

The Importance to the Nation's Energy Future of Interconnecting the Western & Eastern Electric Grids

[North American HVDC Interconnection Seams Study](#): A regional partnership funded by the [U.S. Energy Department's Grid Modernization Initiative](#)

- National Renewable Energy Lab (NREL)
- Pacific Northwest National Lab (PNNL)
- Oak Ridge National Lab (ORNL)
- Argonne National Lab (ANL)
- Iowa State University (ISU)
- Southwest Power Pool (SPP)
- Mid-Continent Independent System Operator (MISO)
- Western Area Power Authority (WAPA)
- Western Electric Coordinating Council (WECC)

Presentation to the [Governor's Wind & Solar Energy Coalition](#)

Thursday, August 24, 2017



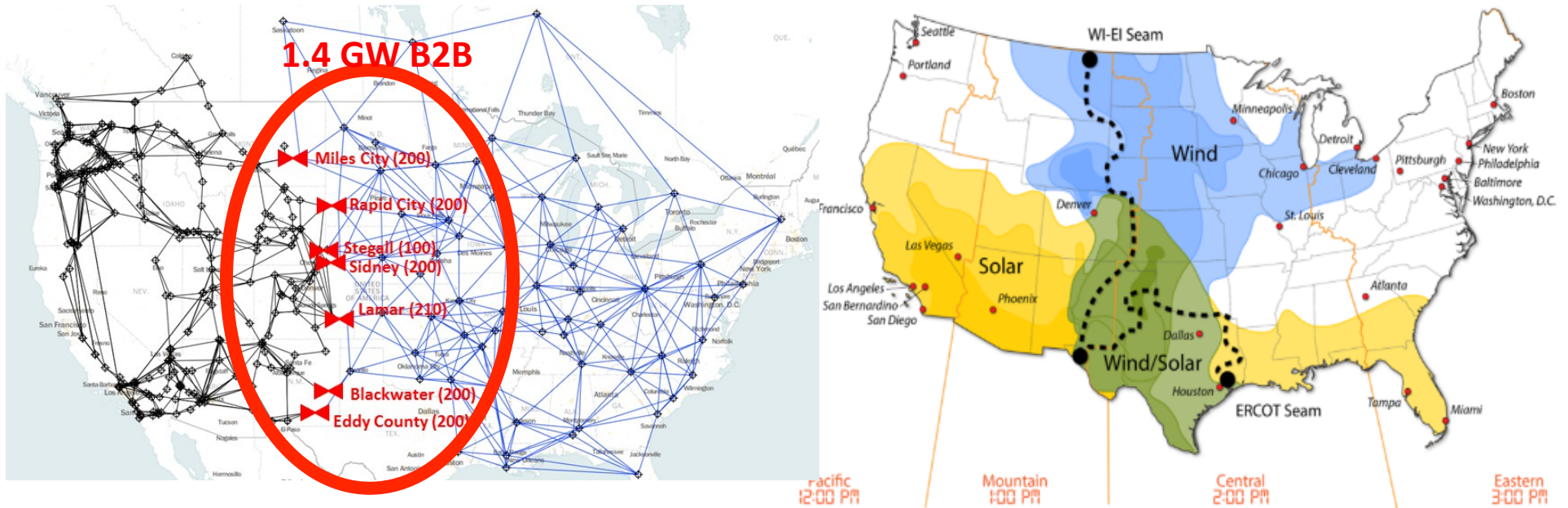
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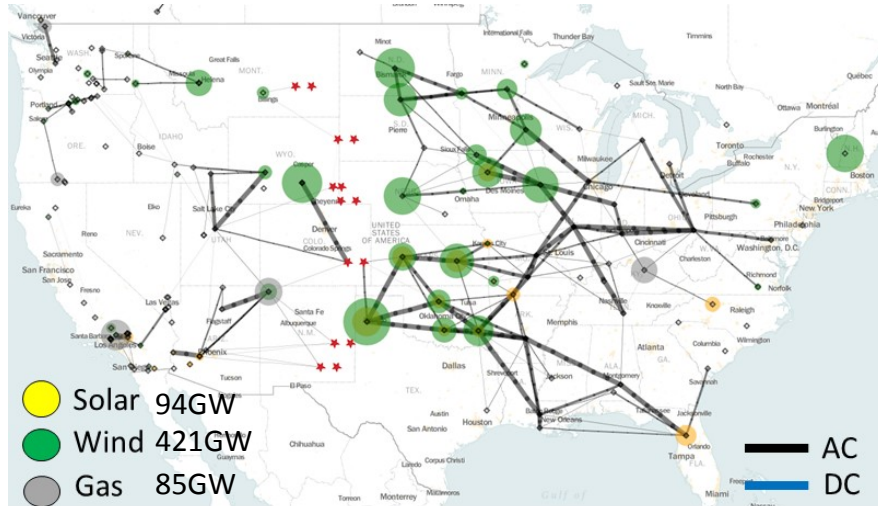
Objective

Given goal of increasing total energy production from wind & solar to 33% by 2038 , how much does cross-seam transmission investment save us?

