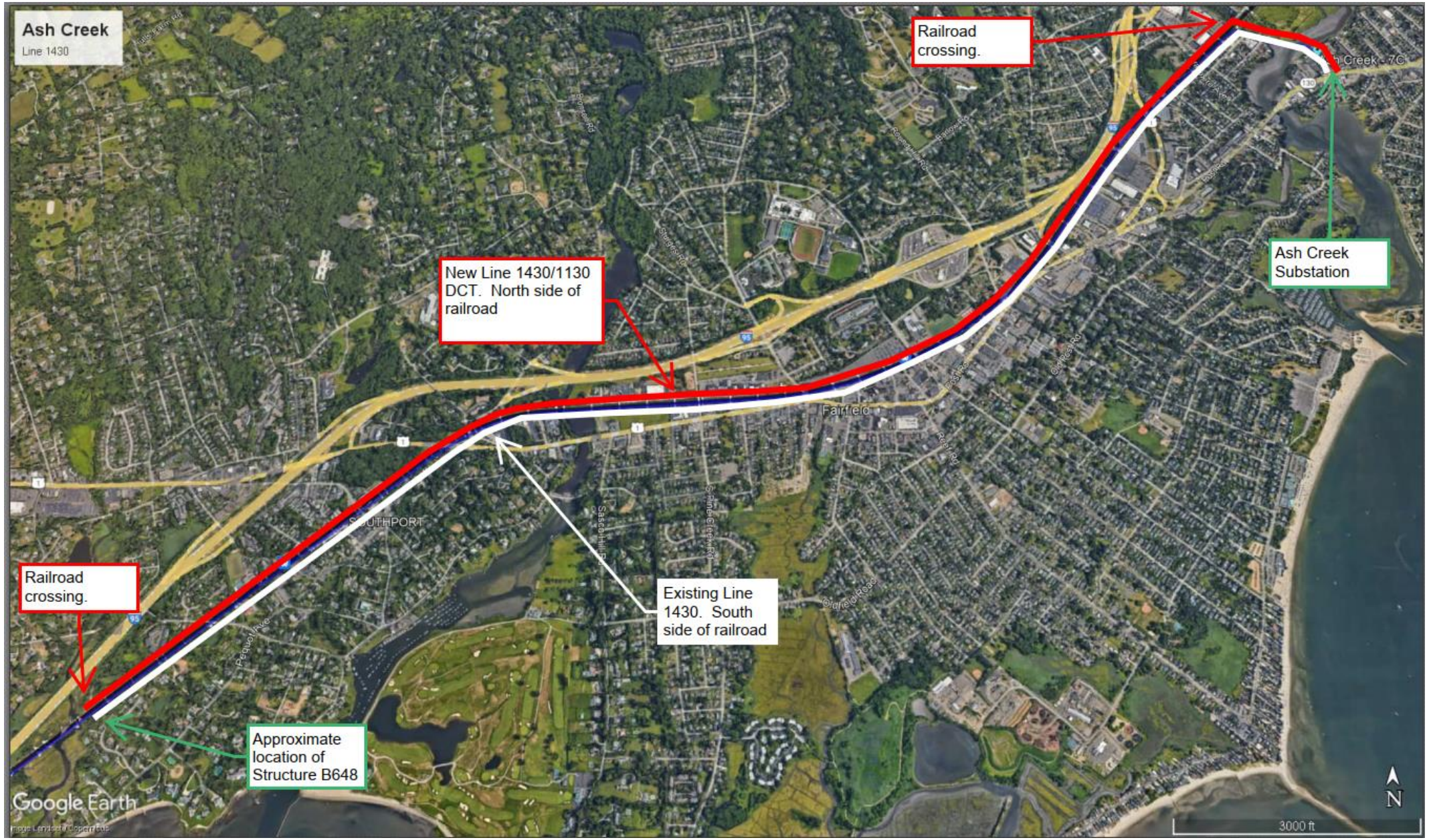
Cause and Effect

- No impacts to electrical performance of the grid
- The line 1430 portion of the project is now separated out into phase 2 and will be constructed independently of phase 1.
- Phase 2 had been developed to 70% design completion but is now set back to conceptual design phase
- Estimated incremental cost impact of $68M

