

# Branford 11J A3 Bus Replacement Project

Planning Advisory Committee Meeting

February 17<sup>th</sup>, 2021

# Agenda

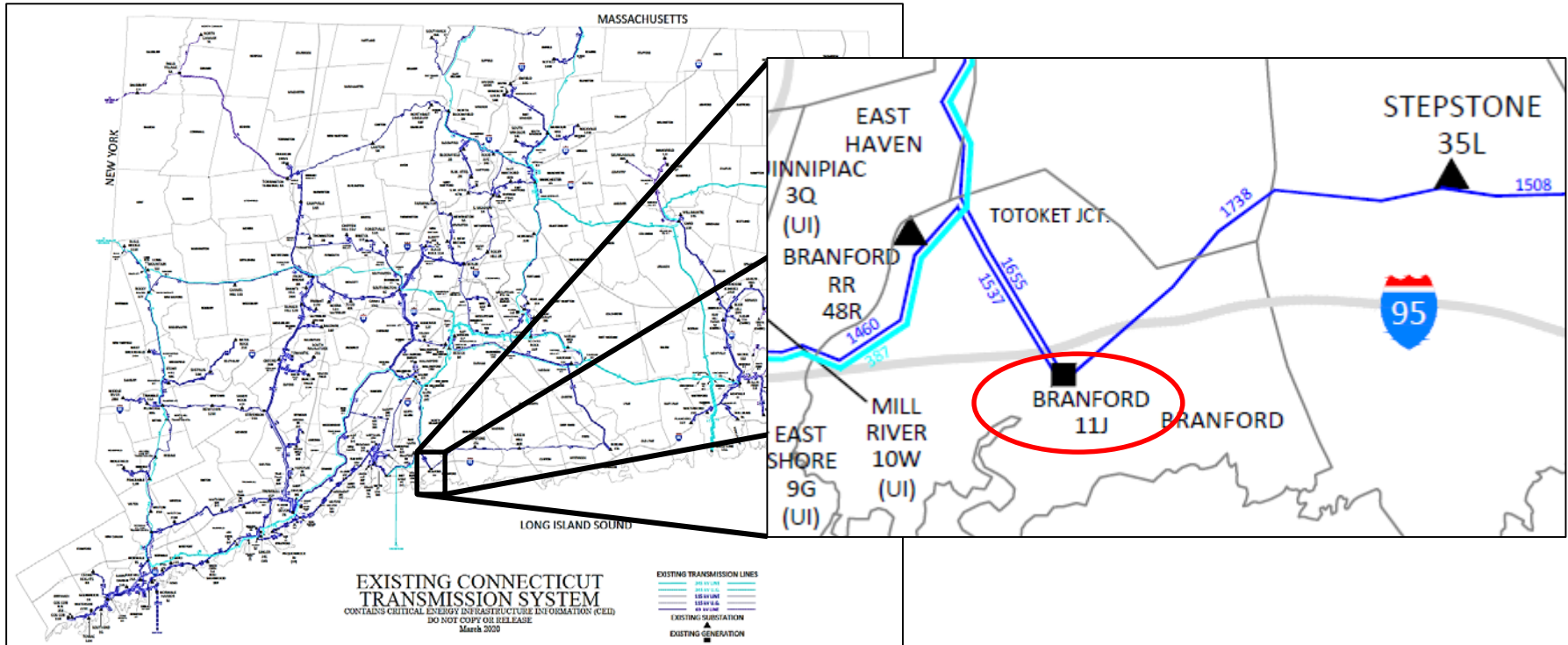
- Project Background
- Project Location
- Project Needs
  - Asset Condition
  - Obsolescence
- Project Scope
  - Preferred Solution
  - Alternatives
- Summary

# Project Background

- Branford 11J is a 115/23-kV substation located in southern CT
- Branford 11J A3 bus contains 400' of 3-phase (1,200' total) self-contained fluid filled (SCFF) cable
- This is the only SCFF cable on the Eversource CT transmission system
- Station also contains an NRG-owned combustion turbine (~22 MVA)



# Project Location



# Project Needs – Asset Condition

- The SCFF cable on Branford 11J A3 115-kV bus was manufactured in 1981 and is now over 40 years old
  - Original cable and component manufacturers, Phelps Dodge and Jerome, are no longer in business
- The cable has logged 26 corrective maintenance work orders since 2005
  - Work orders have included fluid leaks resulting in increased maintenance burdens and reliability concerns
- Continued decrease in oil pressure or oil level will result in a trip of the cable
  - There was an interruption to service to the Branford A3 bus in March of 2017 which required complex restoration methods prior to re-energization
- The cable is located near a waterway creating a potential environmental risk

# Project Scope – Preferred Solution

- Replacement of existing 1500 kcmil SCFF cable system with a solid dielectric cable system in duct bank
  - Removal of 400' of three-phase SCFF cable (1,200' total)
  - Installation of 520' of duct bank
  - Installation of 520' of bundled three-phase 5000 kcmil cross-linked polyethylene (XLPE) cable (3,120' total)
    - Two cables per phase required to meet or exceed the 3,000A circuit breaker ratings
- Replacement of two existing bus support structures
- Relocation of NRG 23-kV circuit to accommodate route of 115-kV duct bank

# Project Scope – Alternatives

- Replacement of existing SCFF cable system with new SCFF cable system
  - Need for dielectric fluid accumulators, fluid level pressure alarms, etc. results in greater maintenance and operational requirements
  - Poses a greater potential for an environmental release of dielectric fluid
  - Limited equipment suppliers
- Replace existing SCFF cable system with an overhead bus
  - Lack of real estate in/near the substation to accommodate overhead alternative solutions

# Summary

- Replacement of existing 1500 kcmil SCFF cable system with a solid dielectric cable system (5000 kcmil XLPE)
- Replacement of two existing bus support structures and relocation of NRG 23-kV circuit

**Estimated Cost = \$8.8 Million (-25% / +50%)**

**Projected In-Service Date: Q4 2021**



# Questions

