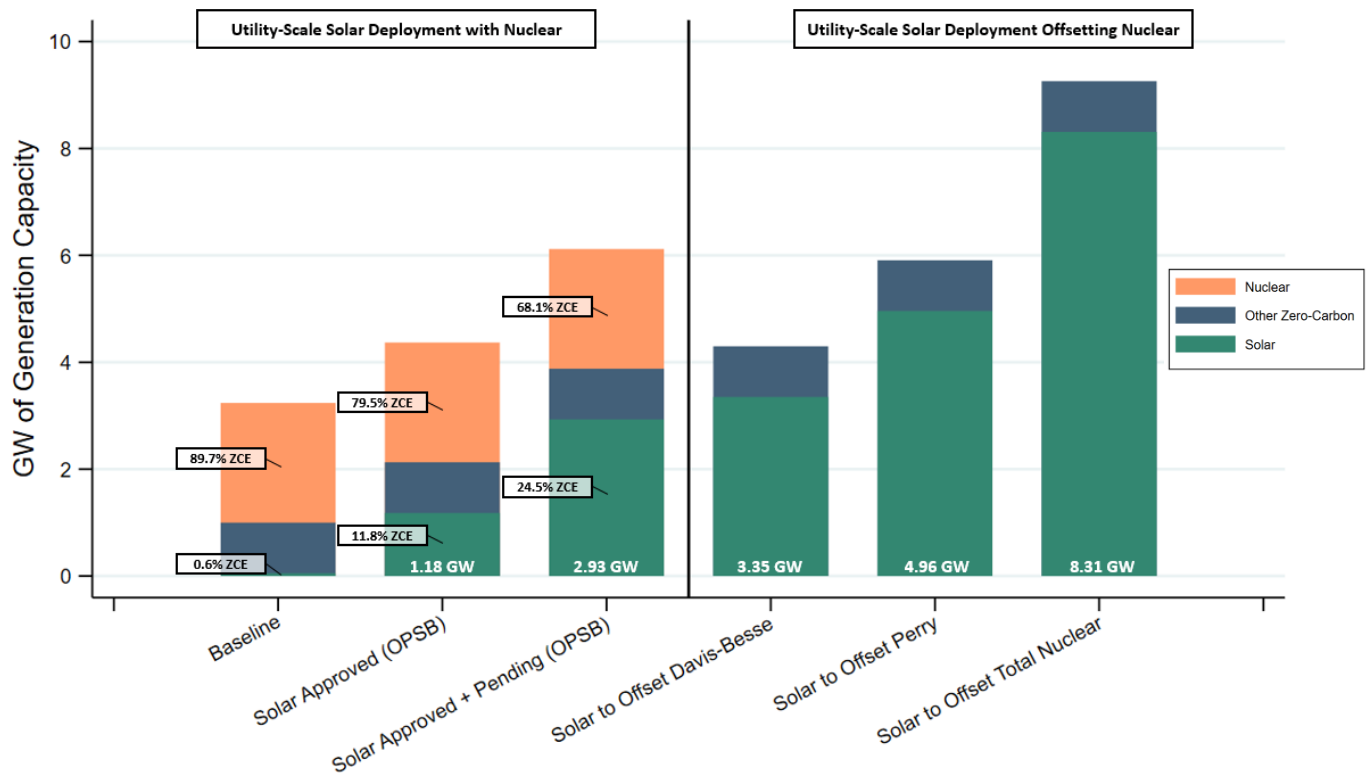




ZERO-CARBON ELECTRICITY STRATEGIES FOR OHIO: COMPARING SOLAR TO NUCLEAR ¹

- Currently, zero-carbon (i.e., non-polluting) electricity accounts for 17.2% of Ohio’s total generation, 89.7% of which is from nuclear energy (roughly 2.24 total gigawatts (GW)).
- The State of Ohio has two operating nuclear plants: Davis-Besse and Perry. Davis-Besse generates about **7.4 million megawatt hours (MWh)** of electricity, while Perry generates about **10.9 million MWh**. Taken together, this represents 15.5% of Ohio’s total electricity generation (from *all* sources).
- As of July 2020, 1.18 GW of utility-scale solar energy projects, another source of zero-carbon electricity, have been approved by the Ohio Power Siting Board (OPSB), with an additional 1.75 GW pending, summing to **2.93 total GW (or 6.5 million MWh of potential generation)**. On average, these projects have 12–18 month construction timeframes.
- If constructed, this 2.93 GW of solar would represent **24.5%** of the zero-carbon electricity in Ohio, assuming that Davis-Besse and Perry remain open. In this scenario, nuclear’s share of zero-carbon electricity would decrease from 89.7% to **68.1%**.
- As shown below, **8.31 GW of solar energy** would be needed to offset the total generation lost if the two nuclear plants were no longer operating. To compare, 3.90 GW of coal generation would be needed to offset the nuclear plants, yet at the cost of an additional 19 million tons (Mt) of annual greenhouse gas (GHG) emissions. Ohio currently emits 75 Mt of GHGs.

Zero-Carbon Electricity (ZCE) Mix by Solar Deployment Scenario



Note. This figure illustrates potential utility-scale solar growth scenarios as part of Ohio’s total zero-carbon electricity strategy. Our baseline (i.e., current) scenario specifies that nuclear energy supplies nearly 90% of Ohio’s zero-carbon electricity (denoted here as ZCE), while solar represents 0.6%. If all 2.93 GW of solar facilities in the OPSB queue are built, solar would represent 24.5% of Ohio’s ZCE, and nuclear 68.1% of Ohio’s ZCE. The right-hand side of the figure displays the GW totals of solar that would need to be constructed to offset the generation lost if Davis-Besse was retired, Perry was retired, and then if both were retired. “Other Zero-Carbon” electricity sources incorporated here include hydropower and wind, which we assumed were held constant for analysis simplicity.

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