



**Institute for Energy Economics
and Financial Analysis**

Financial Risks of Undertaking New Nuclear Reactors

New York State Legislator Briefing

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January 15, 2025



**Institute for Energy Economics
and Financial Analysis**

My Background

- Engineering Degrees from the Massachusetts Institute of Technology (MIT) and Stanford University
- Law Degree from Stanford School of Law
- Studied nuclear engineering & project management courses in non-degree program at MIT
- Worked on energy, utility and environmental issues for over five decades
- Testified as an expert witness in state regulatory commissions in over 35 U.S. states, before the U.S. Nuclear Regulatory Commission (NRC) and the Federal Energy Regulatory Commission (FERC), and in state and federal court proceedings
- Filed expert testimony in over 130 state regulatory commission proceedings
- See my work at www.ieefa.org and www.Schlissel-technical.com

New Nuclear Reactor Benefits and Risks

Benefits

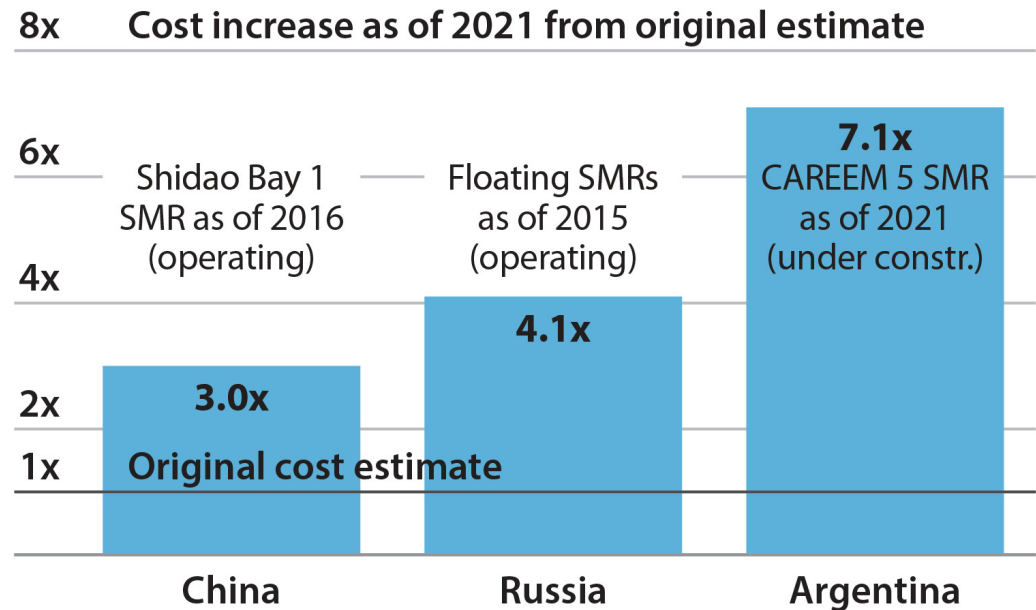
- Would reduce greenhouse gas emissions but at a very high total cost to ratepayers and taxpayers and will take many years to build.
- There are less expensive and faster options for reducing GHG emissions.

Risks

- Nuclear industry has history of huge **cost overruns** and years-long **schedule delays**
- Large reactors have been very expensive - cost of recently completed Vogtle Nuclear Project rose from estimated \$14.1 to more than \$36 billion.
- Small modular reactors (SMRs) involve **untested and not-yet-approved** technologies
- Not good tool for fighting climate change – **too expensive, too late and would compete with renewables**
- Issues with disposal of **highly radioactive, long-lived nuclear waste**