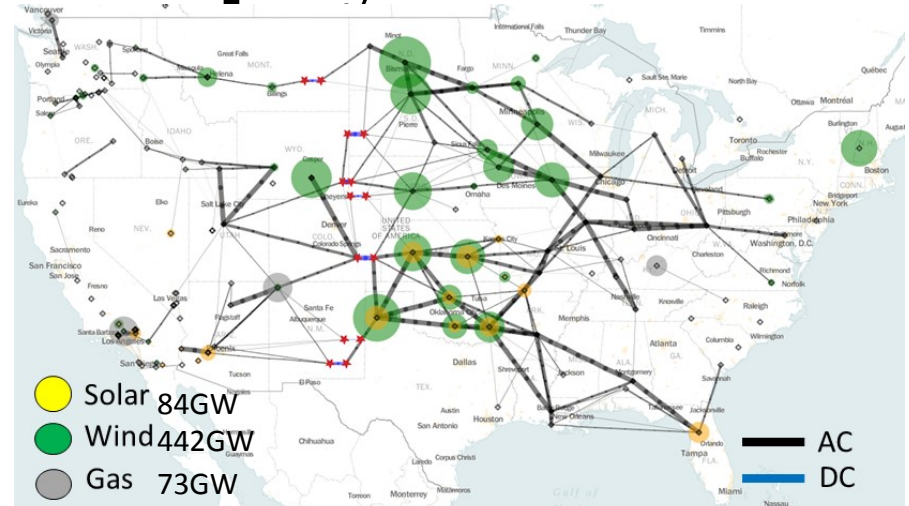


Motivation: Cost of cross-seams transmission is exceeded by savings in generation investment, fuel costs, & reserve costs due to accessibility of better wind/solar resources, sharing of sharing across time zones, & sharing of annual peak

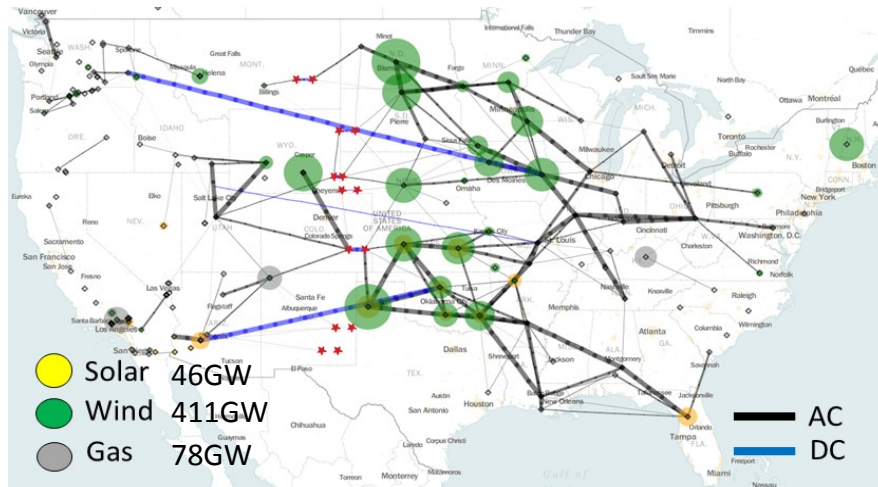
Results: 2024-2038 – it pays for itself!



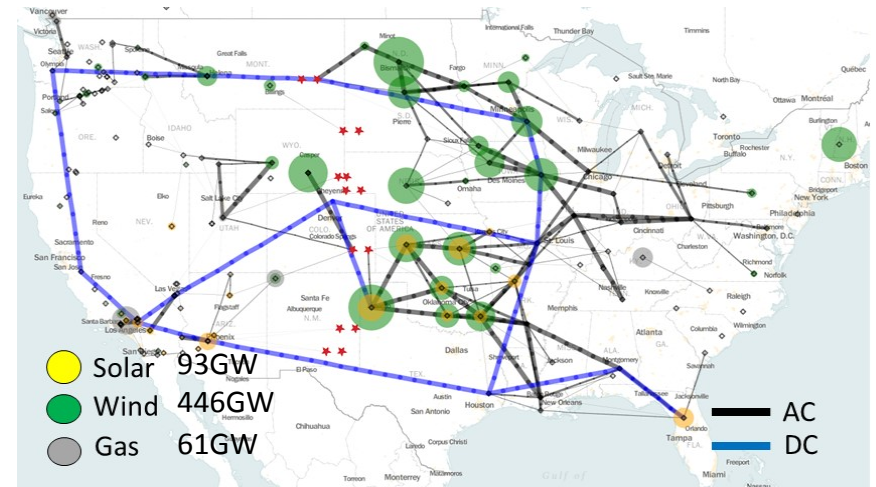
D1: No added cross-seam capacity. Benchmark.



D2A: 30GW added capacity via B2B. Saves \$20B, +cost of \$15B; B/C=1.3.



D2B: 40GW added capacity via B2B/DC lines. Saves \$23B, +cost of \$11B; B/C=2.1.



D3: DC macrogrid overlay. Saves \$39B, +cost of \$20B; B/C=2.0₃

Next Steps

- Complete studies; final report due 10/1/17.
- Follow-on project:
 1. Quantify energy system strengthening: resilience & adaptability.
 - Resilience: ability to use medium-term *operational measures* to provide continuous low-cost energy services following extreme events.
 - Adaptability: ability to use long-term *investment* to provide continuous low-cost energy services for unforeseen futures.
 2. Identify by state: benefits/cost/econ devlpmnt
 3. Develop plans/mechanisms/support to build it, including FERC approval, multi-reg coordination.