FERC Order 1920 and Alternative Transmission Technologies

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V. Consideration of Dynamic Line Ratings and Advanced Power Flow Control Devices

Transmission providers must consider in Long-Term Regional Transmission Planning and existing Order No. 1000 regional transmission planning processes:

- Advanced conductors
- Dynamic line ratings (DLR)
- Advanced power flow control devices (APFC)
- Transmission switching

*Note: FERC declined to include topology optimization and storage as a transmission asset within the enumerated list of technologies.

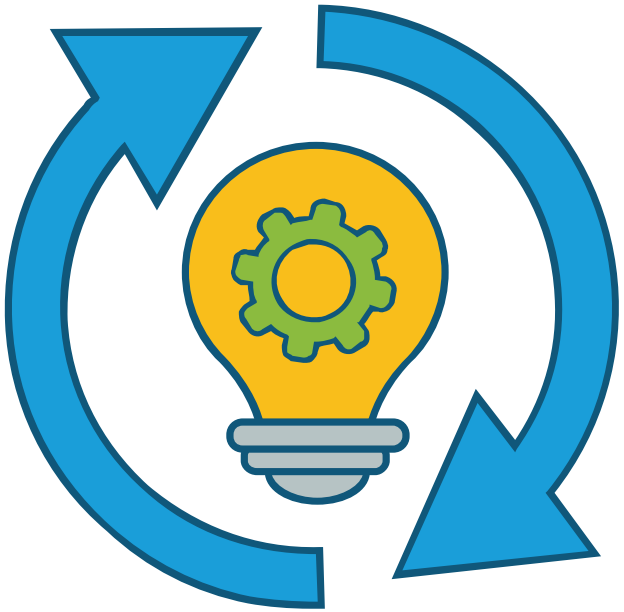
FERC Order 1920: Transmission Provider Considerations

- In terms of alternative transmission technologies, Transmission Providers must consider:
  - Each of the enumerated technologies when evaluating new regional transmission facilities, as well as upgrades to existing transmission facilities.
    - Note: Incumbent transmission providers would be designated to develop any alternative transmission technology incorporated into an existing transmission facility (“upgrade”).
  - Whether regional transmission facilitates that incorporate, or solely consist of, any of the enumerated list of alternative transmission technologies would be more efficient or cost-effective than selecting new regional transmission facilities or upgrades to existing transmission facilities that do not incorporate these technologies.

FERC Order 1920: Transmission Provider Requirements

- Transmission Providers must also:
  - Identify with sufficient detail in their OATTs the point or points in a given process at which the transmission providers in the transmission planning region will consider the potential use of alternative transmission technologies.
  - Culminate in a determination that is sufficiently detailed for stakeholders to understand why a particular transmission facility was selected or not selected.
  - Update their energy management systems, if needed to implement dynamic line ratings or any of the alternative transmission technologies.
  - Measure the required benefits and any additional benefits the transmission provider elects to measure for projects that incorporate alternative transmission technologies.

Alternative Transmission Technologies



- Advanced Conductors
- Dynamic Line Ratings
- Advanced Power Flow Controllers
- Transmission Switching

Advanced Conductors

Advanced conductors employ advanced materials, such as composite and/or carbon cores (traditional cables use conventional steel and aluminum), to reconductor existing lines or construct new lines.

Potential Benefits

- Increased line capacity across existing rights of way reducing time associated with permitting
- Allows operation at higher temperatures with lower sag

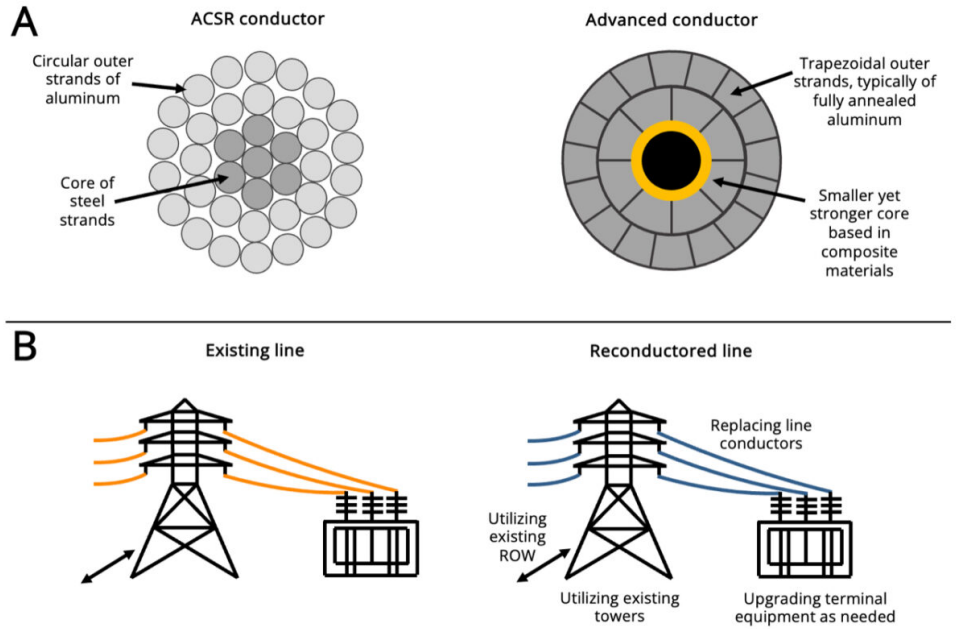


Image Source: https://www.pv-magazine.com/2023/11/24/reconductor-existing-transmission-to-unlock-renewables-says-uc-berkeley-study/

