

# Turning Transmission up to 11

## Innovative Approaches to Maximize Transmission Lines and Their Right-of-Way

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# Reconductoring: Fast Grid Capacity

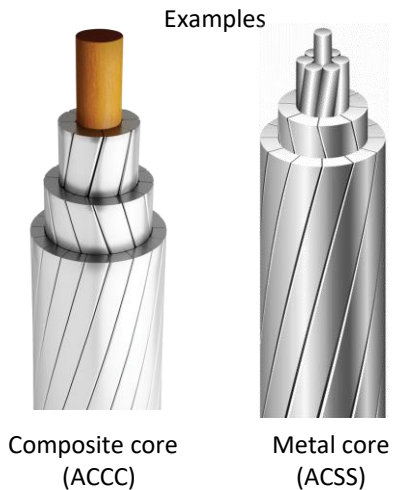


**Reconductoring** on existing T&D structures with high-efficiency advanced conductor is the **fastest, lowest-cost way to add substantial capacity to the existing grid.**

# What is an Advanced Conductor?

Advanced Conductor is a modern design electric conductor that enables more current flow through a given diameter conductor with less sag than traditional conductor. Two types:

- Metal Core
- Composite Core (since ~year 2000)



In this presentation, Advanced Conductor used for Reconductoring will mean the composite core conductor



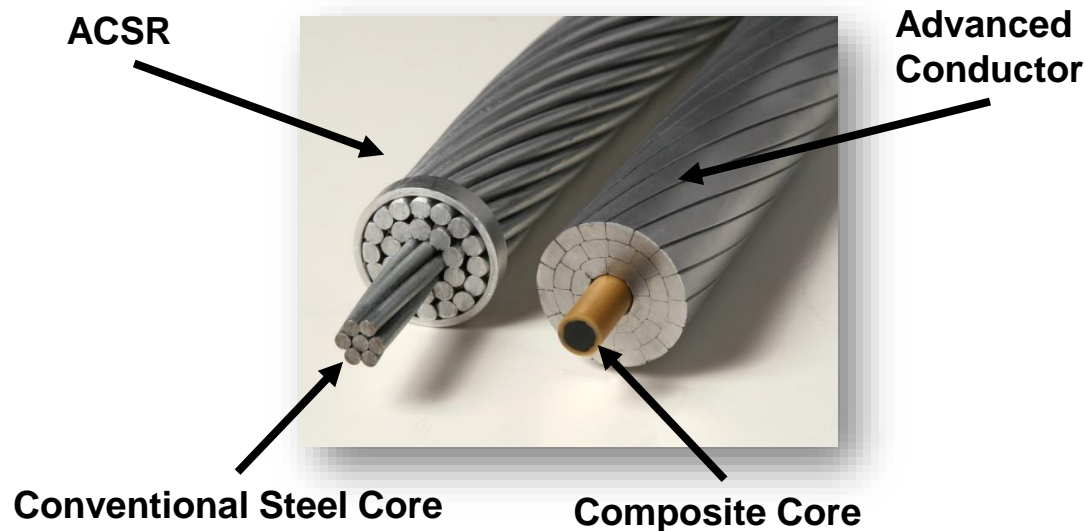
Currently available in the USA



# Composite Core: Enables a Unique Capability

Composite core is stronger and lighter than the same diameter steel (or steel-alloy) core.

Even after more aluminum is added, the composite core Advanced Conductor weighs about the same as the conventional ACSR of the same diameter.



## ENABLES A UNIQUE CAPABILITY:

High-efficiency Advanced carbon-core Conductor can be installed on the same tower/structure that was designed for the conventional ACSR (same diameter) and provides much greater capacity and energy efficiency (and lower sag).

**RECONDUCTORING**

# What Does Reconductoring Enable?

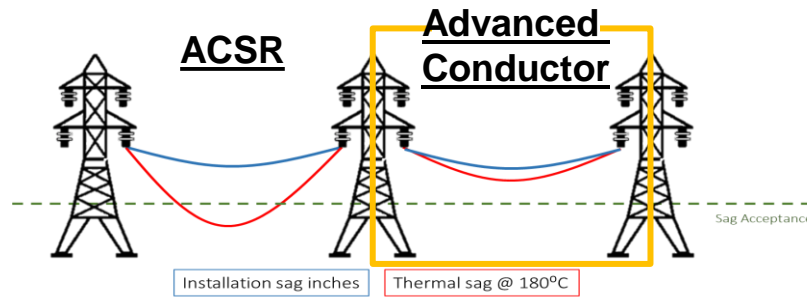
Reconductoring old legacy ACSR conductor with high-efficiency, high-capacity Advanced Conductor using the same structures in existing ROW, results in:

- 50%-100% more capacity in same ROW
- 20%-40% lower line losses
- About HALF the cost of conventional structural rebuild to uprate line
- Fast Process: ~18 - 24 months from decision to energized line
  - Construction permit (& process) is eliminated
  - Maintenance practices for installation



