

Renewable Energy

What's Your Flashpoint?

Karl R. Rábago

Rábago Energy LLC

2023 Clean Energy Legislative Academy
Center for the New Energy Economy

Rábago Energy LLC

- 33+ years utility regulation & markets, plus bioplastics and biofuels.
- Testimony in 165+ cases & proceedings.
- Attorney.
- Other: Armored Cavalry Officer, JAG, TX PUC Commissioner, DOE Deputy Assistant Secretary, utility executive, environmental advocate, sustainability manager, carbon credit developer, law professor, R&D manager, blockchain business advisor, etc.

Electricity Sector Transition & Transformation

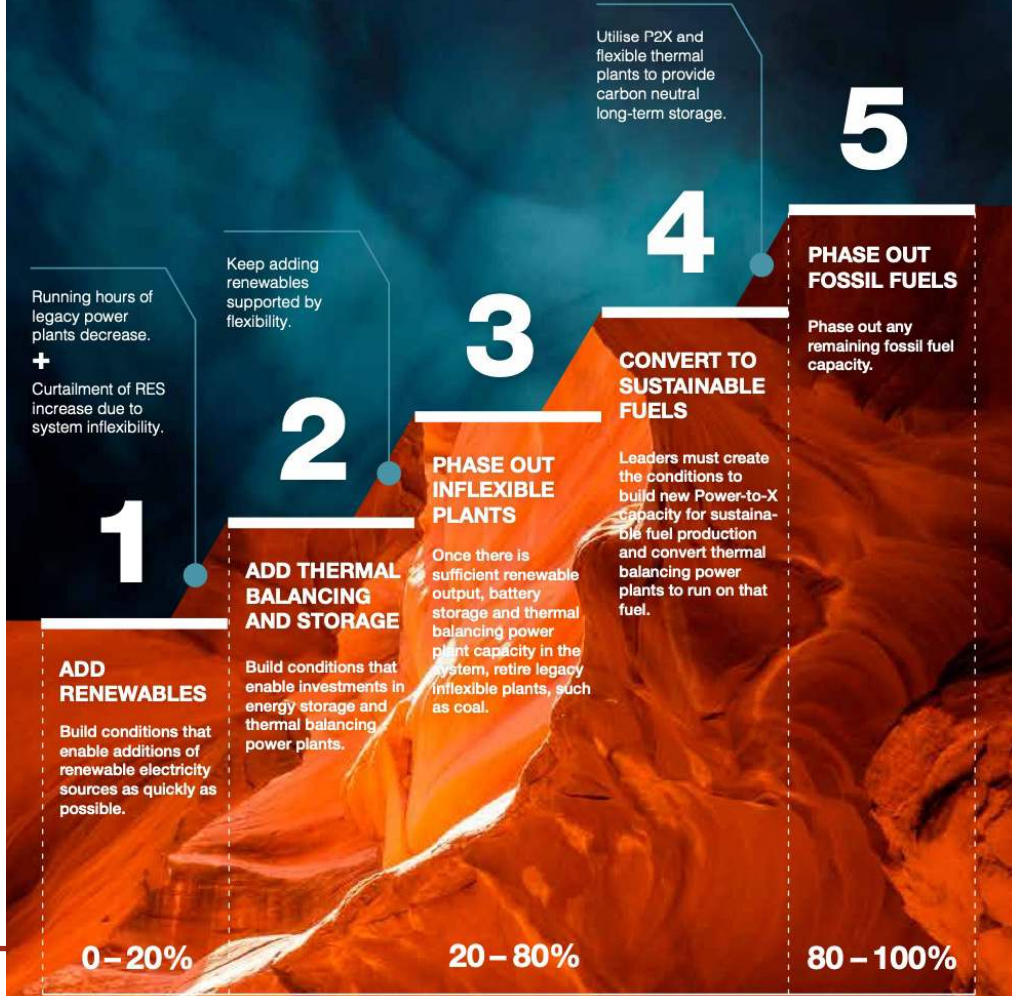
- Decarbonization
- Managed decapitalization of the fossil methane gas system
- Customer engagement
 - Increased capabilities to adopt emerging technologies
 - Increased information about usage (data)
 - Increased range of energy management services
 - Enable distributed energy resource market “animation”
- Reliability and resilience improvements
 - Sensing and downstream visibility
 - Improved information base for repairs, service
 - Self-healing capability, automation, distributed energy resources
- Reduced costs
 - After it is paid for
 - If utilities and regulators resist urge to “gold plate” the distribution grid, chose the most expensive options, or delay adoption of cost-effective alternatives

