

DOE's Transmission Perspective

Office of Electricity
U.S. Department of Energy

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Deputy Assistant Secretary

November 15, 2018

DOE's Annual U.S. Transmission Data Review

Annual U.S. Transmission Data Review

March 2018



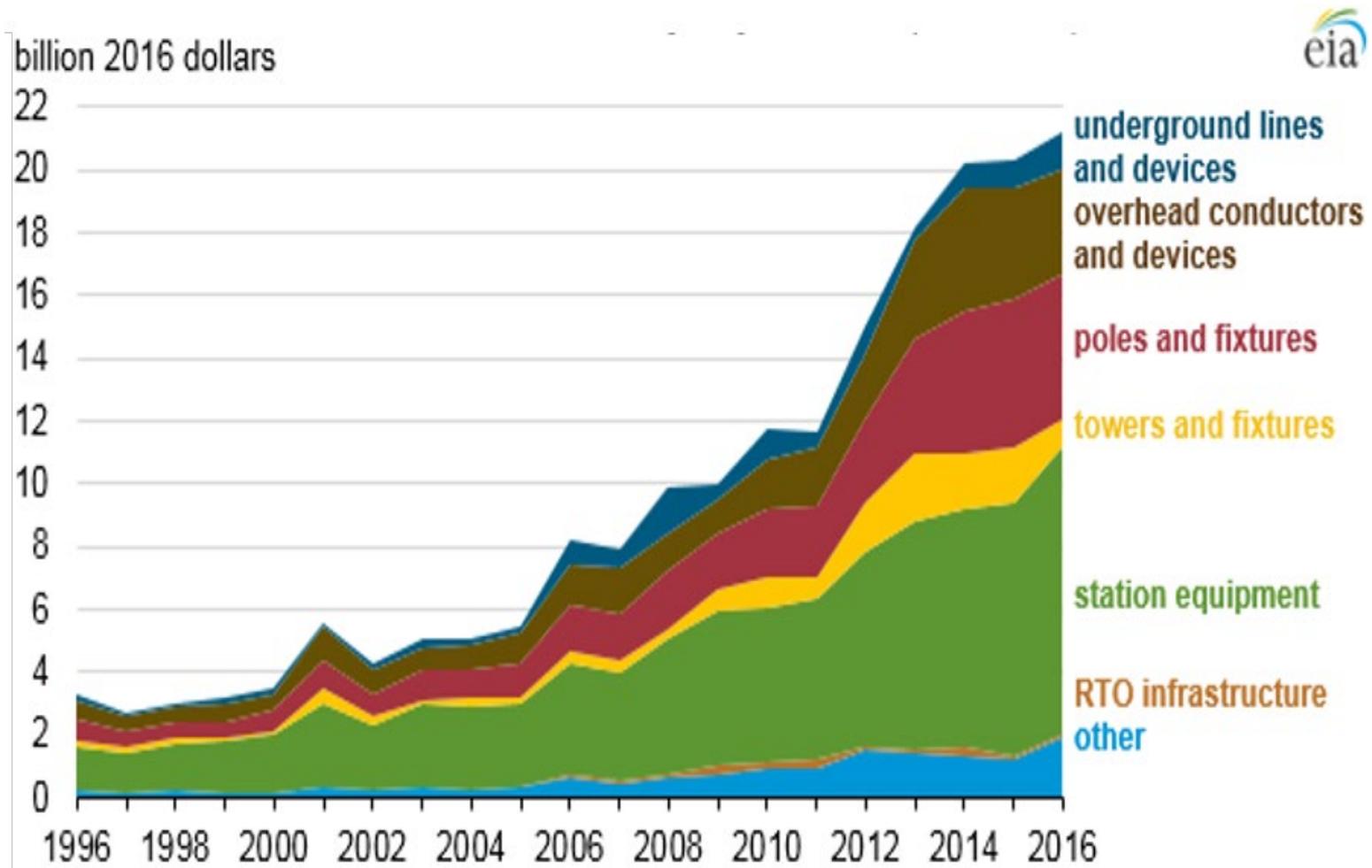
United States Department of Energy
Washington, DC 20585

- Issued annually since 2015
- Relies solely on publicly available sources
- Reviewed by EIA, FERC, NERC, WECC RTO/ISOs, other contributors

Transmission Infrastructure Investment 1996-2016

Investment in transmission infrastructure by major utilities (1996-2016)

