



Eastern Interconnection Planning Collaborative

Phase II HVDC Consideration Process

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Initial Study

- PAs will set initial load flow for each Scenario. PAs perform gap analysis and develop initial concepts for transmission additions.
- PAs will derive initial alternate concepts for each Scenario (including HVDC).
- PAs will develop “Sets” of transmission modifications.

When would HVDC projects be considered as potential solutions?

- An underground or undersea cable longer than 30 miles is required.
- Power transfer between asynchronous systems is identified as a possible solution.
- A long transmission line carrying a large amount of power is required.

Underground and Undersea Cables

- A cable may be used for the entire project or a small part.
- For long AC cables, capacitance builds as a function of length, and there is no way to compensate. This phenomenon does not occur for DC cables.

Asynchronous Systems

- Requires back-to-back HVDC system
- No transmission line
- HVDC acts as a clutch between the two systems
- Connection examples
 - ERCOT to anybody else
 - Hydro – Quebec to US
 - Hydro-Quebec to New Brunswick

Long Transmission Line Carrying Large Amounts of Power

- Most likely situation to arise
- Primary application is point-to-point line > 400 miles
- Considerations:
 - HVDC has no reactive losses
 - HVDC power transfer can be controlled precisely
 - HVDC transmission line conductor costs are less
 - EHV AC can deliver power as far by using switching substations
 - AC transmission line integrates well with existing system - AC power can be tapped easily
 - HVDC requires strong AC systems at both ends
 - HVDC terminals more complex than AC substations

Conclusion

- Ultimately, the initial results of the Phase II study will determine the need for evaluation of possible HVDC solutions.
- Questions?