“Front-Loading Net Zero” – Wärtsilä

- “We see that the transition to 100% renewable energy systems is set to accelerate at an eye-popping rate. It is no longer a question of if we’ll make the journey, but when we’ll arrive at a decarbonised future.”
- “Our analysis shows that net zero is feasible in every region as we already have all the technologies needed. The key is to front-load and start now.”
- Our country-level analysis clearly shows decarbonisation is not just possible – it is technically and commercially feasible with technologies that are already available at scale. These technologies include:
 - Wind and solar photovoltaic (PV) as the main sources of primary energy.
 - Short-duration battery energy storage.
 - Flexible thermal balancing power plants to provide firm and dispatchable capacity.
 - Sustainable fuels used in thermal balancing power plants, forming long-term energy storage. (Sustainable fuels include green hydrogen and hydrogen-based fuels, such as ammonia, methanol and synthetic methane produced from renewable sources).

<https://www.wartsila.com/front-loading-net-zero>

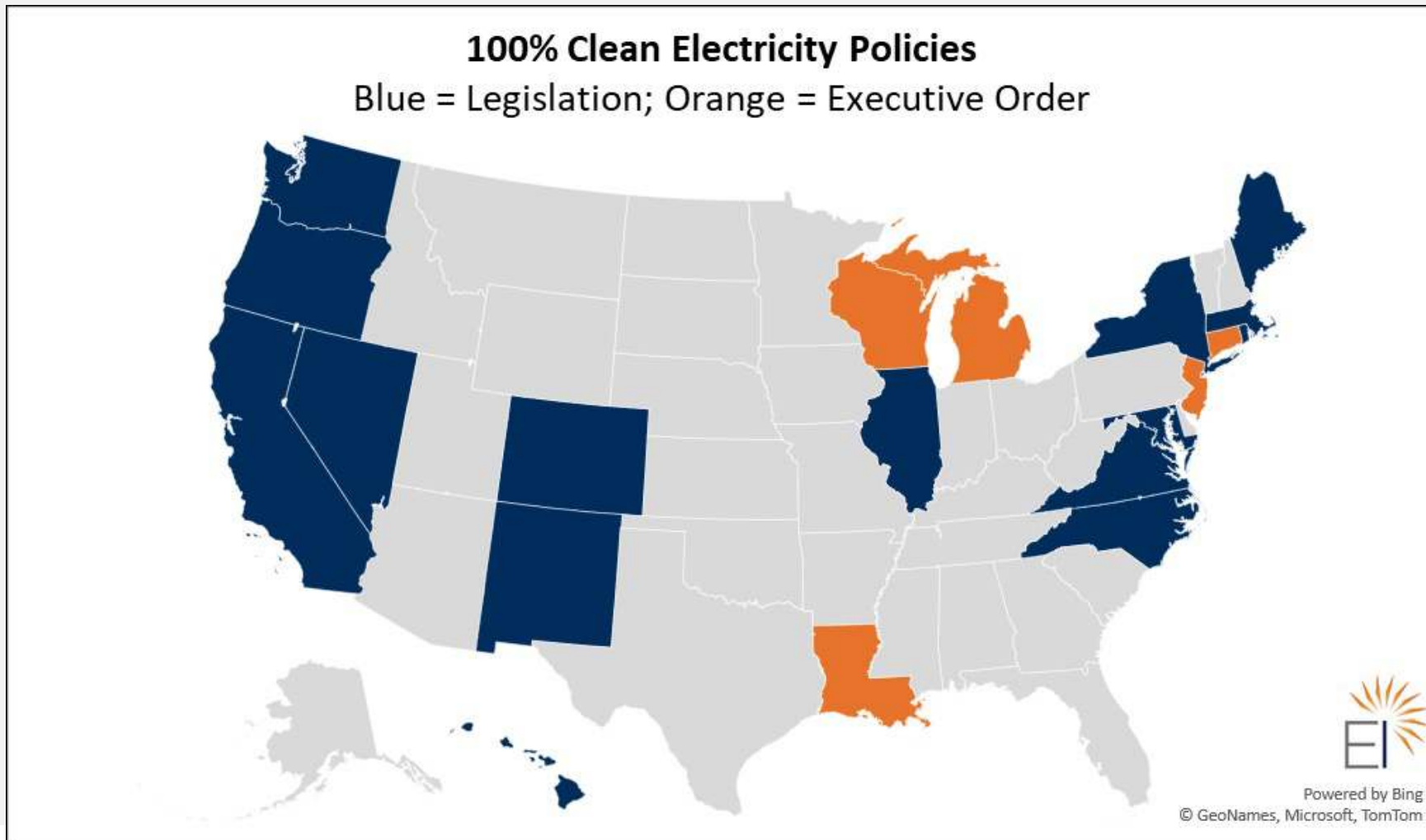
THE KEY STEPS TO
**FRONT-LOAD
NET ZERO**



