SCHLISSEL
TECHNICAL CONSULTING

Cost & Schedule Risks for New SMRs & Large Nuclear Reactors

David Schlissel

March 2, 2025

My Background

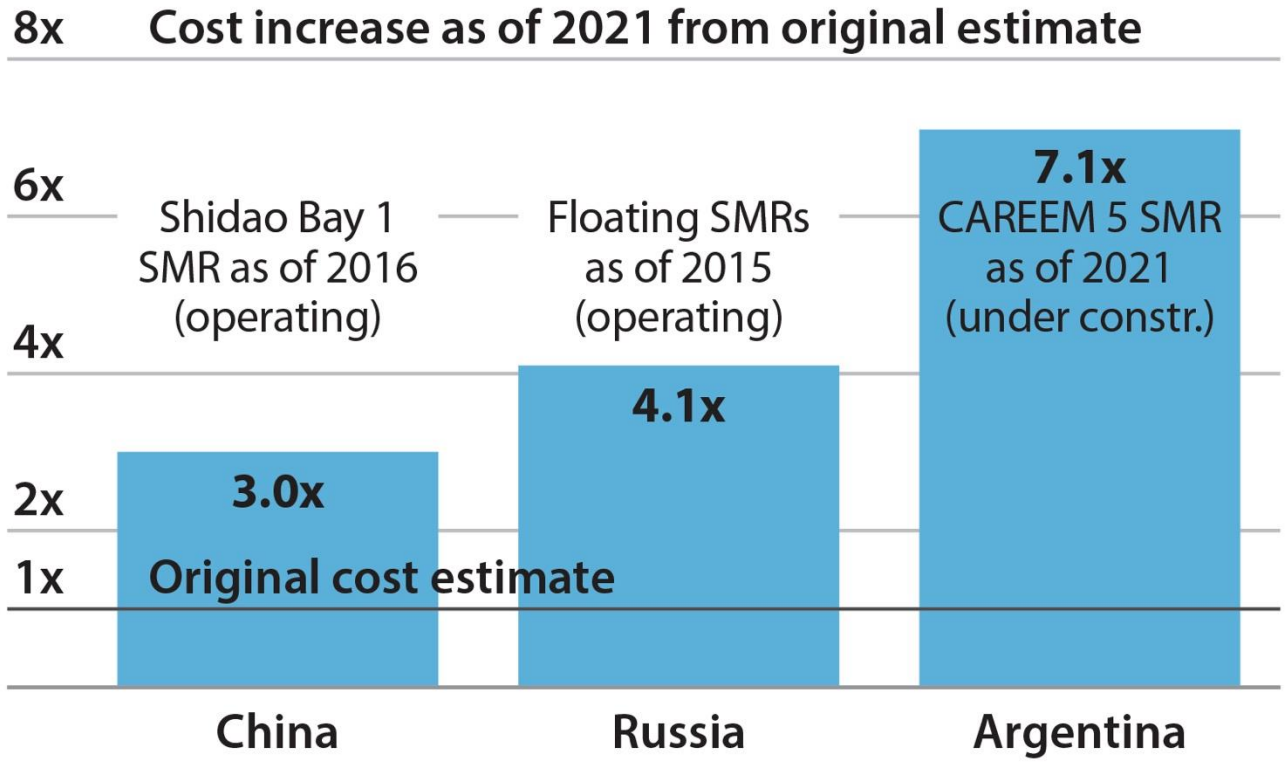
- Engineering degrees from the Massachusetts Institute of Technology (MIT) and Stanford University
- Law Degree from Stanford School of Law
- Studied nuclear engineering & project management in non-degree program at MIT
- Worked on energy, utility, environmental and numerous nuclear issues for over five decades
- Testified as an expert witness in state regulatory commissions in over 35 states and before the U.S. Nuclear Regulatory Commission and the Federal Energy Regulatory Commission, 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

SMR & Large Reactor Risks – Cost Increases and Schedule Delays

- Small modular reactors (SMRs) involve untested technologies
- No SMR has been built in the U.S., is under construction or approved by the U.S. nuclear regulatory commission
- The nuclear industry has a long history of huge cost overruns and years-long schedule delays
    - For example, the two most recent reactors built in the US at the Vogtle Nuclear Project, went into service more than 6 years late, & cost more than $36 billion to build, or $22 billion more than estimated when nuclear construction started

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

- Final construction costs likely are even higher than shown here
- No SMR project has met initial cost and schedule predictions - costs ballooned during project planning phases and again after construction began
- Numerous other small reactor projects failed or were cancelled before plant completed