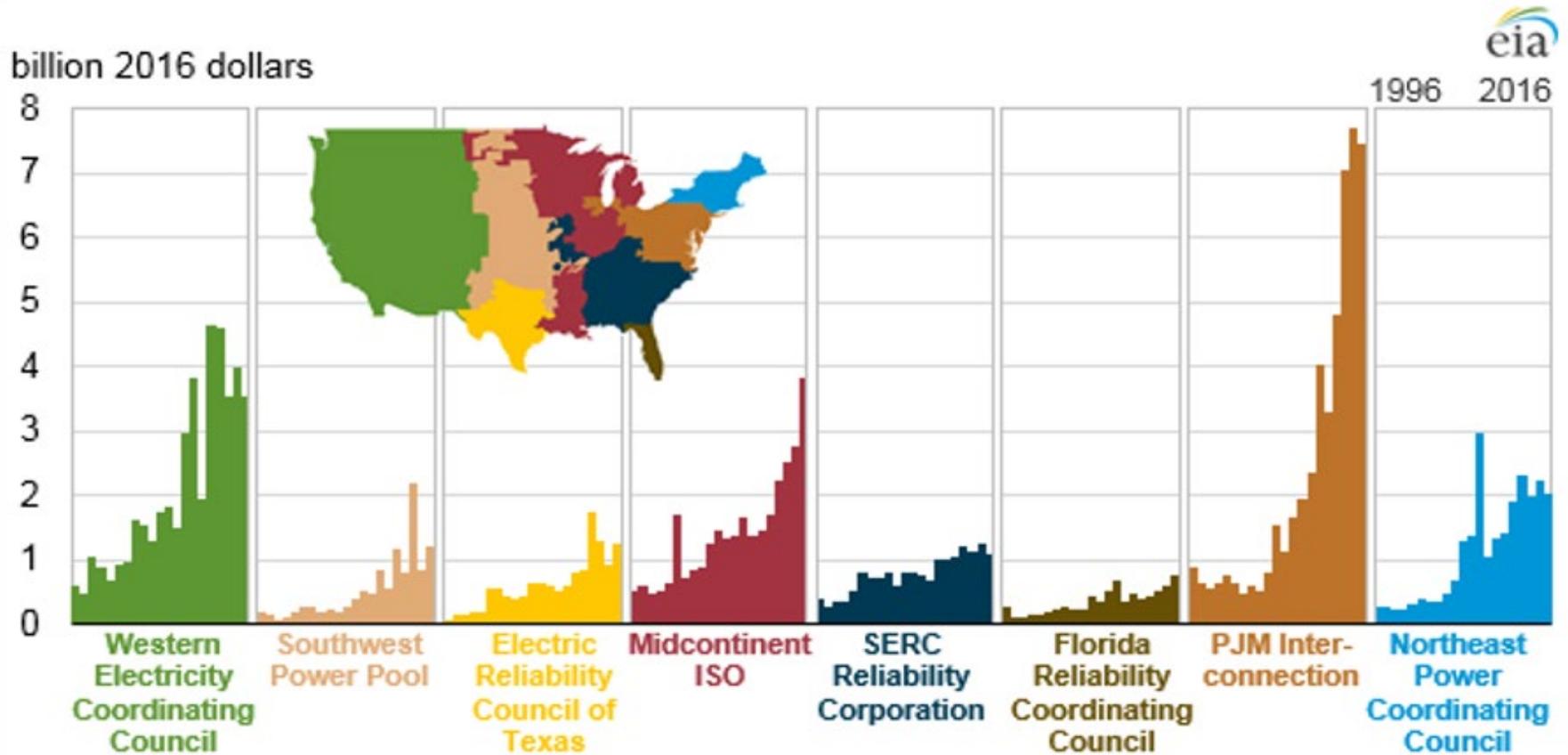
Source: EIA: <https://www.eia.gov/todayinenergy/detail.php?id=34892>



Transmission Investment by NERC Region

Utility transmission investment by NERC region (1996-2016)