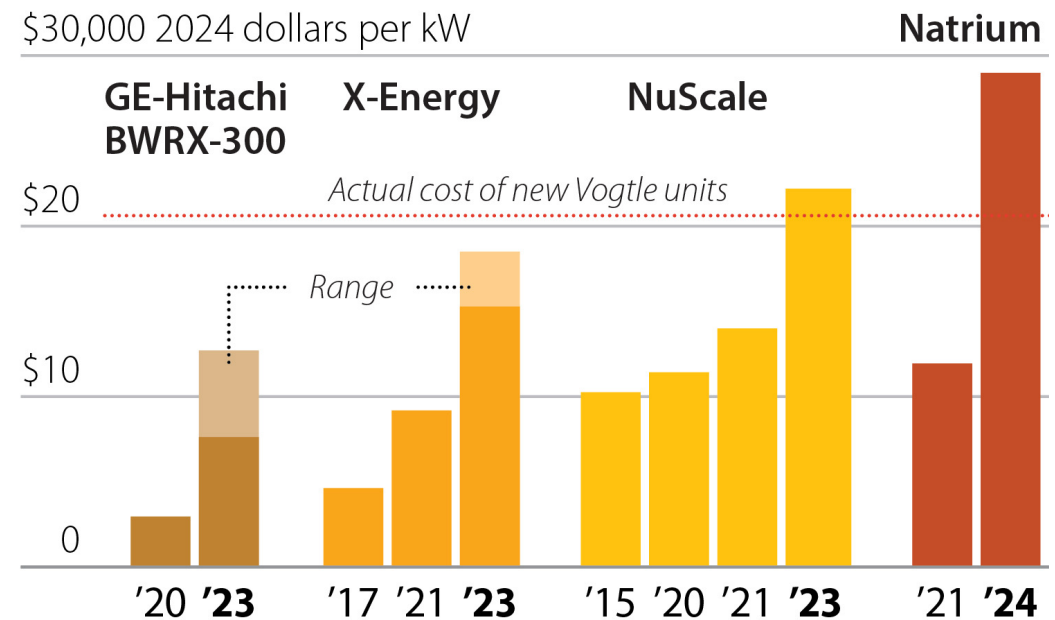
Actual Costs of Building SMRs Have Been Much Higher than Originally Predicted

- Actual costs of building SMRs have been much higher than originally predicted
- Construction costs could be even higher than shown here
- Of the small modular reactor (SMR) designs that are under construction for which data are available, none have met the original project cost estimate
- Costs estimates ballooned either during project planning phases or once construction began



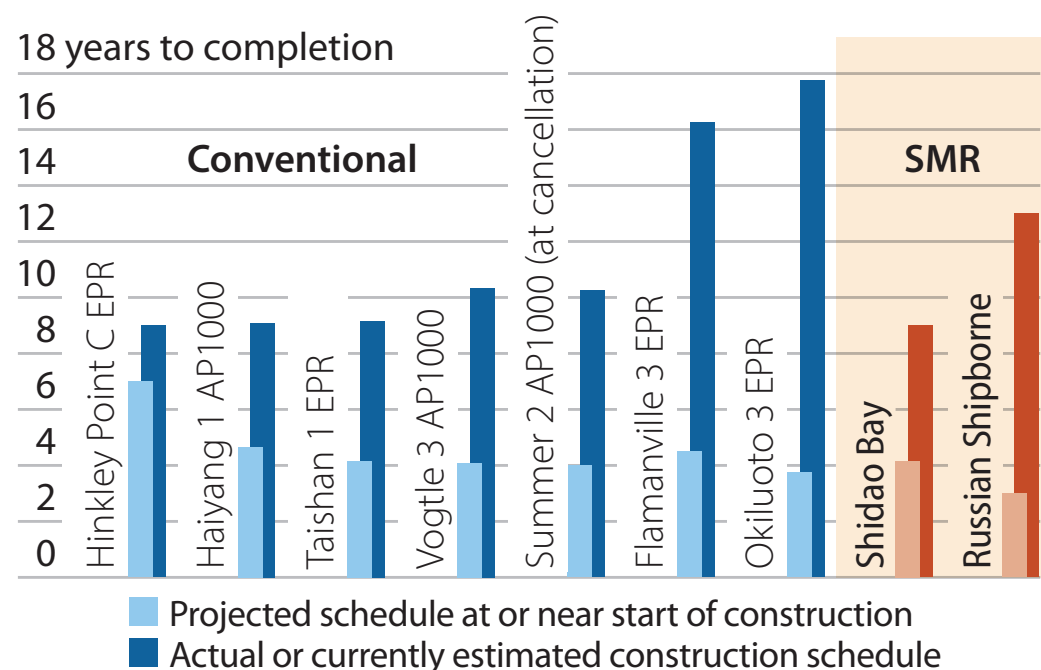
Estimated Costs of Proposed U.S. SMRs Have Risen Sharply, Years Before Construction Scheduled to Start

