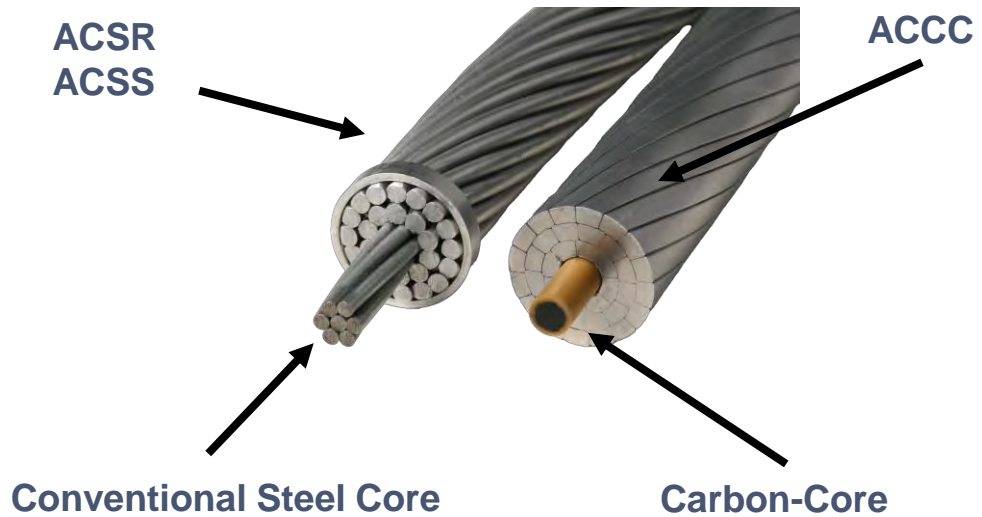


# Advanced Reconductoring as a First Step Grid Capacity Expansion

Reconductoring with Advanced  
Conductors on Existing Structures

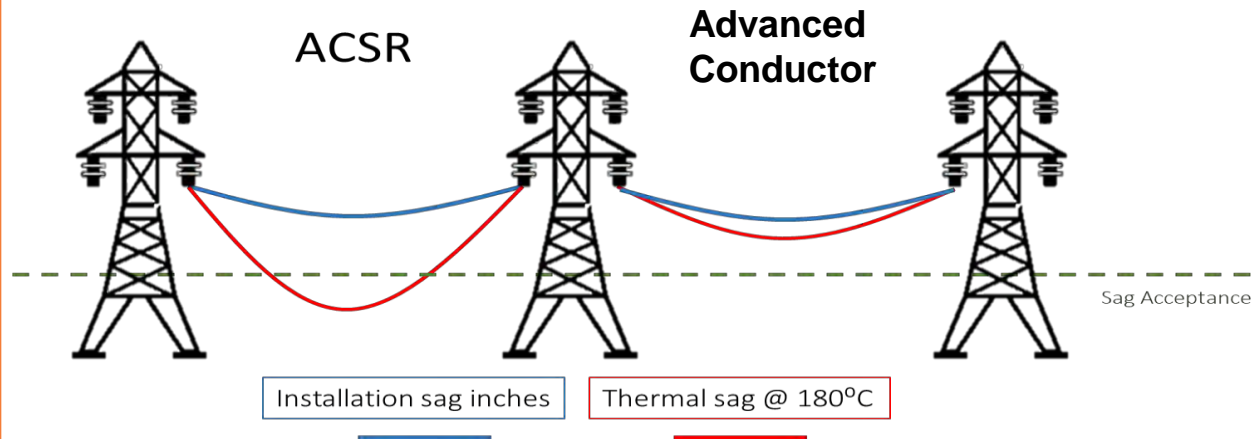
**CTC** GLOBAL





## Advanced vs. Conventional

- Replace steel and hard aluminum with carbon and annealed aluminum
- More aluminum that is more efficient equals:
  - 2x capacity capability
  - More efficient (~30% lower resistance)
- Much lower thermal expansion means 50% less thermal sag
- Corrosion resistant



## Less Sag

- Less sag means smaller towers or fewer towers
- **Less sag means wildfire risk mitigation**

- Increase Transmission Capacity
- Reduce Transmission Line Losses (Increase Efficiency)
- Increase Ground / Vegetation Clearance (Decrease Sag)
  - Wildfire Mitigation
  - Wildfire Resilience
- Future Proof (the Opposite of Gold Plating...)





**AEP** This project won EEI Transmission Project of the Year - 2016



## Objectives

- Improve reliability (less sag and corrosion)
- Increased capacity to serve growth (**65% uprate achieved**)
- Retain existing structures – to reduce costs
- Eliminate downtime with **Live Reconductoring**

## Solution

- replace 1,440 miles of ACSR conductor with Advanced Conductor (ACCC®) w/ **live reconductor solution**
- 240 circuit miles, 345 kV line, double bundle

## Additional Benefits

- Reduced line losses by 30%
  - *Saving \$15 million/yr. (300,000 MWh at \$50)*
  - *Reducing CO<sub>2</sub> emissions by ~200,000 metric tons per year (= 43,000 cars off the road)*
  - *Freeing up ~34 MW of generation*
  - *Saving 3.5 billion gallons of water/yr. (avoided 12k gal/MWh that would have been consumed in fossil-fuel steam power plants to produce the energy saved)*

2009: ACCC<sup>®</sup> Conductor installed to increase the capacity of existing 120 kV transmission line from Reno to Carson City from 350 amps to 1,000 amps.

2012: wildfire burned down four wood H-frames structures dropping the ACCC<sup>®</sup> Conductor to the ground. The damaged structures were replaced and the undamaged ACCC<sup>®</sup> Conductor was lifted back into service.  
RESILIENCE.





## 2006

Oklahoma Gas & Electric: ACCC<sup>®</sup> Conductor was installed to connect new generator to the grid.

## 2013

EF-5 Tornado hit Moore, Oklahoma. Tornado picked up empty shipping container and threw it into a transmission powerline steel monopole.

## Damage

The shock and tension on the powerline shredded the aluminum conductor, but the carbon-composite core was NOT broken.

## Result

Because the core survived and kept the conductor in the air, the bucket crew was able to splice the conductor and return the powerline to service after only a few hours.

**Avoided Potential Delay in Powerline Restoration**

# Thank You



## Address

CTC Global Corporation

2026 McGaw Avenue

Irvine, CA 92614



## Email

[PBrehm@CTCGlobal.com](mailto:PBrehm@CTCGlobal.com)



## Contact Number

509-727-7200 m