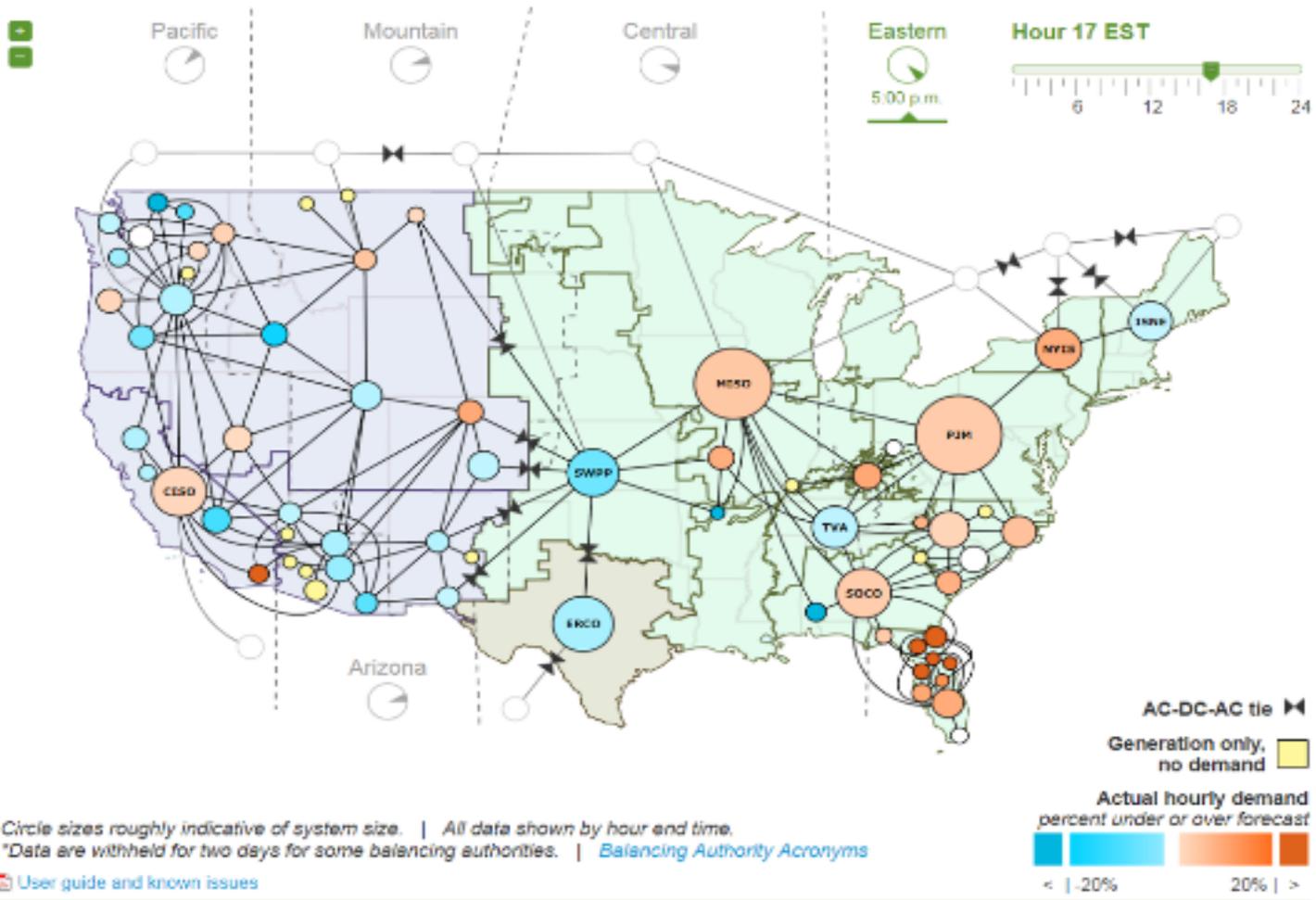
Source: EIA



EIA Near-Real Time Information on Electricity Flows

534,947 U.S. electricity demand (Lower 48 states)
megawatthours

◀ Jan 1, 2018 ▶

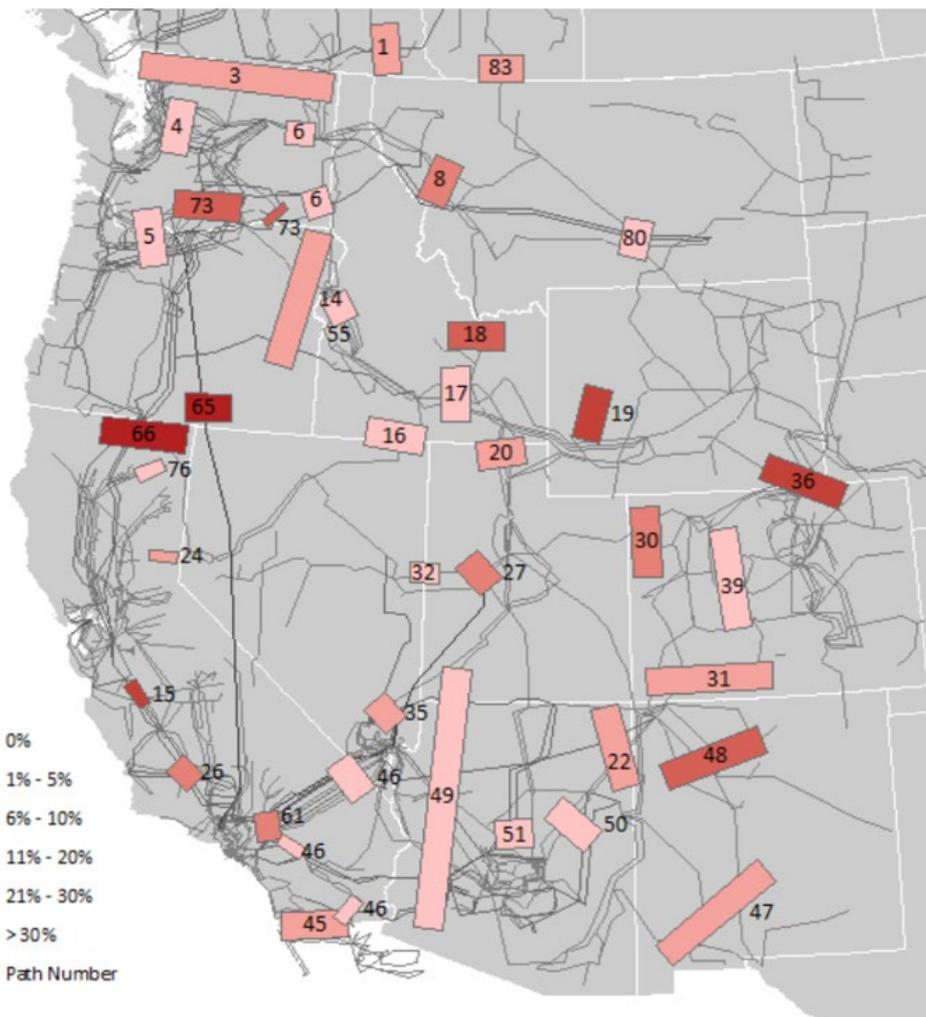


Source: EIA: https://www.eia.gov/realtime_grid/#/status?end=20180119T17

Utilization of Major Electricity Paths in the West

WECC Major Paths and U75 for 2016

Source: WECC: <https://www.wecc.biz/epubs/StateOfTheInterconnection/Pages/Overview.aspx>

