Americans for a
Clean Energy Grid

Regional Transmission Webinar Series

PACIFIC NORTHWEST

Who we are and what we do:

We support policies that will modernize the nation's electric power network and unlock clean energy and economic opportunities across the country. The backbone of a clean electricity system and a strong economy is a resilient and reliable transmission grid. Smart state and federal policies that improve the way the grid is developed, planned, and paid for will help it become a more robust, reliable, and secure network that supports expansion of renewable energy, competitive power markets, energy efficiency, and lower costs for consumers.

Regional Transmission Summits

St. Paul, Minnesota, October 21st

- Oregon
- Iowa
- Kansas
- Massachusetts
- Ohio
- Tennessee
- Colorado

Regional Transmission Webinar Series

- Pacific Northwest
- Midwest
- Heartland
- New England
- PJM
- Southeast
- Rocky Mountain

Grid Operational Reforms to Integrate Renewable Energy

Roger Hamilton

ACEG Webinar

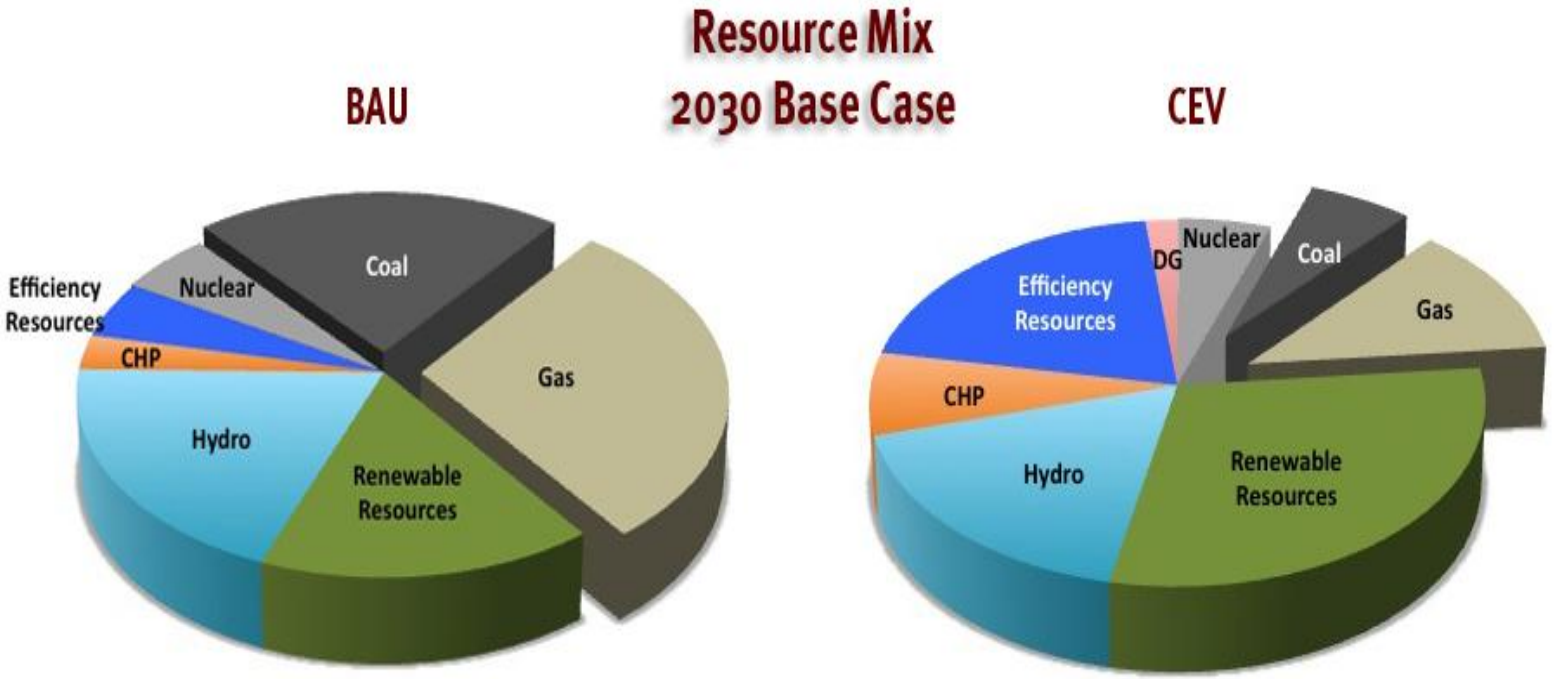
September 19, 2013

WESTERN GRID GROUP

WCEA guiding principles

- By 2050 West should achieve 80% reduction in CO_2
- Maximize Energy Efficiency and Distributed Generation
- Maximize use of existing system
- Plan generation & transmission smart from the start (environmental and economic standards)