- Estimated costs of proposed U.S. SMRs have risen dramatically, years before construction has started
- None of the SMR designs marketed in the U.S. have been licensed by the NRC
- Additional cost increases should be expected after NRC permit is granted and actual construction begins (actual cost of the recently completed Vogtle Nuclear Project increased 157% *after* construction began)
- Costs of plants overseas have increased even more during construction



Recent Reactors With New Designs Have Experienced Significant Schedule Overruns

- Recent reactors with new designs have experienced significant schedule overruns
- Recent large reactor projects have taken much longer to complete than originally estimated with delay as long as 12 to 14 years for Flamanville (France) and Okiluoto (Finland)
- The two SMR projects that have been completed also took much longer, between double and quadruple the original estimate

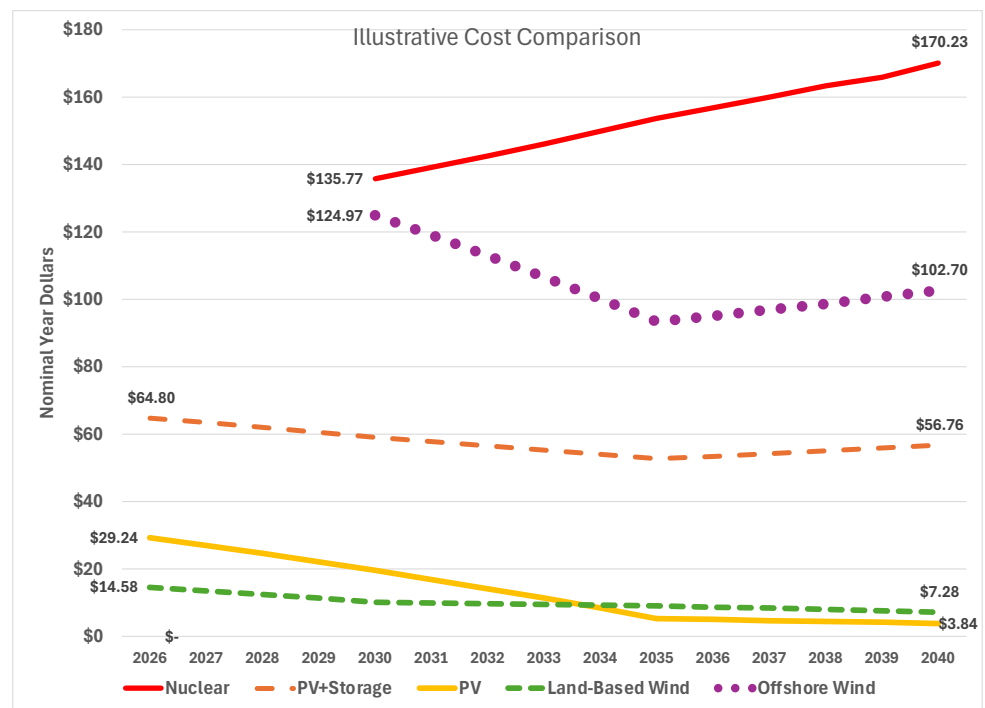


Illustrative Cost Comparison Shows Nuclear Much More Expensive than Renewables

- Nuclear is much more expensive than renewables and will continue to increase in cost
- Renewables are cheaper and will become even less expensive in the future
- Cost of gas with CCS would fall between renewables and nuclear
- Nuclear cost comparable to estimated average cost of recently completed Vogtle Nuclear Project of >\$160 per megawatt hour without federal subsidies

Data from [National Renewable Energy Lab \(NREL\) 2024 Annual Technology Baseline \(ATB\)](#)

Costs shown have been adjusted to nominal year dollars from year 2022 dollars in the ATB



Contact



*Moss Landing Battery Storage Plant in California (750 MW/3,000 MWh)
Former fossil-fired plant converted to battery storage*

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More information: www.ieefa.org/SMR