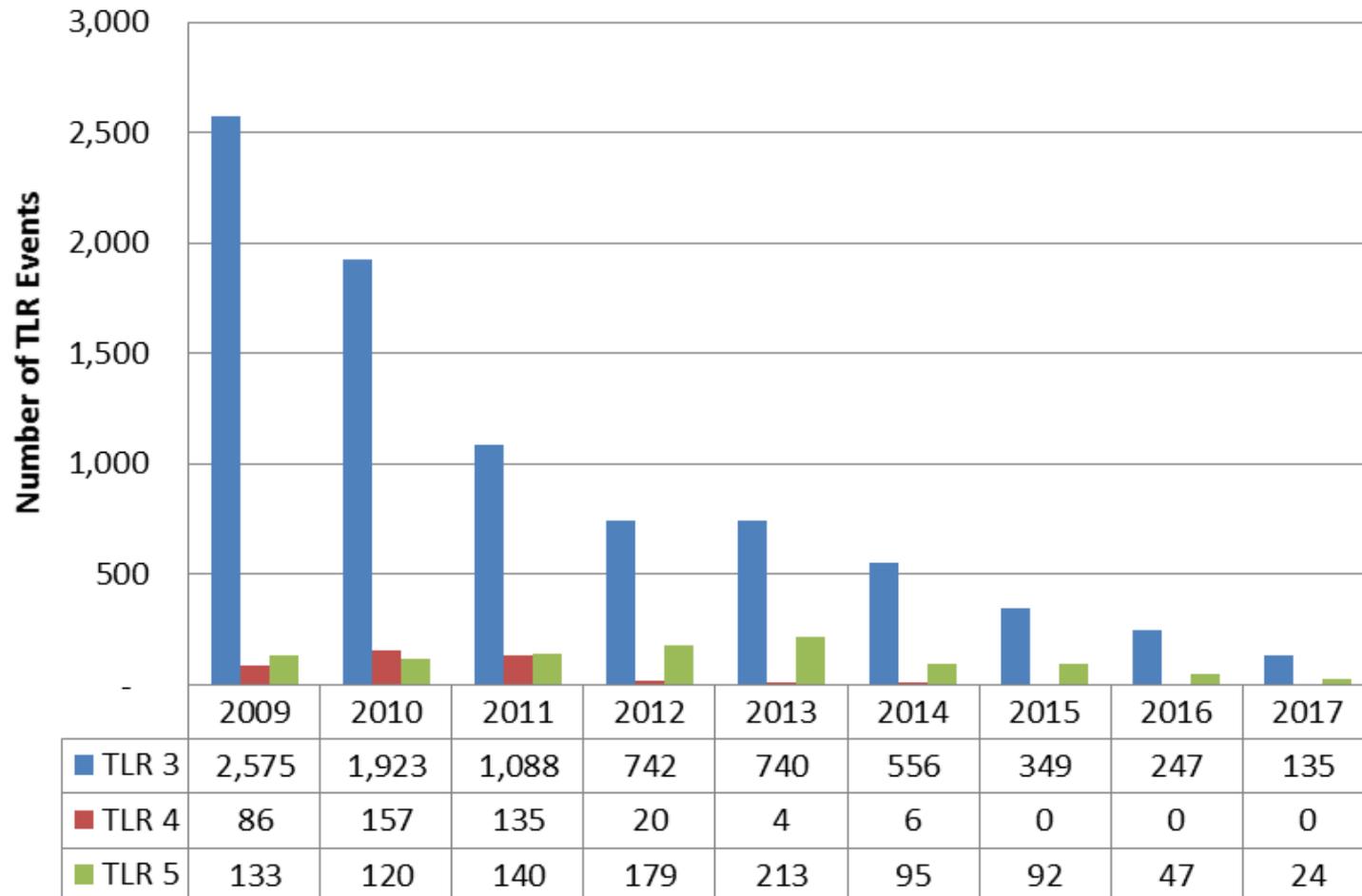


U75 = % of year that path is operated at or above 75% of its operating limit

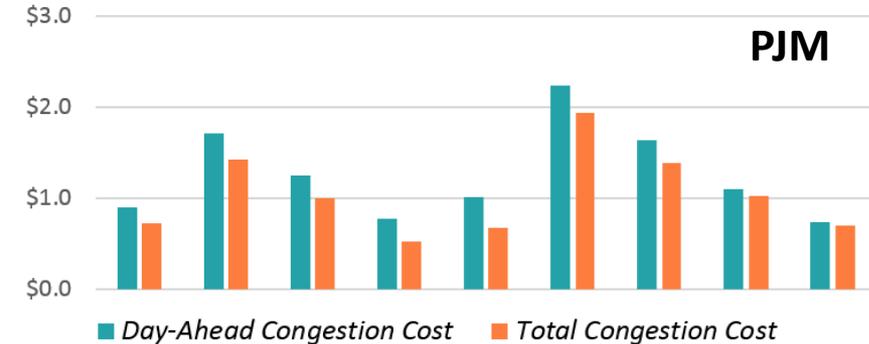
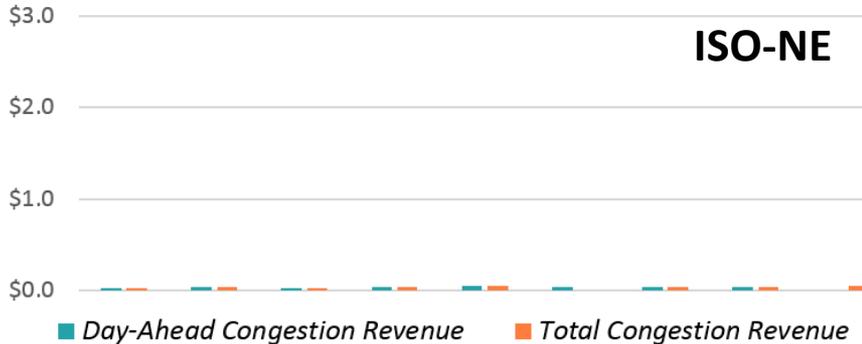
