

Stakeholder Comment #2 on the CETA Transmission Study

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Comments on "Transmission Solutions: Advanced Conductor Rebuild"

These comments concern Meeting #2, slide #38 ("Transmission Solutions: Methodologies to Evaluate Technologies"), specifically the last category ("Advanced conductor rebuild"), which reads:

What it does and how to model it?

Reconductor or rebuild an existing line with advanced conductors which have ratings ~2X that of ACSR or ACSS. Modeled in power flow using appropriate impedance and rating of selected advanced conductor. It should be noted that loadability of advanced conductors decreases with line length. So, increased rating of advanced conductors is only useful for uncompensated lines less than 70 miles in length and compensated lines less than 170 miles in length.

When is it appropriate?

Considered when overload on a line exceeds thresholds identified for reconductor/rebuild with ACSR. Only considered for lines less than 70-80 miles in length.

Comments:

1. The above phrasing suggests that the go-to reconductor/rebuild solution to increase capacity is to use ACSR or ACSS, and that advanced conductor would only be considered if the go-to solution was insufficient. However, please consider thinking of advanced conductor as the primary go-to solution given its advantages. Reasons to consider advanced conductor first:
 - Increasing capacity by reconductoring with larger ACSR or ACSS, or by rebuilding with ACSR or ACSS at higher voltage, generally requires upgrading or replacing the structures at high cost. In contrast, capacity can be doubled with the same size advanced carbon-core conductor using the existing structures, due to its greater strength, lower weight, and greater conductivity. This not only expedites the project, but it saves on the capital cost and justifies using a higher-cost conductor (i.e., this factor must be considered for advanced conductor to win on the cost-benefit analysis). Furthermore, advanced conductor has ~40% lower line loss, which over the lifetime of a transmission line is an enormous benefit to ratepayers that should be considered in the cost-benefit analysis.
 - If, for example, only a 50% increase in capacity is needed and therefore the 100% increase offered by advanced conductor might seem like overkill, please consider that any capacity overhead would "future proof" the line for unanticipated scenarios. Just barely meeting expected capacity needs is a recipe for unnecessary future projects. Also, a lower load factor further decreases line loss by running the line cooler. The underloaded line would also be available for potential reconfiguration of power flows to alleviate congestion elsewhere on the system using advanced power flow controllers or topology optimization.

2. Please consider the option of adding compensation to reconductor/rebuild scenarios (or even new-builds) so that the benefits of advanced conductor can be realized for longer lines as well.

Thank you very much for considering these comments!

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