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

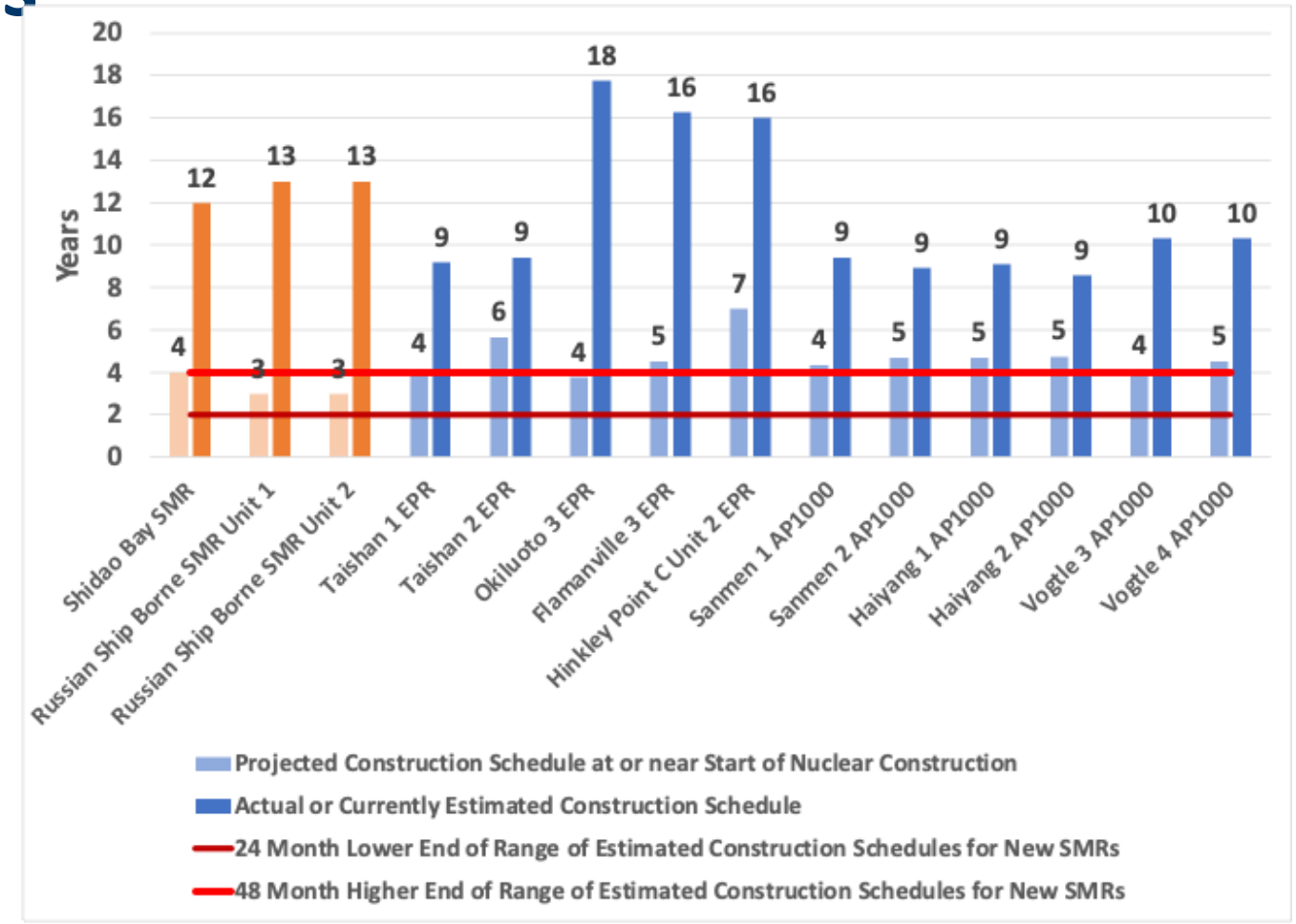
- Further increases in the costs of these SMRs can be expected in the 10 years, or longer, before construction is completed and the plants produce power

- Proposed NuScale reactor project in Idaho was cancelled in late 2023 after estimated cost skyrocketed and communities in Utah refused to write blank checks for the project

Recent Reactors With New Designs Have Experienced Years of Schedule Delays

- The SMRs built in China and Russia took as long as three to four times longer to build than estimated at start of construction

- Recent large reactor projects in also have taken much longer to complete than originally claimed by proponents – with numerous delays of of 4 to 5, and as long as 12, years