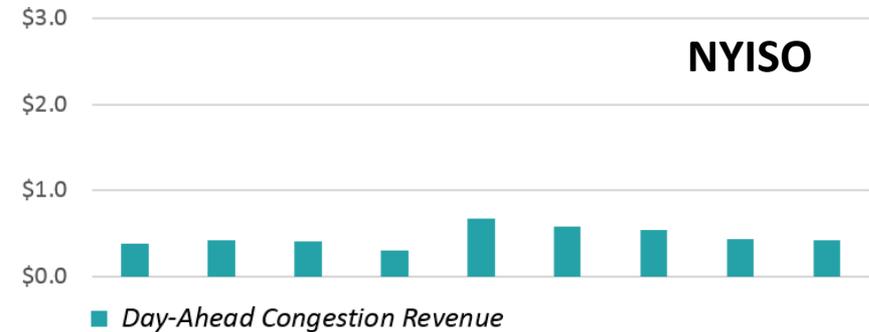
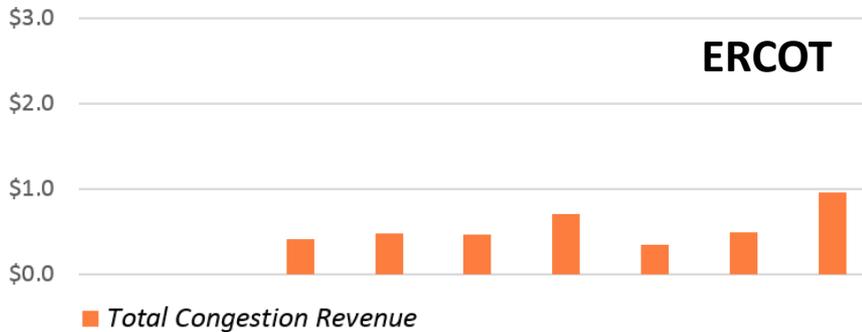
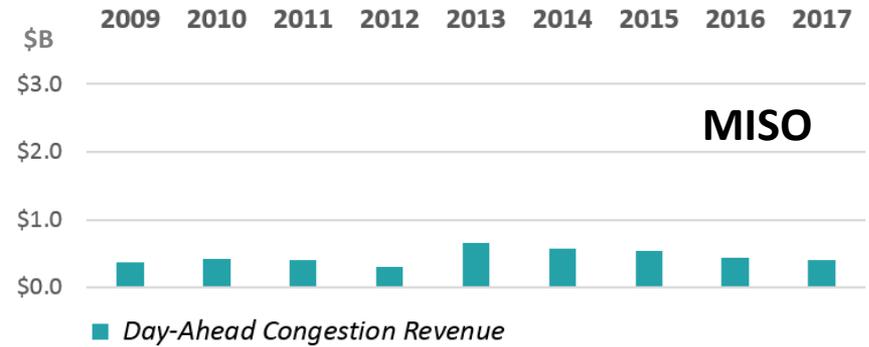
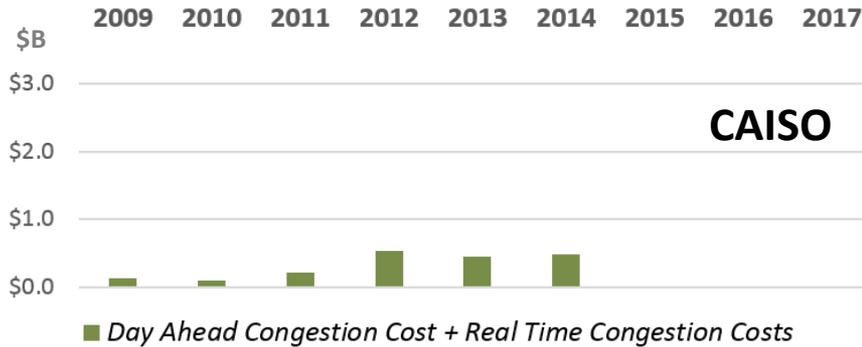
Eastern Transmission Loading Relief Events

