MOVING FORWARD WITHOUT NUCLEAR

Montana's Path to Clean, Reliable Electricity



MEIC

MONTANA CHAPTER

Spoiler Alert: Idaho NuScale Project Failed

UTILITY DIVE Deep Dive Opinion Library Events Press Releases

Generation T&D Grid Reliability Electrification Load Management Renewables Storage

NuScale, UAMPS terminate small modular reactor project in Idaho

NuScale and the Utah Associated Municipal Power Systems determined that the 462-MW project would likely not reach a sufficient subscription level to continue toward deployment.

Published Nov. 9, 2023





Energy | Industry Insight

Cancelled NuScale contract weighs heavy on new nuclear

By Paul Day

January 10, 2024 10:15 AM MST · Updated 15 days ago



We Need An Energy System That Is:

> Affordable

- ≻ Reliable
- > Equitable
- ≻ Carbon Free





NorthWestern rate increase hits 28% for residential customers

Lutey Oct 26, 2023 🔍 15



Montana Court Reverses on \$283M Gas Power Plant Project Halt

Project is also core to separate lawsuit by 16 plaintiffs, aged five to 22, against Montana for violating state constitution in promoting fossil fuel development



July 14, 2023 No Comments

Urgency of Decarbonizing Energy

• Climate change primarily driven by fossil fuels







Urgency of Decarbonizing Energy

- Climate change primarily driven by fossil fuels
- Energy decarbonization technologies readily available
 - Not waiting around for nuclear







History of the Nuclear Energy Industry

- Softening image of the nuclear bomb
 - Atomic Energy Commission
 - "Atoms for Peace"
 - Folded into Department of Energy (DOE)



- DOE oversees nuclear energy & warhead arsenal
 - ~²/₃ of DOE's budget
 - Biased towards nuclear



How Does Nuclear Electricity Generation Work?

- Fission:
 - An expensive way to boil water







Challenges of Nuclear

- High Risk Investment
 - Ballooning costs
 - Runaway timelines
 - Project failure



- Industry marked by corruption and deceit
- Highly Subsidized
 - DOE and ratepayers tax dollars and utility bills



SMRs Another False Prophet Profit

- History of PR Stunts and Failed Rebranding
 - "Atoms for Peace"
 - "Too Cheap to Meter"
- Now SMRs...
 - "Economies of scale"
 - Failed NuScale project in Idaho an indicator of what's to come





(Rendering of failed NuScale Project)



Not to Mention Safety and Environmental Concerns...

- Threat to National Security
- No long-term waste repository
- Potential groundwater contamination
- On-site radioactivity after plants close
- Uranium mining
 - New and old damage and injustice





What About Fusion?





What About Fusion?

- Challenging to replicate conditions at the Sun's core on Earth's surface
 - First "ignition" in 2022

- Utility-Scale decades away at the soonest
 - Economic viability yet to be seen





If Not Nuclear, How to Achieve Reliable, Affordable, Carbon-Free Electricity?

- Nuclear investments divert funding and attention from where it is needed in the energy transition
 - Transmission
 - Renewables & Storage
 - Energy Efficiency & DSM
 - Regional Power Sharing
 - Future grid management that is more connected, efficient, and dynamic







An Energy System That's Bigger Than the Weather









Montana Wind Oregon & Washington Wind

January 2012 Average Hourly Capacity Factors



Peak Demand Hours

Energy Strategies LLC

Current System: Bilateral Markets



- Fine when energy and capacity are available
- High demand and/or low supply leads to:
 - High prices
 - Volatility & huge spikes during extreme peaks
 - Gas "peakers" become more prevalent
 - Transmission constraints



Benefits of the Western Energy Imbalance Market (EIM)

Participants BHE Montana – entry 2026 Avangrid – entered 2023 El Paso Electric – entered 2023 WAPA Desert Southwest Region – entered 2023 Bonneville Power Administration – entered 2022 Tucson Electric Power – entered 2022 Avista – entered 2022 Tacoma Power – entered 2022 NorthWestern Energy – entered 2021 Los Angeles Department of Water & Power – entered 2021 Public Service Company of New Mexico – entered 2021 **Turlock Irrigation District – entered 2021** Salt River Project – entered 2020 Seattle City Light – entered 2020 Balancing Authority of Northern California – entered 2019 Idaho Power Company – entered 2018 Powerex – entered 2018 Portland General Electric – entered 2017 Puget Sound – entered 2016 Arizona Public Service – entered 2016 NV Energy – entered 2015 PacifiCorp – entered 2014 California ISO – entered 2014



Benefits of the WEIM

\$5.05 billion - gross benefits since 11/14

925,568 metric tons - CO2 Emissions Reductions since 2014

\$74 million - NorthWestern Energy's Benefits since 6/21



2023 Q3 BENEFITS

\$462.05 M

Gross benefits realized due to more efficient inter-and intra-regional dispatch in the Fifteen-Minute Market (FMM) and Real-Time Dispatch (RTD)*

ENVIRONMENTAL 25,728

Metric tons of CO₂** avoided curtailments

OPERATIONAL

Average reduction in flexibility reserves across the footprint

Regional Market Development Phases

- 1. Energy Imbalance Market
- 2. Energy Day Ahead Market (EDAM)
- Regional Transmission Organization (RTO) or Independent System Operator (ISO)



Thank You!

Questions?