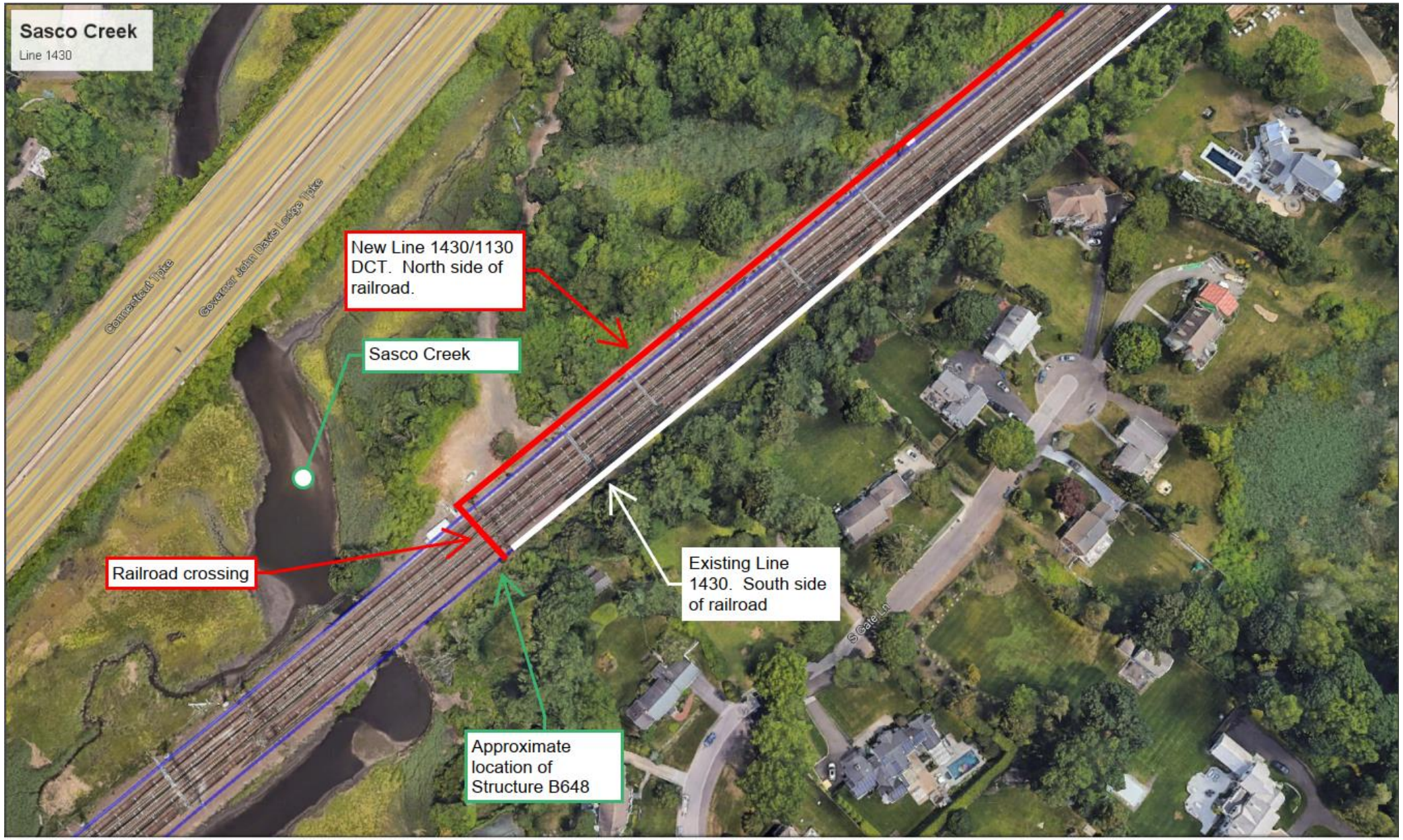
Fairfield – Congress (Segment A) Overall Aerial View