Eastern (total) TLR events, 2009–2017

Source: Developed by DOE from NERC: <https://www.nerc.com/pa/rrm/TLR/Pages/default.aspx>



The Economic Cost of Congestion

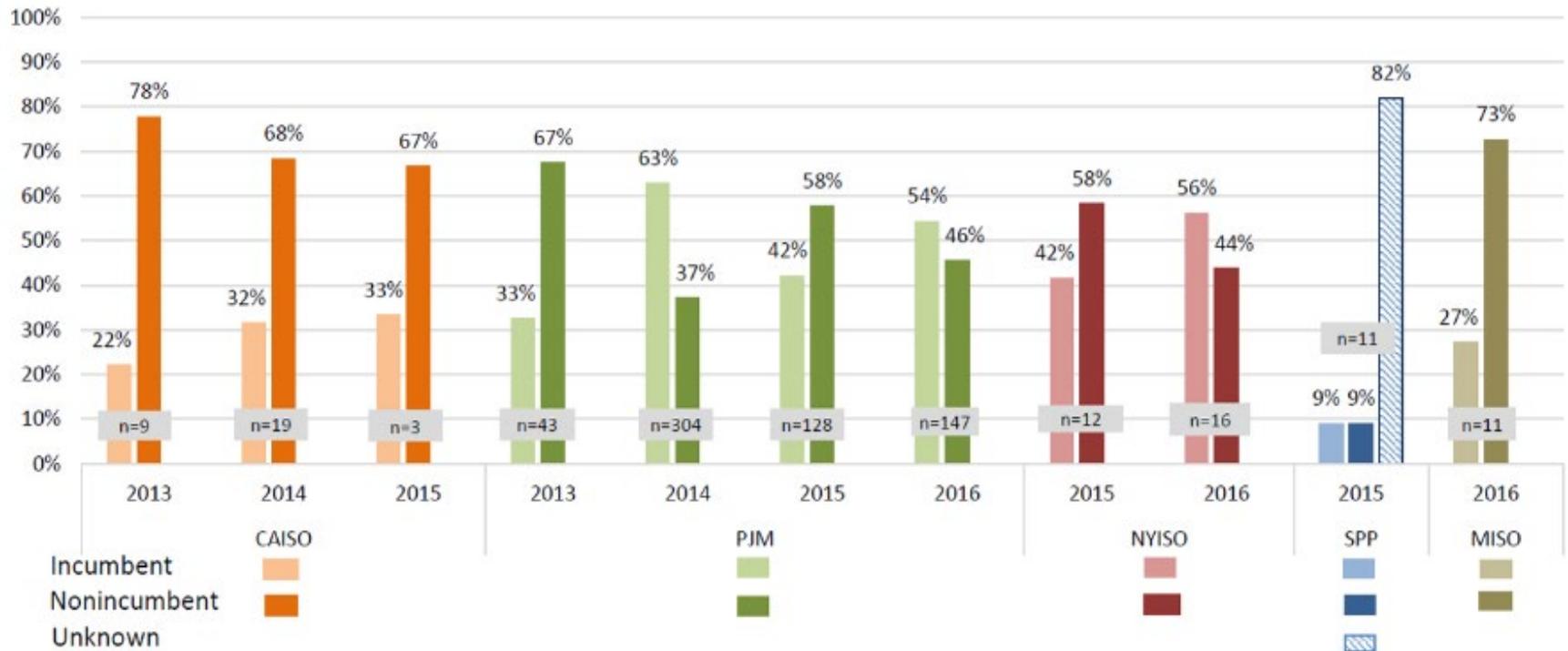


Competitive Proposals for Transmission

Percentage of Competitive Proposals by Incumbents vs. Nonincumbent Transmission Developers (2013–2016)