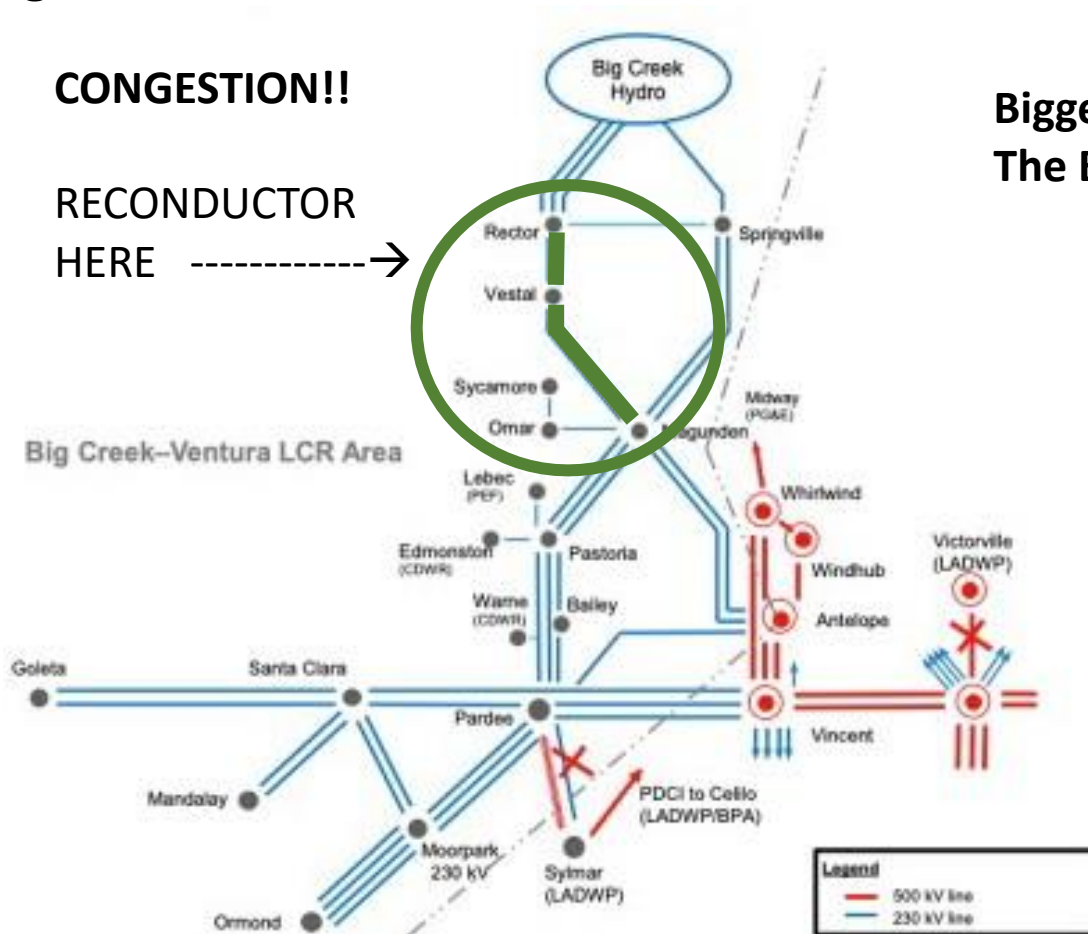
AND

- LOW SAG => Wildfire Risk Mitigation



# How/Where to Reconductor?

Reconductor at the grid congestion points (choke points) to rapidly upgrade the grid so that Clean Generation can be interconnected, and Clean Energy can be distributed around the grid to rapidly decarbonize the electric grid.



# How to Implement with State/Federal Funding

Energy savings and CO<sub>2</sub> reduction are rather easy to estimate with relatively low uncertainty. (“It just physics!”)

- Contribution by State or Federal Decarbonization funds to the project based on CO<sub>2</sub> reduced
- National Emissions Registry for the project for Carbon Credit trading
- Financial incentives for use of lower resistance conductors in T&D projects
  - For conductor  $\geq 10\%$  lower resistance than ACSR/AAAC baseline for same size conductor “buy” the CO<sub>2</sub> reduction
  - Establish a Resistance-based Conductor Efficiency Standard for all T&D capital projects
- Adopt emission credits program for reduced CO<sub>2</sub> emissions
  - Emission Credits issued for CO<sub>2</sub> emission reduction, and
  - Emission Credits for reconductoring with Advanced Conductors that enable rapid (e.g. <2.5 year) RE/Clean generation interconnection to grid [that achieve State Renewable Portfolio (RPS) and energy efficiency goals, faster and more cost effectively]

**Make sure energy savings and carbon reduction are included in EVERY T&D PROJECT**

# SUMMARY

**Reconductor** with Advanced Conductor to **economically and rapidly interconnect** more RE/Clean generation **to accelerate decarbonizing** the electric grid!

**Reconductoring should be in every state's decarbonization plans!**