Line 1430 Overall Aerial View



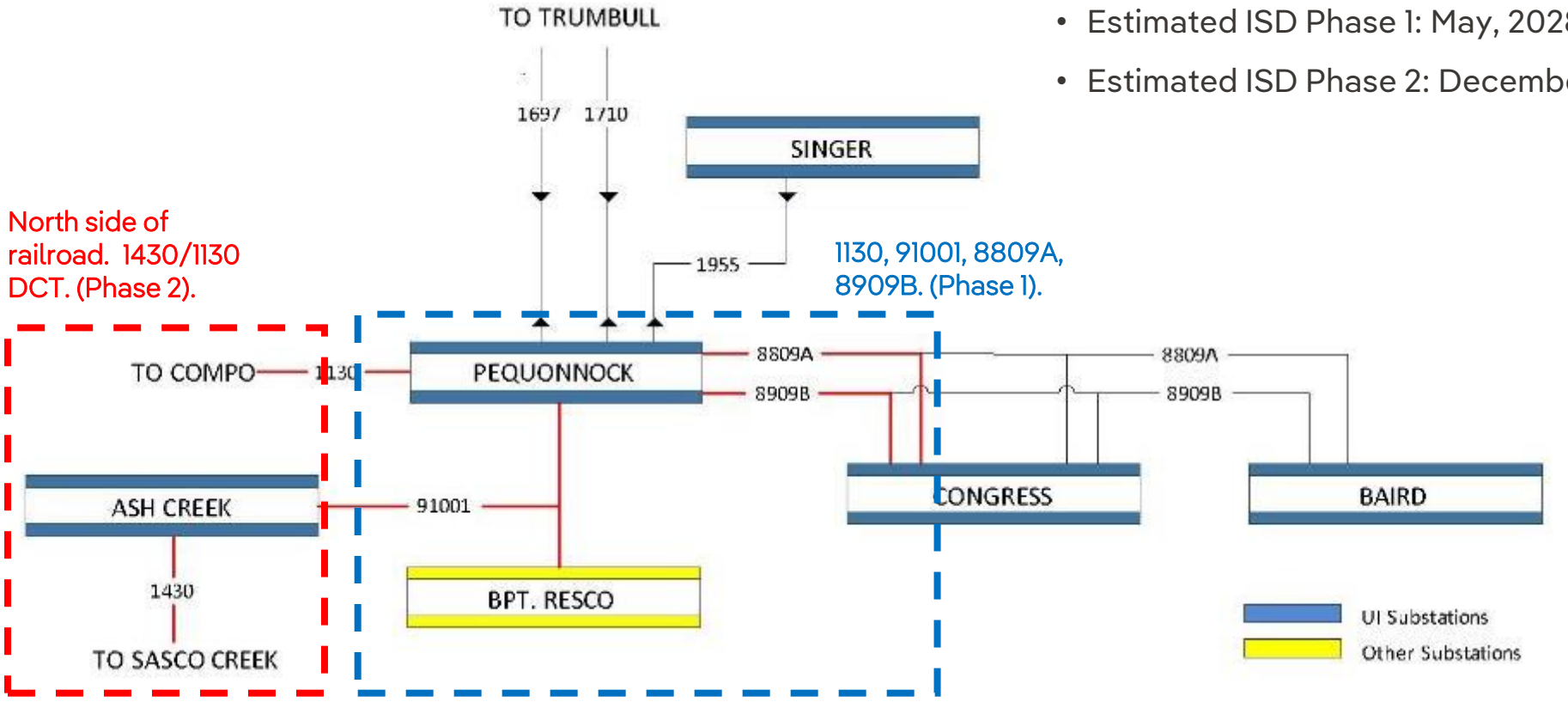
Line 1430 at Sasco Creek - Aerial View



Line 1430 at Ash Creek - Aerial View

Solution Alternatives

Fairfield (UI/ES Transition) – Congress Solution Alternatives (+50/-25% Level)				
Solution Alternative	**2018 Estimate**	**2024 Estimate**	**Effect of CSC Order**	**Total 2024 Estimate**
Double Circuit Tower (Preferred Alternative)	$179.7M	$329.5M	$68M	$397.5M
Monopole (100% corridor)	$207.1M	$458.1M	NA	$458.1M



- Estimated ISD Phase 1: May, 2028
- Estimated ISD Phase 2: December, 2030

Major Cost Drivers

	2018 Estimate, $M	2024 Estimate, $M	Subtotal Variance	CSC Order Estimate	Grand Total Estimate	Net $M Variance	Variance Comments
Material	5.4	10.4	5.5	2.5	12.9	7.5	Continue to update based on either updated contracts or market price (i.e., metals). Updated material costs for phase II relocation.
Labor & Equipment	80.9	139.0	67.6	30.5	169.5	88.6	Increase in cost is due to multiple factors: The price escalation and inflation of labor and equipment from 2018 to 2024. Construction scope challenges are more complex than was assumed in 2018. Having a better understanding of the project developing from conceptual stage in 2018 to 90% design in 2024. Additionally, on Feb 15, 2024 the CSC approved UI's Docket 516, however the approval required UI to construct both the 1130 Line (in original plan) and now add the 1430 Line onto double circuit monopoles along the north side of the right-of-way. This caused an increase in project cost.
Right of Way	8.9	20.4	8.0	3.5	23.9	15.0	Significant increase needed from 2018 to 2024 on easements (permanent 22 acres and temporary 23.5 acres). The standard in 2018 for clearance on lines reflective of what the easement areas will need to be was less than what it is today. 15' in 2018 vs 25' 2024 based on the design criteria being used (Category III storm/wind and ½ inch ice load). The CSC's approval of UI's Docket 516 moving ~50% of UI's project to the north side on double circuit monopoles caused an increase of ~20% to the easement area.
Engineering/Permitting/ Indirect	41.3	83.6	32.3	15.0	98.6	57.3	Increase is from more clear understanding of environmental conditions due to completion of fieldwork completed t date vs desktop analysis in 2018 (wetland impact - temp vs permanent, species, stormwater, cultural and historic resources). Phase II engineering was set back to conceptual design phase due to the CSC decision.
Escalation	1.8	2.6	0.3	0.5	3.1	1.3	
AFUDC	19.8	34.0	18.1	7.5	41.5	21.7	Increase due to current AFUDC rates versus 2018
Contingency	21.6	39.5	18.0	8.5	48.0	26.4	Current Project contingency status Phase I = +/-10% Phase II = +200/-50%
Total	**179.7**	**329.5**	**149.8**	**68.0**	**397.5**	**217.8**	

Questions

Point of contact Zach Logan zachary.logan@cmpco.com.
Please submit any written comments or feedback by September 5, 2024.