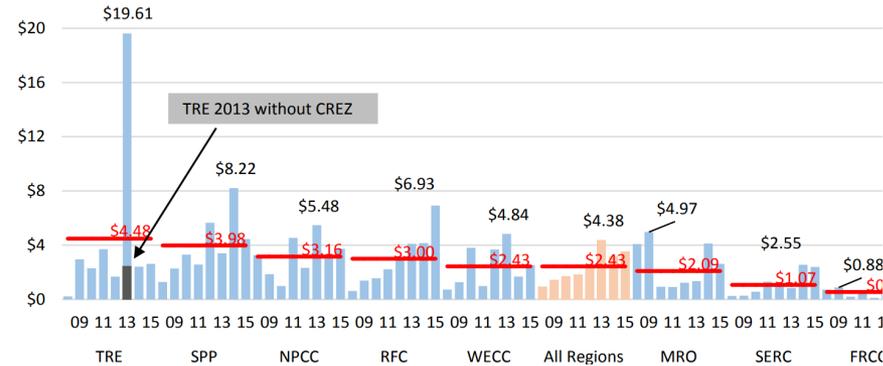
Source: FERC

Note: In October 2017, NYISO selected a non-incumbent as the developer for the Western NY Transmission Facilities as a result of its 2015 Public Policy solicitation.



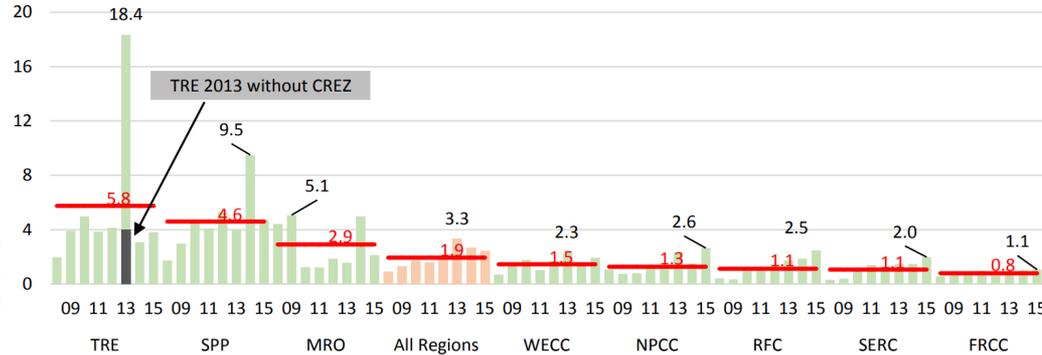
FERC Metrics for Transmission Adequacy

Incremental Load-Weighted Transmission Investment in the U.S., 2008-2015
All New and Upgraded Projects in Operation, \$/MWh

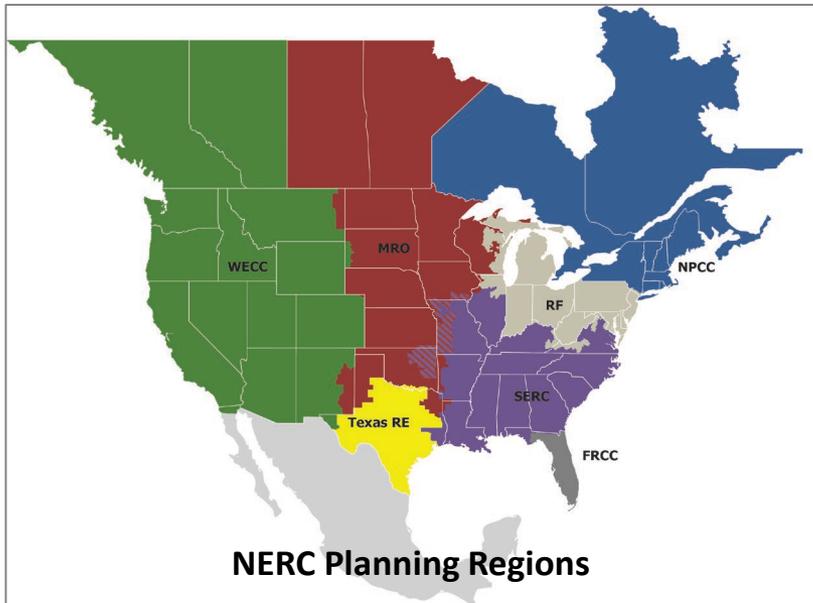


Sources: C Three Group, NERC, and BLS.

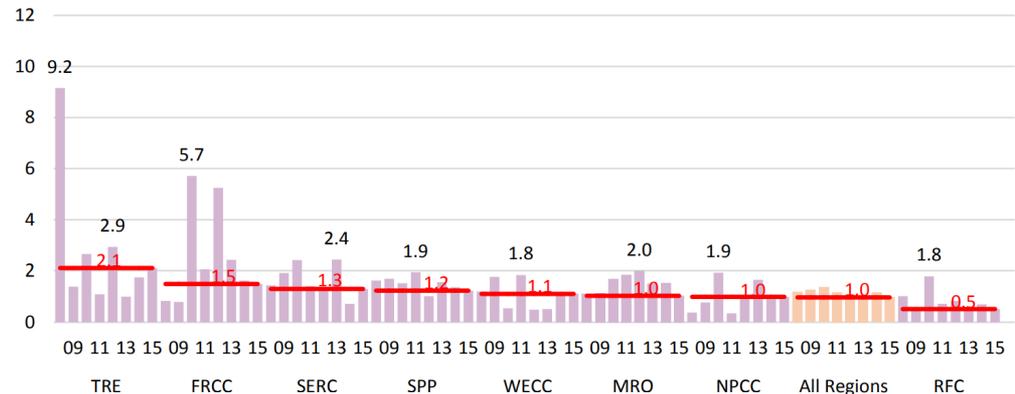
Load-Weighted Circuit-Miles of Transmission Added in U.S., 2008-2015
New and Upgraded Lines in Operation, Circuit-Miles/TWh



Sources: C Three Group and NERC.

