# Control Number: 55421

Item Number: 34

**Jimmy Glotfelty** 

Commissioner



**Greg Abbott** 

Governor

# Public Utility Commission of Texas

455421

Texas Advanced Nuclear Reactor Working Group Meeting

November 16, 2023, 10:00 am CDT

Agenda and Minutes

#### Agenda:

- 1. Introduction/welcome remarks (Jimmy Glotfelty)
  - a. Discussion of Leadership changes with Doug, Derek, and Mike
  - b. Expectations and Desires for WG / Plan December meeting.
- 2. Presentation on subgroup participation survey results and proposed subgroup meeting structure and leadership (Derek Haas, UT) followed by Q&A.
- 3. ERCOT Presentation (Pablo Vegas, President & CEO) followed by Q&A
  - a. Discussion of:
    - i. Ercot load growth
    - ii. EPA regulations
    - iii. Market design/re-design/incentives need for Nuclear.
- 4. General Working Group discussion/Public input.

#### Minutes:

The meeting started at 10:00 am and went until 11:36 am. Approximately seventyfive people joined in.

Jimmy stated that the Working Group now has a year to go to meet its deadline and it is time to really get the work started. The goal today is to inform the group of his idea to share the burden by selecting a new leadership team. The new team is Doug Robison, Mike Kotara and Derek Haas, who all agreed to take on delegated authority

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to help manage the actual nuts and bolts of the now four pillars/subgroups. These groups are: Development and Manufacturing, Market Demand/End Users, State & Federal Regulatory, Higher Ed/R&D. He also shared that Nuclear Regulatory Commissioner David Wright had agreed to go to Abilene Christian University in early December, and the Working Group's next meeting will be in conjunction with that visit, so the group can hear from and ask questions about the NRC licensing process. He also said it had been a challenging week nationally in the news about SMRs, but we should view this as a 'blip, not a barrier' to our work. Skip Alvarado addressed the NuScale news reports, saying the challenge was not their technology, but the agreement with the potential end users.

Derek Haas (UT) shared his two slides depicting the individual members' responses to the brief survey sent out on November 13<sup>th</sup>, as well as a proposed meeting template for each subgroup to use for its meetings. The membership and Chairs will be shared as this is finalized.

Pablo Vegas (ERCOT) discussed the three items listed in the agenda. He also shared two slides showing the Lazard Levelized Cost of Energy Comparison (one with federal tax subsidies sensitivities) and walked through their meaning. The estimated base load growth will increase about 20% (from 85 to 102 Gigawatts) in the next ten years, according to ERCOT projections, much of it new industrial. There was robust Q&A and chat comments with Pablo about the ERCOT market design.

Comments included the following: Industrials value reliability more than cost (Eric with Lyondell Basel); should there be a communications subgroup, and should the State & Federal group also incorporate local governments? (Andrew and Commissioner Meyers with Ft. Bend County); there is some modeling showing ERCOT with nuclear (Eugene with IEEE).

Attachments: Derek's slide (1 page).

Pablo's slides (2 pages).



### Highest Priority (36 total responses, 29 complete and unique)

First Second





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# Levelized Cost of Energy Comparison—Unsubsidized Analysis

#### Selected renewable energy generation technologies are cost-competitive with conventional generation technologies under certain circumstances



Source. Lazard and Roland Berger estimates and publicly available information

Here and throughout this presentation, unless otherwise indicated, the analysis assumes 60% debt at an 8% interest rate and 40% equity at a 12% cost. See page titled "Levelized Cost of Energy Comparison-Sensitivity to Note: Cost of Capital" for cost of capital sensitivities

Given the limited data set available for new-build geothermal projects, the LCOE presented herein represents Lazard's LCOE v15.0 results adjusted for inflation.

(2) The fuel cost assumption for Lazard's unsubsidized analysis for gas-fired generation resources is \$3.45/MMBTU for year-over year comparison purposes. See page titled "Levelized Cost of Energy Comparison—Sensitivity to Fuel Prices' for fuel price sensitivities

(3) Given the limited public and/or observable data set available for new-build nuclear projects and the emerging range of new nuclear generation strategies, the LCOE presented herein represents Lazard's LCOE v15.0 results adjusted for inflation (results are based on then-estimated costs of the Vogtle Plant and are U.S.-focused).

(4) Represents the midpoint of the unsubsidized marginal cost of operating fully depreciated gas combined cycle, coal and nuclear facilities, inclusive of decommissioning costs for nuclear facilities. Analysis assumes that the salvage value for a decommissioned gas combined cycle or coal asset is equivalent to its decommissioning and site restoration costs. Inputs are derived from a benchmark of operating gas combined cycle, coal and nuclear assets across the U.S. Capacity factors, fuel, variable and fixed operating expenses are based on upper- and lower-quartile estimates derived from Lazard's research. See page titled "Levelized Cost of Energy Comparison-Renewable Energy versus Marginal Cost of Selected Existing Conventional Generation Technologies" for additional details.

(5) Given the limited public and/or observable data set available for new-build coal projects, the LCOE presented herein represents Lazard's LCOE v15.0 results adjusted for inflation. High end incorporates 90% carbon capture and storage ("CCS"). Does not include cost of transportation and storage.

Represents the LCOE of the observed high case gas combined cycle inputs using a 20% blend of "Blue" hydrogen, (i.e., hydrogen produced from a steam-methane reformer, using natural gas as a feedstock, and sequestering the resulting CO, in a nearby saline aquifer). No plant modifications are assumed beyond a 2% adjustment to the plant's heat rate. The corresponding fuel cost is \$5.20/MMBTU, assuming -\$1.40/kg for Blue hydrogen. Represents the LCOE of the observed high case gas combined cycle inputs using a 20% blend of "Green" hydrogen, (i.e., hydrogen produced from an electrolyzer powered by a mix of wind and solar generation and stored in a nearby salt cavern), No plant modifications are assumed beyond a 2% adjustment to the plant s heat rate. The corresponding fuel cost is \$10.05/MMBTU, assuming -\$4.15/kg for Green hydrogen.

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# Levelized Cost of Energy Comparison-Sensitivity to U.S. Federal Tax Subsidies

The Investment Tax Credit ("ITC"), Production Tax Credit ("PTC") and domestic content adder, among other provisions in the IRA, are important components of the levelized cost of renewable energy generation technologies



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