BAU vs. CEV Portfolios in 2030



From Table 33. Western Grid 2050: Contrasting Futures, Contrasting Fortunes

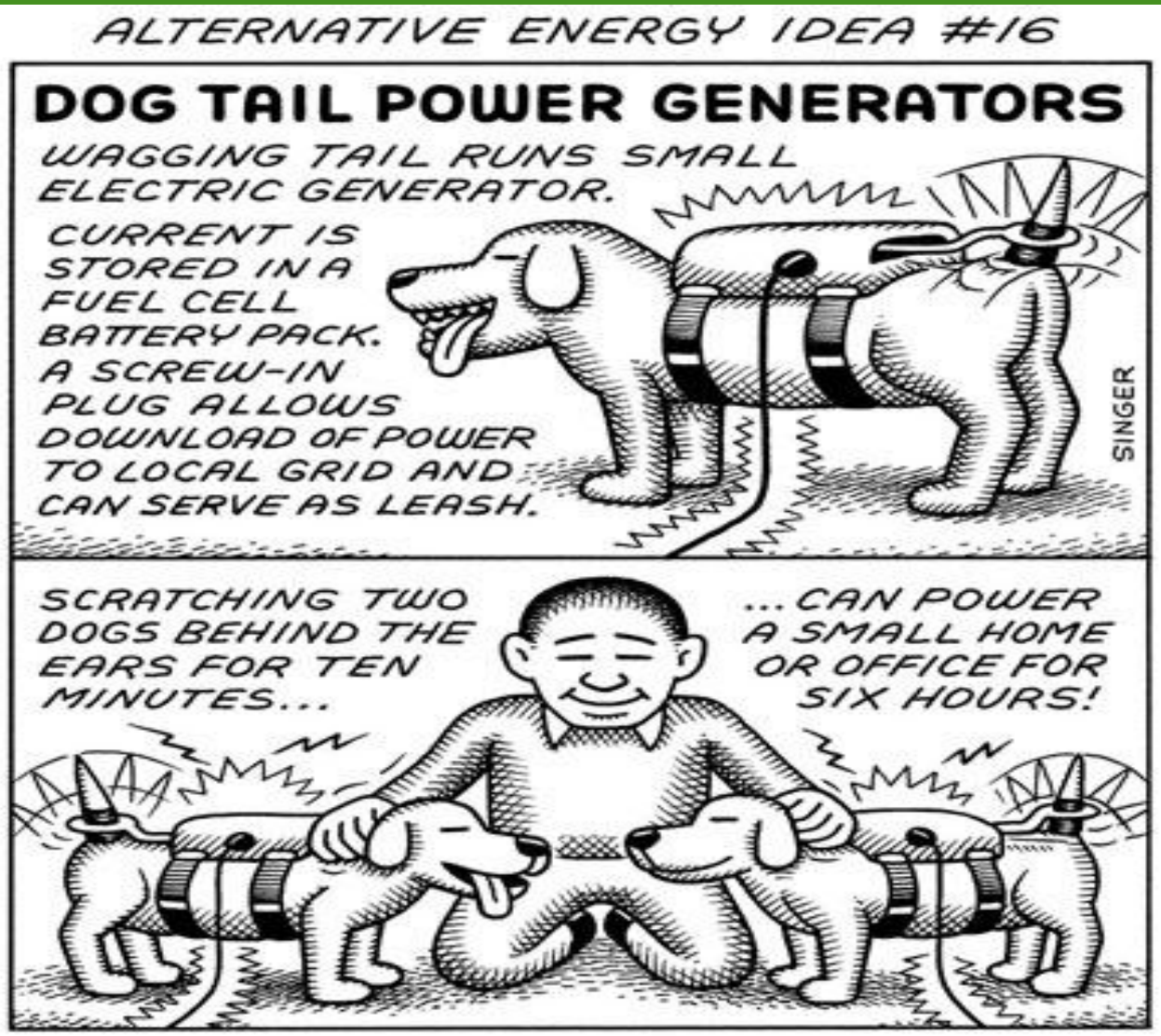
Priority Measures

- Expand subhourly dispatch and intra-hour scheduling.(FERC 764) Reduces need for reserves and provides better access to variable RE.
- Facilitate dynamic transfers between balancing authorities. Allows for access to RE outside of BA and reduces costs.
- Implement an energy imbalance market (EIM). Real time awareness improves reliability and captures benefits of geographic diversity of RE via access outside existing BA's.
- Improve weather, wind and solar forecasting. Reduces imbalance costs and increases efficiency.
- Take advantage of geographic diversity of resources. Wind and solar output varies across wide areas of west. Capture wind and solar complements and reduce variability of aggregate RE.

