

NARUC  Winter

Policy Summit

**Subcommittee
on
Nuclear Issues – Waste
Disposal**

Nuclear Energy and Spent Fuel Update

11:15 am – 12:15 pm

Moderator: Hon. Tim Echols, Georgia

Panelists:

Richard Donohoe, Managing Director, J.S. Held LLC

Dr. Sunil Felix, Nuclear Advisor, French Embassy

Paul Murray, Deputy Assistant Secretary for Spent Fuel and
Waste Disposition, U.S. Department of Energy, Office of
Nuclear ENergy

Doug True, Chief Nuclear Officer & SVP of Technical and
Regulatory Services, NEI



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National Association of Utility Regulatory Commissioners (NARUC)

Nuclear Energy Value Update

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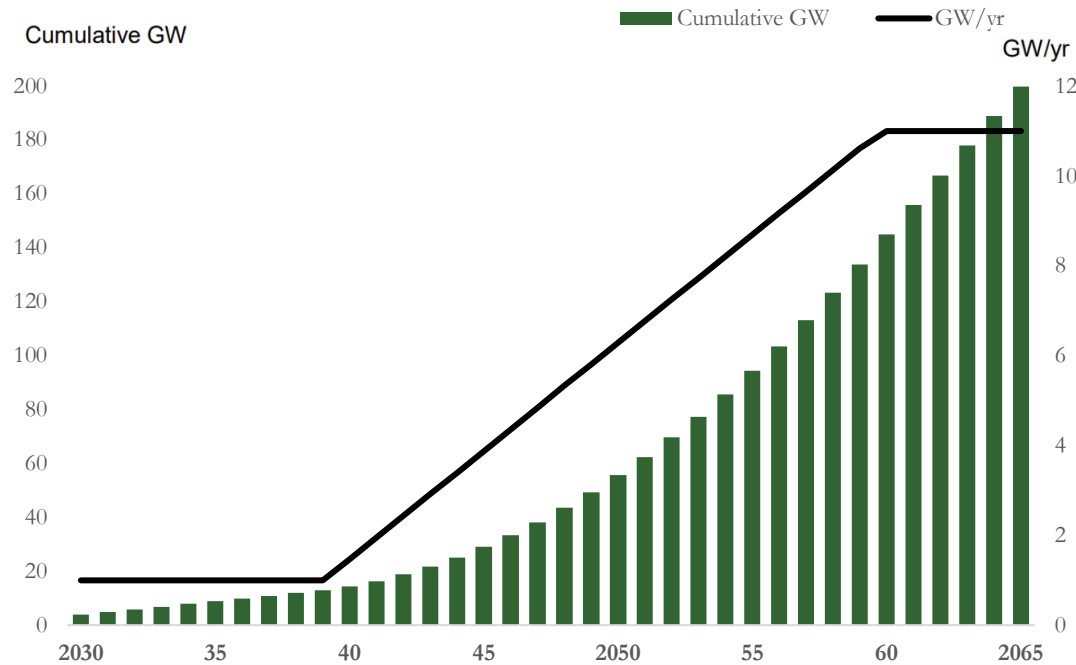
February 25, 2024



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DOE Forecast – DOE vs. Reality



Adjusted Assumptions:

- Regulatory limitations (e.g., NRC)
- Labor & materials limitations
- Focus on right markets (e.g., industrials)
- Regulated Utility scale nuclear deployment commencing in 2040?
- Steady-state 11 GW/yr. deployment by 2065
- LCOE \$94 MWh excluding subsidies
- USA/EU: Can we beat CCGT \$65/MWh
- Resilience and reliability cost factors
- Loss of GDP factors (Uri)
- Data/AI loss of GDP factors and 30-40% reduction in CAPEX