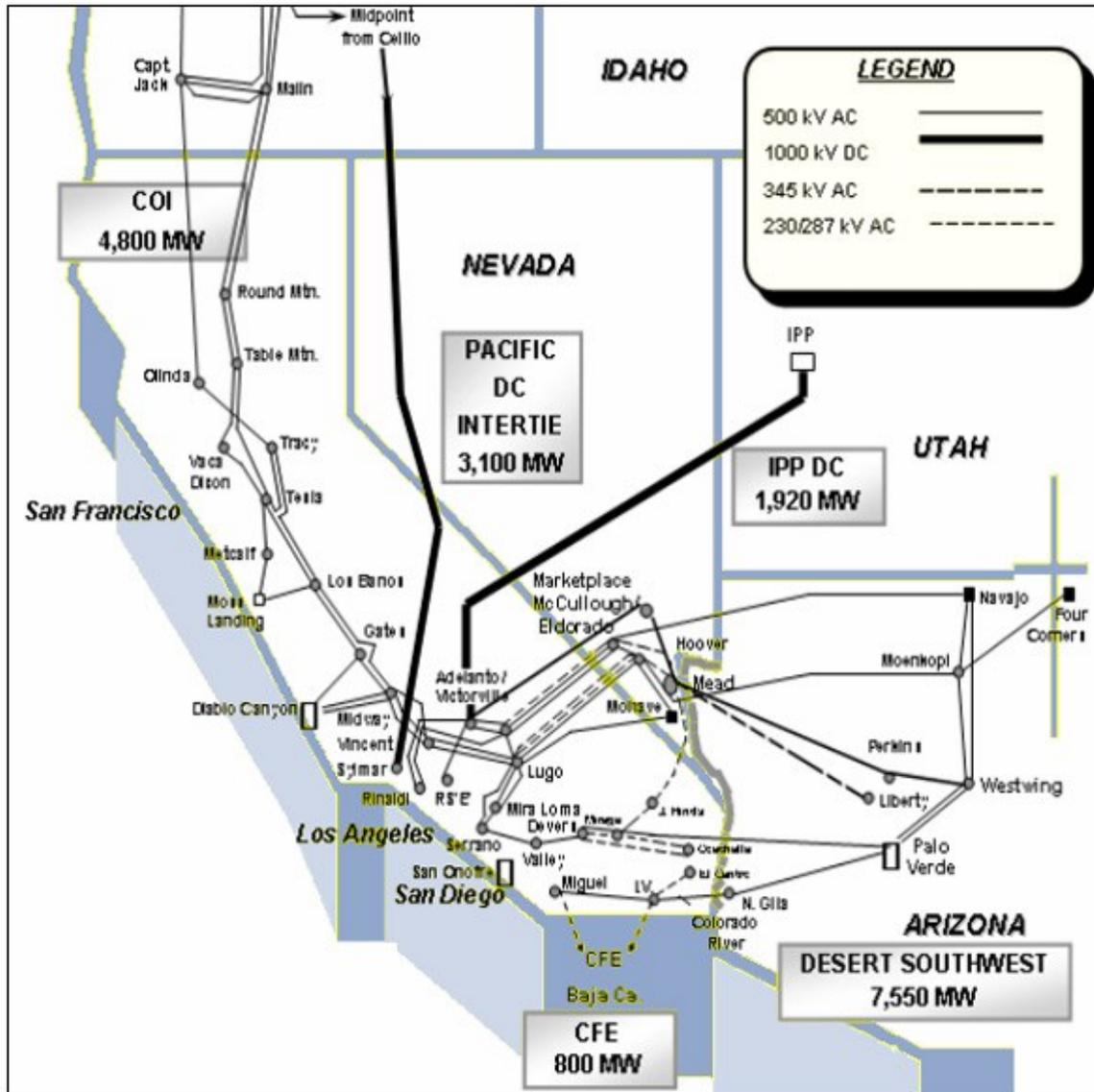


Load-Weighted Circuit-Miles Added per Million Dollars of Investment, 2008-2015
New and Upgraded Lines in Operation, Circuit-Miles/\$ Million



Sources: C Three Group, NERC, and BLS.

California's Regional Inter-ties



Focus of Today's Panels

Panel I: Are there unmet needs for additional long-distance, high-voltage transmission lines?

What are the indicators?

Panel II: Permitting and siting issues

Panel III: Possible remedies to challenges identified in previous panels