Advanced Conductors

Dynamic Line Ratings

Advanced Power Flow Controllers

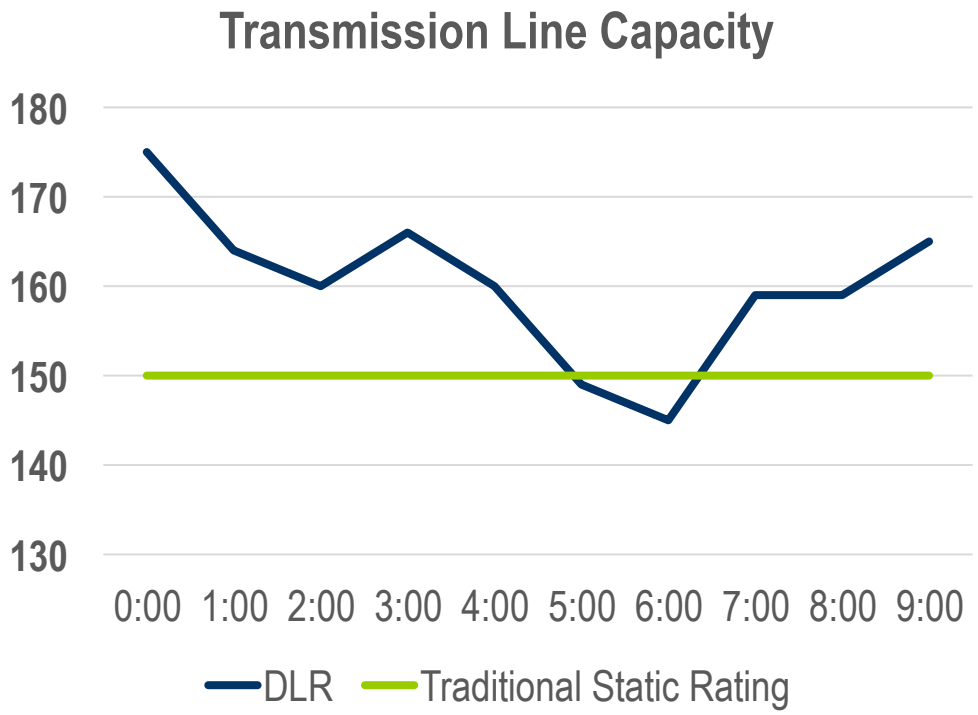
Transmission Switching

Dynamic Line Ratings

Dynamic Line Rating technology uses advanced sensors and/or software to monitor real-time environmental conditions (e.g., wind speed, solar radiance) along a transmission line to calculate real-time capabilities/ratings.

Potential Benefits

Updated line ratings based on real-time conditions, which may reduce congestion compared to traditional static rating methodologies



Advanced Conductors

Dynamic Line Ratings

Advanced Power Flow Controllers

Transmission Switching

Advanced Power Flow Controllers

Advanced Power Flow Controllers utilize in-line voltage injection to manipulate line conductance in order to "push" or "pull" flow across existing systems of lines.

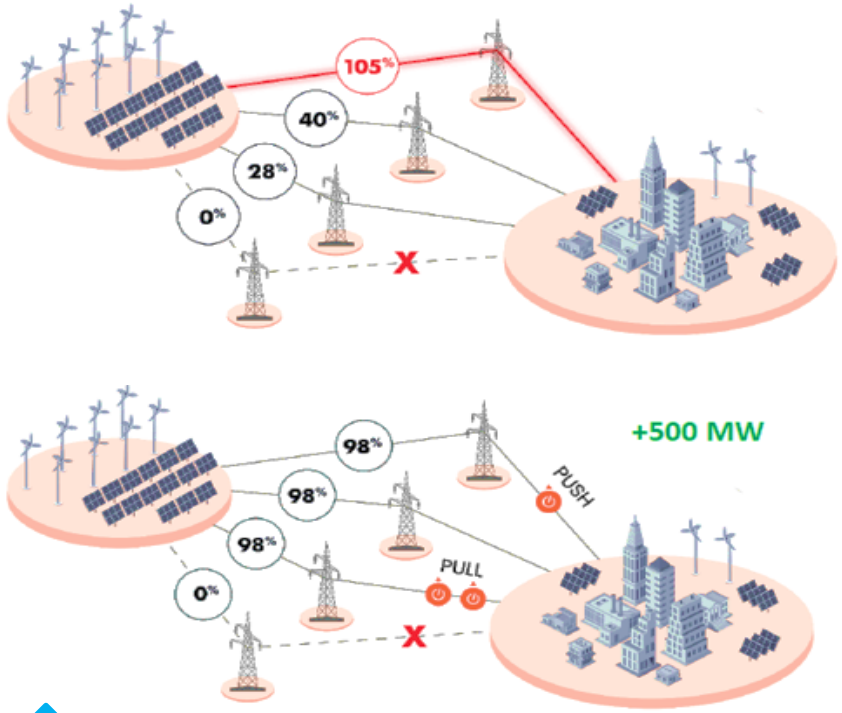


Image Source: Smart Wires

Potential Benefits

Optimized existing network to redistribute flow in order to increase renewable generation, reduce interconnection costs and expedite interconnection timelines

Advanced Conductors

Dynamic Line Ratings

Advanced Power Flow Controllers

Transmission Switching

Transmission Switching

Transmission Switching utilizes topology reconfigurations based on system conditions to minimize off-cost operations.

Potential Benefits

Reconfiguration can help reduce congestion and manage potential overloads on the system.

Advanced Conductors

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Contact

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