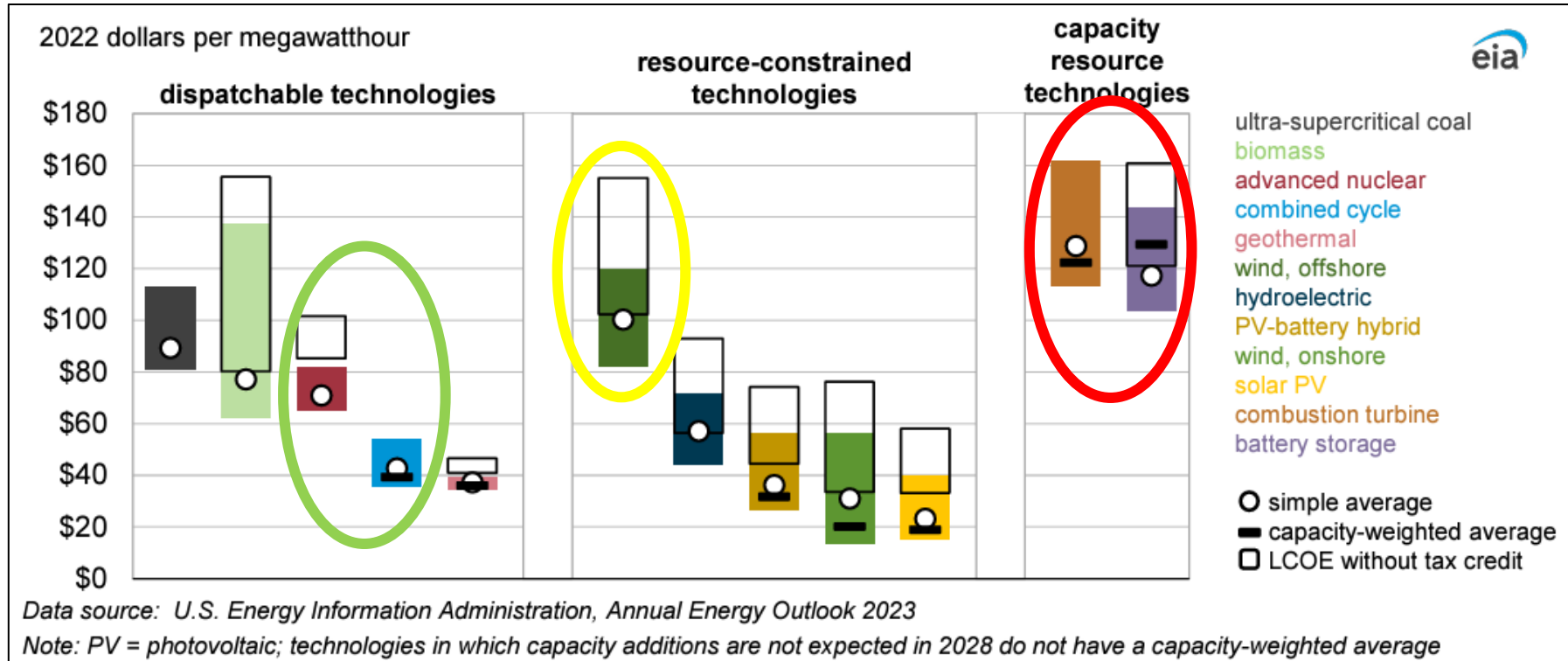
DOE Assumptions Overly Optimistic:

- ~375,000 workers by 2050 dedicated to construction, manufacturing, and operations (10 NOAK by 2025)
- NOAK overnight costs total ~\$3,600/kW & LCOE of \$66/MWh

Adjusted Assumptions:

- Life Cycle Reality: Incentives degradation in EV Vehicles & semi-conductor = incentive down score (25%)
- Total Life Cycle Costs (e.g., Renewable insurance premiums up 15% - 45% across the solar industry, 37% average renewable)
- High hazard zones - Extreme weather production capacity disruption

LCOE Comparison Across Technologies (Competition)



1000 MWE Nuclear (80 yrs.) = 5,000 MWE (Renewable) + 8,000 MWE (Gas/Battery backup)
Total life-cycle costs reduced with nuclear as you are not constantly replacing, reinsuring, operations & maintenance and paying for site decommissioning



LCOE Sensitivities – FOAK Deployment Delays and the Price of Fuel

Vendor LCOE Sensitivity Analysis (Fuel Price and FOAK Deployment)

HALEU (\$/kg)	Year of FOAK Deployment							
	2028	2029	2030	2031	2032	2033	2034	2035
7,000	\$ 59.00	61.00	62.00	63.00	64.00	66.00	67.00	68.00
12,000	66.00	69.00	71.00	73.00	74.00	76.00	78.00	81.00
15,000	71.00	74.00	76.00	78.00	80.00	83.00	85.00	88.00
20,000	78.00	82.00	85.00	87.00	90.00	94.00	97.00	101.00

Vendor LCOE Sensitivity Analysis (Capacity Factor)

	<i>Year 1</i>	<i>Year 2</i>	<i>Year 3</i>	<i>Year 4</i>	<i>Year 5</i>					
Capacity Factor (%)	75%	80%	85%	90%	95%					
LCOE (\$)	68.00									
	<i>Year 1</i>	<i>Year 2</i>	<i>Year 3</i>	<i>Year 4</i>	<i>Year 5</i>	<i>Year 6</i>	<i>Year 7</i>			
Capacity Factor (%)	65%	70%	75%	80%	85%	90%	95%			
LCOE (\$)	71.00									
	<i>Year 1</i>	<i>Year 2</i>	<i>Year 3</i>	<i>Year 4</i>	<i>Year 5</i>	<i>Year 6</i>	<i>Year 7</i>	<i>Year 8</i>	<i>Year 9</i>	<i>Year 10</i>
Capacity Factor (%)	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%
LCOE (\$)	74.00									