Priority measures (continued)

- Improve reserves management. Reserves currently are over committed and costly.
- Retool demand response to complement variable supply. Demand response may reduce curtailment of variable generation and avoid need for fossil generation.
- Access greater flexibility in the dispatch of existing generating plants. Variable renewables are not fully dispatched and existing fossil generation plants are not operated as flexibly as they could be, leading to higher emssions.
- Focus on flexibility for new generating plants. New natural gas plants should be manufactured for increased flexibility for load following of variable generation.

We Need it All



The Cost of Not Building Transmission

Cameron Yourkowski

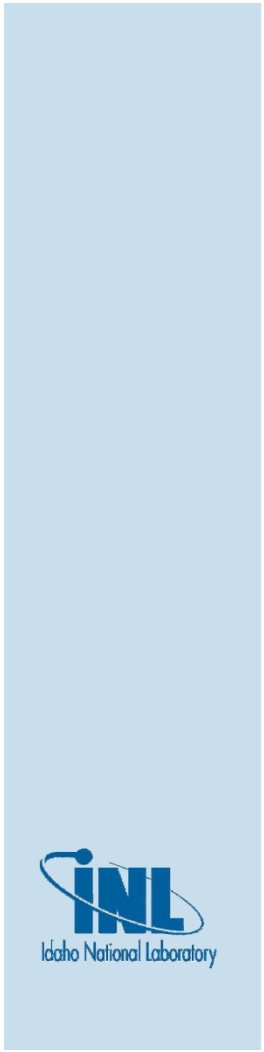
ACEG Webinar

September 19, 2013

Renewable Northwest Project

Overview:

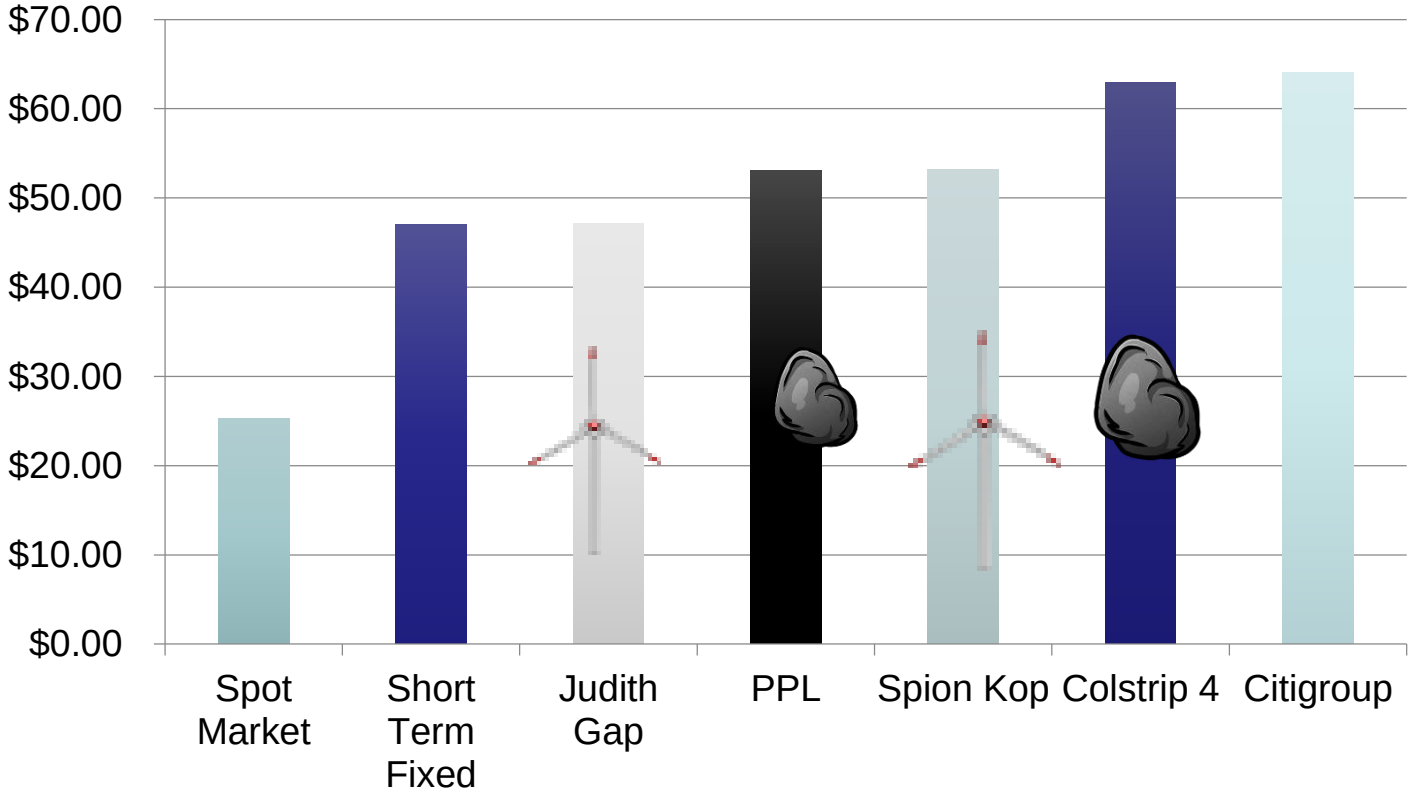
- Diversity benefits
- Efficient use of the existing system
- MT-WA transmission upgrade
- Access to low cost superior resources
- Siting
- Cost allocation



- **MT-to-WA Upgrade**
  - 45% CF wind
  - HLH/Winter peaking
- 600 MW new capacity
  - One new substation
  - Upgrade 4 substations
  - Reconductor 14 miles
  - $100-200 million
- No new right-of-way
- NEPA review
- 2015 Construction?

Transmission Investments Avoid More Expensive Generation Costs:

- Unit Prices of Selected Sources of NorthWestern's Electric Supply (January 2009 through June 2012) $/MWh



http://psc.mt.gov/Consumers/energy/pdf/NorthWesternElectricRateGraphs.pdf

Discussion:

- Siting
  - http://www.mstireviewproject.org/blog/msti-video/
- Cost Allocation
  - Individual benefits
    - Utility contracts
    - Lower rates
  - Social Benefits
    - Reliability
    - Environmental

THANK YOU

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