

Why is it doing these projects?

“The NETOs undertake asset condition projects to address known and identified deficiencies with existing transmission facilities, not to expand the capacity of the transmission system.”

(NETO response to stakeholder comments, 11/15/2023)

In 2018 Eversource’s existing 115kV transmission structures were inadequate to support the low-performance* ACSS 2,000 amp conductor Eversource has been installing since then, and which has doubled and tripled its line capacities.

Eversource 115kW conductor capacities and weight (3 conductors and 2 ground wires) :

Existing and former 336 ASCR: 529 amps, 800’ span = 1,817 lbs

Existing and former 795 ASCR: 908 amps, 800’ span = 3,325 lbs

Proposed/installed 1272 ACSS: 2,000 amps, 800’ span = 4,778 lbs

Rejected by Eversource as alternatives:

Southwire ZTACCR/TW/C7 -TS, 904 amps, 800’ span = 1,714 lbs

Southwire ZTACCR/TW/C7-TS, 2003 amps , 800’ span = 3,612 lbs

(Above Southwire calculations include weight of proposed OPGW.)

The C7 conductors also have less sag and lower line losses. “While the ACCC Hawk [701 amps] may cost approximately twice the ACSS Hawk...the line losses savings that will be realized by the ACCC will allow the initial capital cost of the ACCC Hawk to be paid back within 2 to 7 years depending on the comparison and load factor.”

<https://documents.dps.ny.gov/search/Home/ViewDoc/Find?id=%7B4B3A8A12-3090-40E7-841F-EC1BEED0C95B%7D&ext=pdf>

“Why Are We Doing This Project?”

“Recent inspections and engineering analysis of the B112 transmission line revealed that many of the structures are in poor condition due to their age, woodpecker damage, insect damage, and pole rot.” (complete rebuild, 529 amp conductor replaced with 2,000 amp ACSS conductor)

“Recent inspections and engineering analysis of the E115 [A11, Z180] and E115 Tap transmission lines revealed that many of the structures are in poor condition due to their age, woodpecker damage, insect damage and pole rot.” (complete rebuilds, 529 amp conductor replaced with ACSS 2,000 amp conductor)

“Recent inspections and engineering analysis of the F139 and V182 transmission lines revealed that many of the structures are in poor condition due to their age, woodpecker damage, insect damage and pole rot.” (F-139, complete rebuild, 908 amp conductor replaced with 2,000 amp ACSS conductor)

D-108 “As part of our ongoing investments to deliver reliable energy to our customers and communities, Eversource will be replacing existing wood poles in Keene, N.H.” “Many existing wood structures have one or more of the following deficiencies:– Woodpecker damage – Pole top rot – Cracked arms – Split pole top– Decay... Nearly all structures cannot support new conductor and/or OPGW...

(complete rebuild, 529 amp conductor replaced with 2,000 amp ACSS conductor)

D-142: “Eversource is making a significant investment in electric infrastructure in order to provide enhanced system reliability for local communities. The new steel structures will be more resilient and will be less susceptible to woodpecker damage, insect damage or pole rot. The new structures will also have reliability enhancements to protect the system from damage due to severe weather, including floods.”

(complete rebuild, 529 amps to 2,000 amps ACSS conductor)

“Recent inspections and engineering analysis of the O154 transmission line revealed that many of the structures were in poor condition due to their age, woodpecker damage, insect damage and pole rot.”

(complete rebuild: 529 amp conductor replaced with 2,000 amp ACSS conductor)

“Recent inspections and engineering analysis of the P145 and co-located transmission lines revealed that many of the structures are in poor condition due to their age, woodpecker damage, insect damage and pole rot.”

(complete rebuild; 908 amp conductor replaced with 2,000 amp ACSS conductor)

“Recent inspections and engineering analysis of the S136 transmission line revealed that many of the structures are in poor condition due to their age, woodpecker damage, insect damage and pole rot.”

(proposed complete rebuild after a \$24 m. partial structure replacement in 2020.) 908 amp conductor to be replaced with 2,000 amp ACSS conductor)

“Recent inspections and engineering analysis of the U199 transmission line revealed that many of the structures are in poor condition due to their age, woodpecker damage, insect damage and pole rot.”

(proposed complete rebuild; 908 amp conductor to be replaced with 2,000 ACSS amp conductor)

“Recent inspections and engineering analysis of the W179 transmission line revealed that many of the structures are in poor condition due to their age, woodpecker damage, insect damage, and pole rot.”

(complete rebuild; 908 amp conductor replaced with 2,000 amp ACSS conductor)

“Recent inspections and engineering analysis of the X178 transmission line revealed that many of the structures are in poor condition due to their age, woodpecker damage, insect damage, and pole rot.”

(proposed complete rebuild 529 and 908 amp conductor to be replaced with 2,000 amp ACSS conductor)

L-163, C-129 G-128, C-163, and X-104 lines: “Nearly all structures cannot support new conductor and/or OPGW...”

Q-195: line ‘Project Drivers – Wood Structure Asset Condition, Shield Wire Asset Condition, OPGW, Full Line Rebuild...Utilizes Eversource standard structures, conductor, and OPGW– Increased conductor size will drastically raise thermal capability of lines to meet future needs.’

(proposed complete rebuild, 646 amp conductor to be replaced with 2,000 amp ACSS conductor.)

* **Why is Eversource using ACSS conductor?**

“...the primary drawback with ACSS is its propensity to sag much like an ACSR conductor. The bottom line here is that if an existing ACSR line was designed to accommodate the sag at ~93°C, replacing the ACSR with ACSS is going to require structure height extensions as it will sag much further than ACSR under higher load conditions.

Increased strength, greatly reduced thermal sag, lowest cost solution

ACCC® Conductor, on the other hand, offers increased strength (41,200 pounds for Drake size), and, more importantly, greatly reduced thermal sag. This means that the capacity of an existing ACSR line can be doubled by upgrading to ACCC without the need to replace or modify existing structures.

Other performance / durability benefits of ACCC compared to ACSR or ACSS is that ACCC offers greatly improved corrosion resistance as well as resistance to fretting failure and cyclic load fatigue caused by Aeolian Vibration and thermal cycling.

Finally, and with great significance, the ACCC conductor's lighter weight composite core allows the incorporation of 28 percent more aluminum (using compact trapezoidal shaped strands), without a weight or diameter penalty. The added aluminum content and reduced electrical resistance allows the ACCC conductor to reduce line losses between 25 and 40 percent compared to equally sized ACSR / ACSS conductors.

Reduced line losses serves to reduce operating costs, fuel consumption (and associated GHG / CO₂ emissions) while also freeing up generation capacity that is otherwise wasted.”

<https://ctcglobal.com/high-capacity-low-sag-acc-conductor-offers-better-solution-acss/>