SHARE OF RENEWABLE ENERGY SOURCES

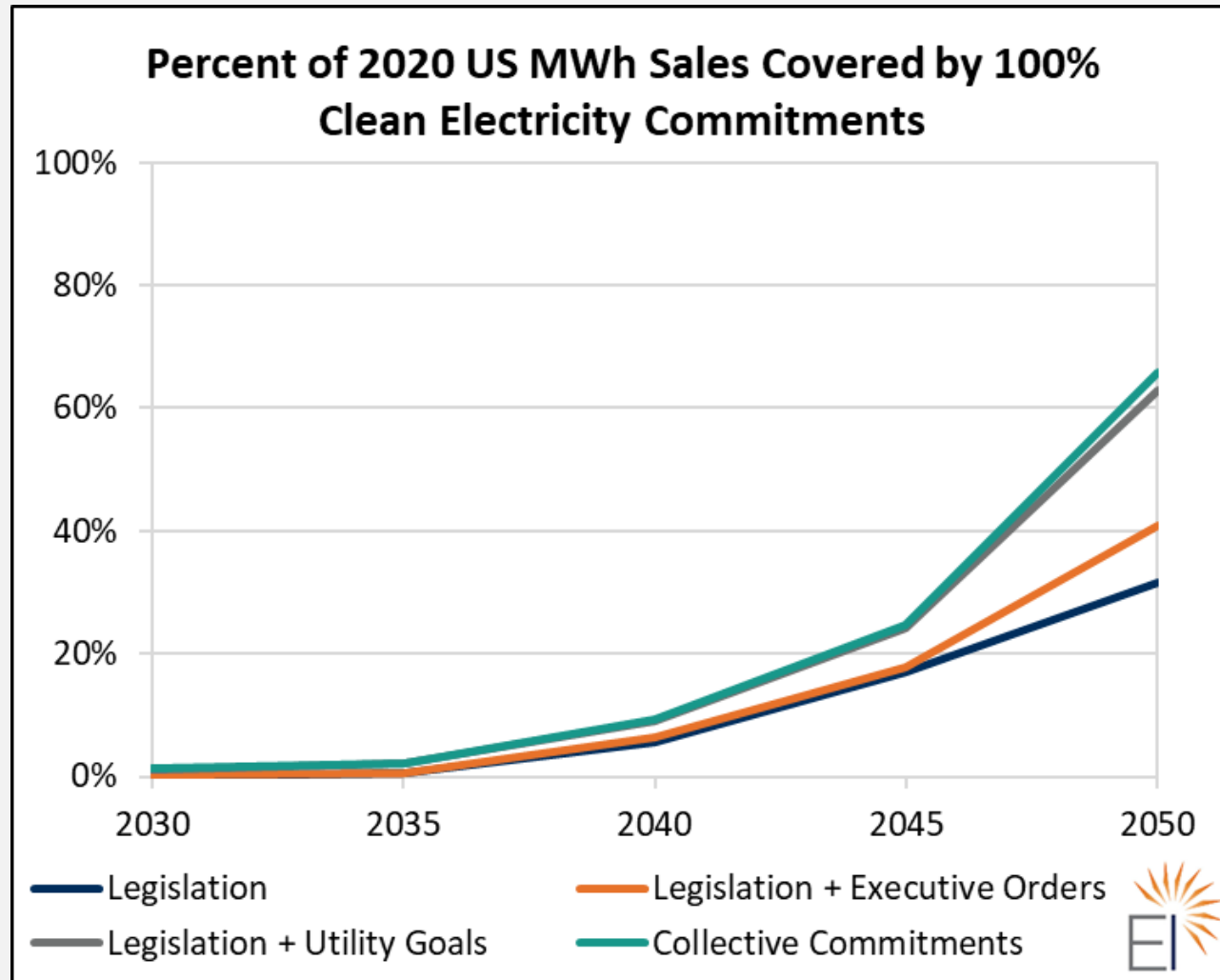


States are leading the way, but can go faster



Utilities are following suit

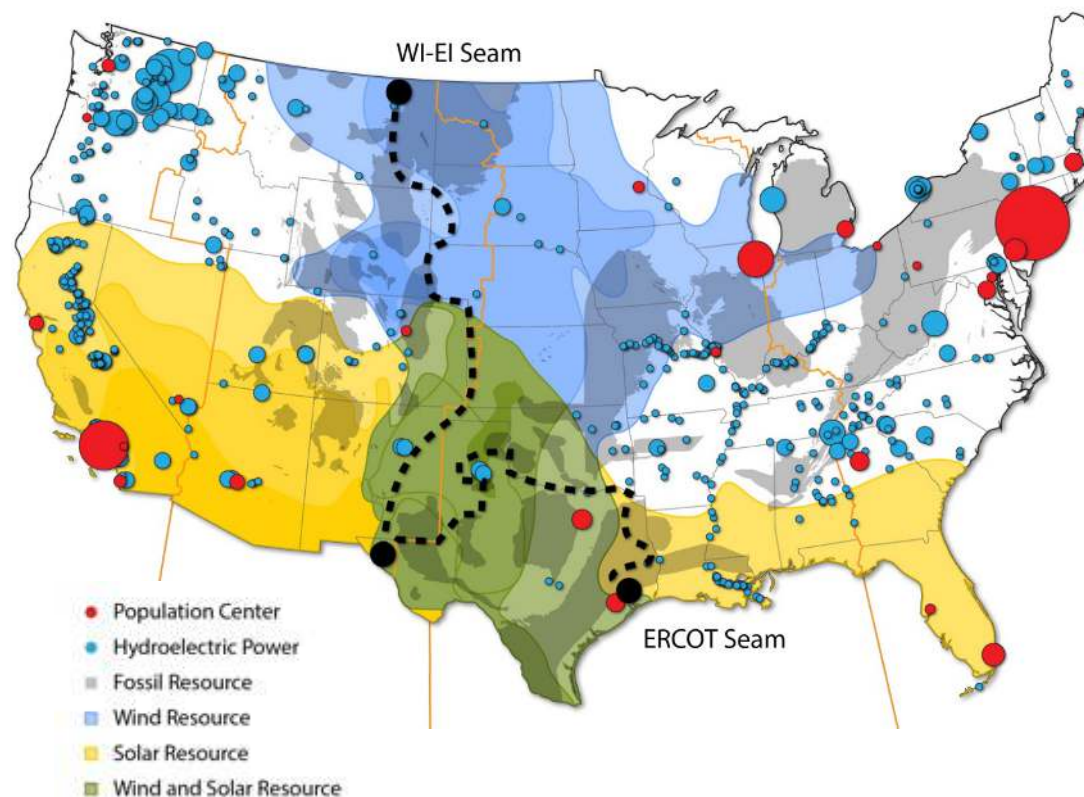
39 of the 41 largest utilities have committed to net zero



Transmission policies

WHY?

- Access to the best wind and solar resources
- Strengthening links between regions reduces the overall cost to consumers
- Improved resilience during extreme weather
- FERC is not doing enough, and states can take charge



<https://www.cotransmissionauthority.com/>

What's Your Flashpoint?

- Decarbonization
- Reliability & Resilience
- Portfolio Management & Planning
- Job & Business Creation
- Job & Business Attraction
- Future Generations
- Business Protection
- Technological Innovation
- Energy Justice/Equity

Thank you!

Karl R. Rábago

Rábago Energy LLC

karl@rabagoenergy.com

512.968.7543

@rabagoenergy