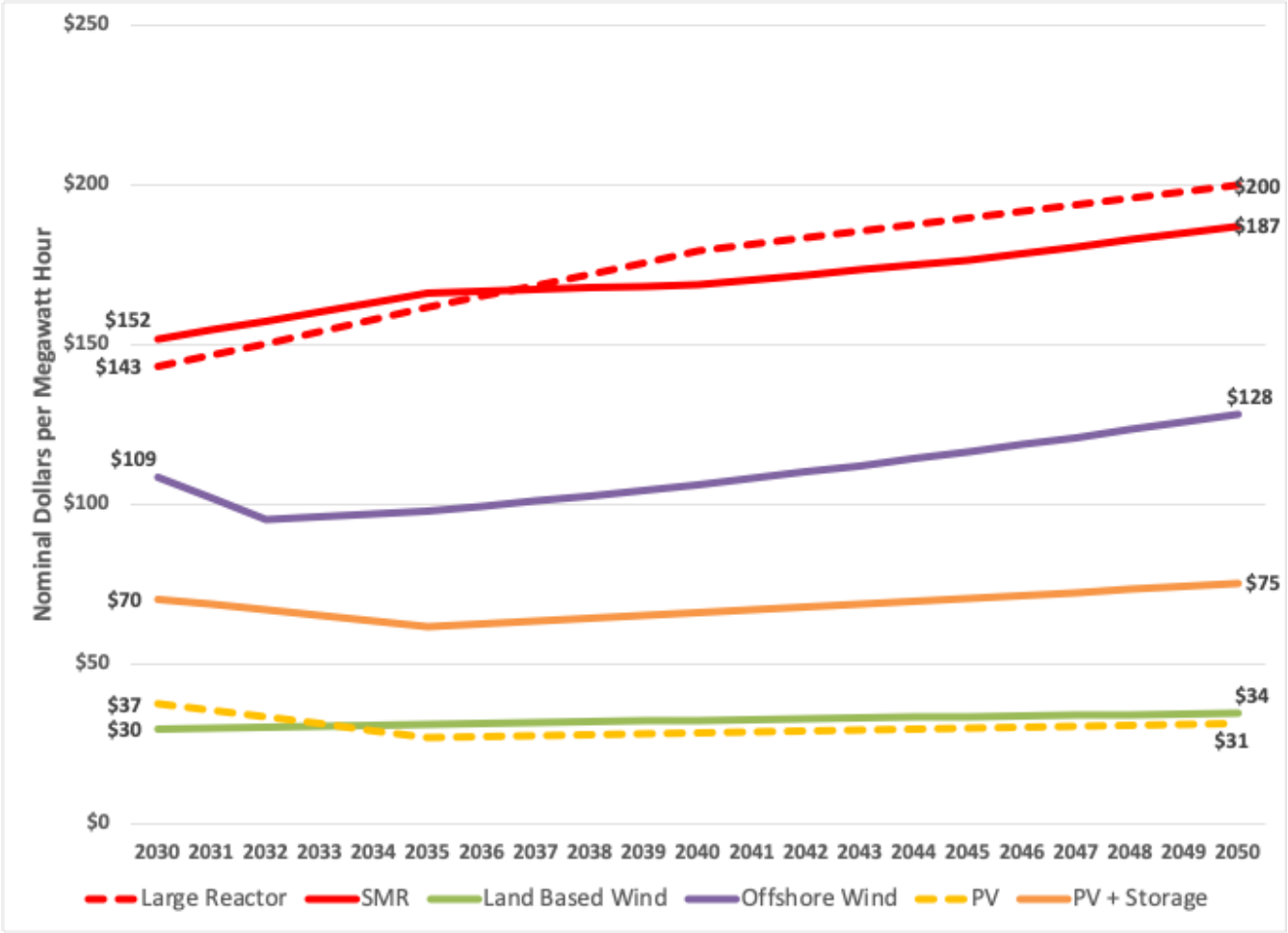


Announced Schedules For Three SMR Designs Being Marketed in the US Have Already Slipped by Years

- NuScale originally claimed that its first SMR project would be producing electricity by 2015-2016
    - That reactor's start of commercial operations was subsequently delayed twice – first to 2026-2027 and then to 2029-2030
    - The project was subsequently cancelled in 2023 after its cost rose by
- Similarly, the Xe-100 reactor project planned for Washington State was initially scheduled to be completed in 2027-2028 but is now not expected to be in operation until September 2033
- Bill Gates initially said his Natrium reactor would begin generating power in 2028 but its scheduled start of operations has been delayed until 2030 with more delays to come

Cost of Power From Both SMRs & Large Nuclear Reactors Will Be Much More Expensive Than Renewables

- As nuclear project construction costs go up, the cost of the power from the new reactors will be more expensive than shown here
- This chart also likely overstates cost of power from renewables
- Source – 2024 National Energy Technology Laboratory ATB (Annual Technology Baseline)



Conclusions

- Nuclear projects pose substantial financial, fiscal & economic risks for state & federal & taxpayers & utility ratepayers who will be asked to bear rising costs
    - Just ask the customers of Georgia Power who recently experienced “Rate Shock” when hit with a 23.7% rate increase to pay for the 2 Vogtle reactors
    - This was on top of an over 10% rate increase in 2011 which forced Georgia Power’s ratepayers to pay for the reactors while they were being built
- There is no benefit or award from rushing to be one of the first to start reactor projects – better to take time & learn from others’ successes and mistakes

For More Information

- David@Schlissel-technical.com
- www.IEEFA.org/smr
- www.Schlissel-Technical.com