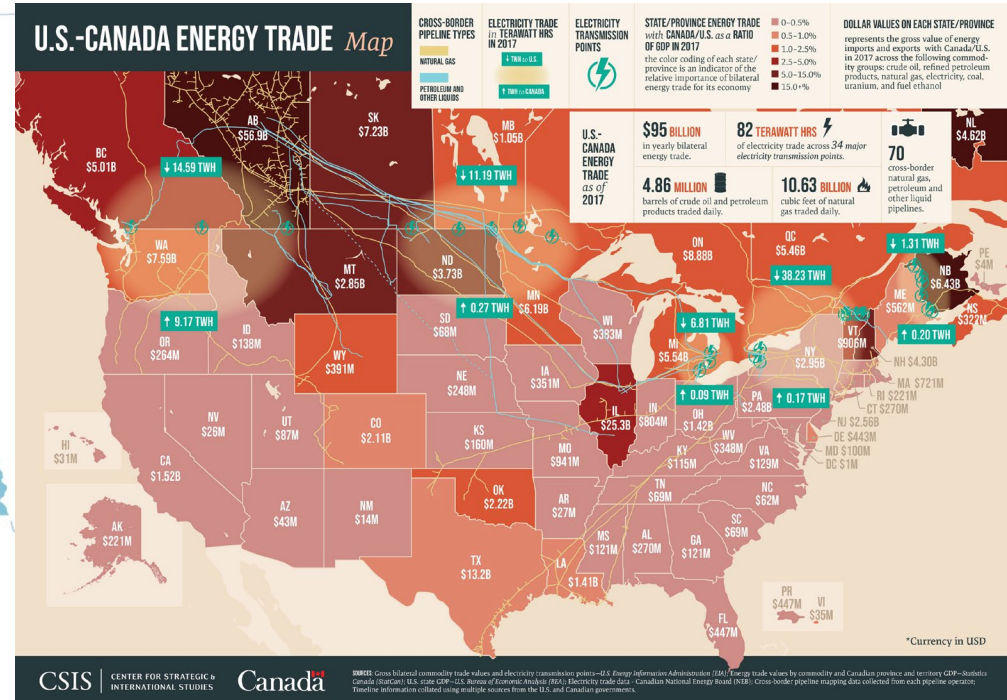
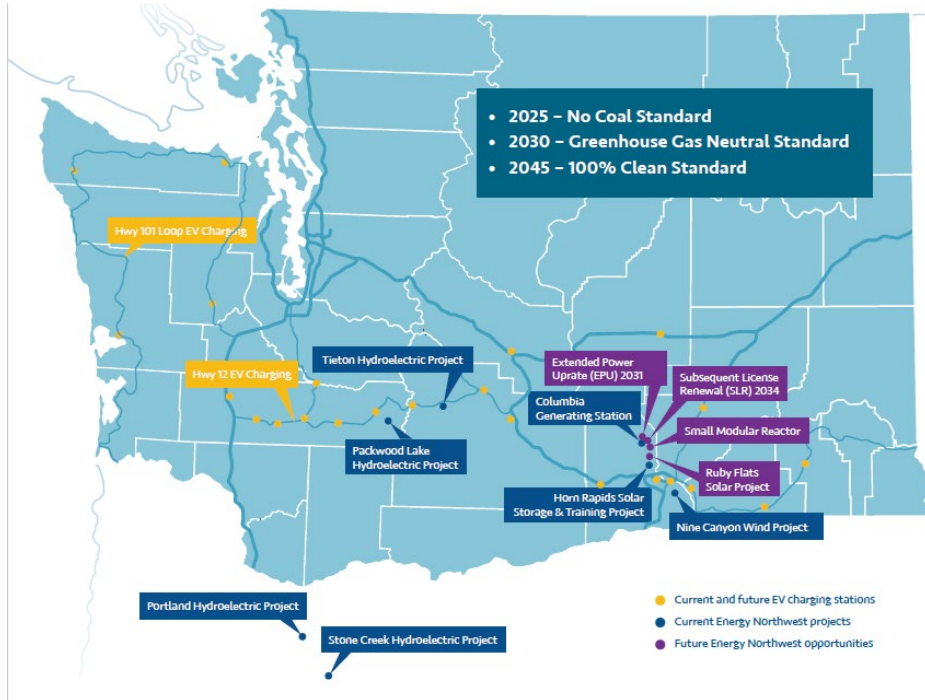
North American Intersection SMR Off-Take Agreements, Transmission, Data Centers and AI

Bonneville Power Authority (BPA) – Bulk Transmission

- 31 Federal Dams and Clean Hydro, existing nuclear
- Access to eastern WA, OR, ID, UT, WY and NV
- Cooler locations for Data Center/AI, easier to permit

USA / Canada Border

- Significant existing cross border hydro and nuclear sales
- Expand capacity (e.g., New Brunswick, Ontario, Sask, Alberta)
- Cooler locations for Data Centers/AI



Nuclear Energy and Spent Fuel Update

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Break for lunch

Meetings resume at 1:30 pm

**Check app for sessions and
locations**