



State of New Hampshire

GENERAL COURT

CONCORD

MEMORANDUM

DATE: December 1, 2022

TO: Honorable Sherman Packard, Speaker of the House
Honorable Chuck Morse, President of the Senate
Honorable Paul C. Smith, House Clerk
Honorable Tammy L. Wright, Senate Clerk
Honorable Chris Sununu, Governor
Michael York, State Librarian

FROM: Representative Keith Ammon, Chairman

SUBJECT: Interim Report of the Commission to Investigate the
Implementation of Next Generation Nuclear Reactor Technology
in New Hampshire.
RSA 125-O:30 (HB 543, Chapter 253, Laws of 2022)

Pursuant to RSA 125-O:30 (HB 543, Chapter 253, Laws of 2022), enclosed please find the first Interim Report of the Commission to Investigate the Implementation of Next Generation Nuclear Reactor Technology in New Hampshire.

If you have any questions or comments regarding this report, please do not hesitate to contact me.

I want to thank those members of the commission who were instrumental in this study so far. The commission expresses our appreciation to those who have testified and assisted our study to date.

Enclosures

cc: Members of the Commission

INTERIM REPORT

Commission to Investigate the Implementation of Next Generation Nuclear Reactor Technology in New Hampshire

RSA 125-O:30 (HB 543, Chapter 253, Laws of 2022)

December 1, 2022

Member	Appointing Authority
Representative Keith Ammon, Chair	Speaker of the House
Representative Michael Harrington, Vice Chair	Speaker of the House
Senator William Gannon	Senate President
Cathy Beahm	NH Dept. of Environmental Services
Marc Brown, Secretary	Governor, Member of the Public
Alex Fries	NH Dept. of Business and Enterprise Affairs
Bart Fromuth	Governor
Daniel Goldner	PUC Chair
Matthew Levander	NextEra Energy/Seabrook Station
Christopher McLarnon	Governor
David Shulock	NH Dept. of Energy

Commission Charge and Study Purpose:

125-O:30 Commission to Investigate the Implementation of Next Generation Nuclear Reactor Technology in New Hampshire.

III. The commission shall investigate:

- (a) Advances in nuclear power technology, including "generation IV" reactors, by conducting research and seeking counsel and testimony from experts in the field;

- (b) The most promising generation IV designs as determined by the Gen IV International Forum:
 - (1) Gas-cooled Fast Reactor (GFR);
 - (2) Lead-cooled Fast Reactor (LFR);
 - (3) Molten Salt Reactor (MSR);
 - (4) Supercritical Water-cooled Reactor (SCWR);
 - (5) Sodium-cooled Fast Reactor (SFR); and
 - (6) Very High Temperature Reactor (VHTR);
- (c) Large-scale, small-scale, microreactor, modular and breeder reactor designs;
- (d) The safety of modern designs, including "passive safety systems";
- (e) Various types of fuel consumption, including the ability for new designs to safely consume nuclear waste, such as the waste in long-term storage facilities;
- (f) Nonelectric applications including:
 - (1) Hydrogen or other liquid and gaseous fuel or chemical production;
 - (2) Water desalination and wastewater treatment;
 - (3) Heat for industrial processes;
 - (4) District heating;
 - (5) Energy storage; and
 - (6) Industrial or medical isotope production;
- (g) Potential siting options;
- (h) Partnerships with industry participants or investors;
- (i) Partnerships with federal agencies, such as the U.S. Nuclear Regulatory Commission;
- (j) Federal incentives for nuclear power generation; and
- (k) Shall identify potential obstacles with federal nuclear regulation.

Meetings:

The commission organized on October 11, 2022, and elected Representative Keith Ammon as Chair, Representative Michael Harrington as Vice Chair, and Marc Brown as Secretary. The following table outlines key testimony accepted at the commission's two meetings so far.

Date	Speaker/Title	Representing	Topic
October 11, 2022	N/A	N/A	Organizational meeting.
	See minutes below and meeting event page .		
November 21, 2022	Marc Nichol, Senior Director of New Reactors	Nuclear Energy Institute	Mr. Nichol gave a presentation of the status of nuclear technology, commercial deployments, major topics related to advanced reactors, and issues relating to interfacing with the federal government.
	Christopher Colbert, Chief Financial Officer	NuScale Power	Mr. Colbert gave a presentation of his company's technology.
See minutes below or meeting event page .			

Future Work:

We intend to continue to elicit testimony from experts, stakeholders, and public members to broadly cover the topics required by statute while collecting information on the potential benefits and pitfalls of next-generation nuclear technology.

We also intend to make the commission's work publicly available and accessible to members of the public throughout our process. To that end, we will be posting to an online portal (<https://nuclearnh.energy>) audiovisual recordings of meetings, meeting transcripts for the hearing impaired, meeting agendas and minutes, and other supporting documents. We will also ensure that the commission submits copies of written documents generated by our activities to the General Court [website](#) for long-term archive accessible to the public.

Findings to Date:

The commission is still in its investigation phase and will be compiling recommendations for legislation or other action in future reports. What follows are some of the observations we have made so far.

We note that Small Modular Reactors, one topic included in our charge of study, are receiving regular media coverage around the country and internationally. Governors of some US states, such as Texas and Virginia, are making their development part of their governing platform.

We also note that the [2021 State Energy Strategy](#) document by the NH Department of Energy refers to the role of nuclear energy in power generation and includes some recommendations.

- Page 10 of the report reads in part, “Nuclear generation should be allowed to compete fairly and without unwarranted constraints in New England’s wholesale markets, thereby contributing to a market-driven, cost-effective resource important to New Hampshire’s environmental goals and policy frameworks.”
- Page 56 reads, “In summary, segmentation of the RPS that limits competition among generation technology types should be eliminated over time. The RPS should be evaluated as to whether it should be expanded to include other zero-carbon resources and to pursue the most cost-effective low-carbon options [such as nuclear].”

We further note that the Inflation Reduction Act purportedly includes federal incentives for nuclear, and we plan to investigate the details of that legislation, now law.

Lastly, we plan to utilize and confer with the Bipartisan Energy Supply Task Force of the National Congress of State Legislators, of which Representative Doug Thomas is a member. We also plan to utilize the National Council of State Legislators and other inter-state resources.

Respectfully Submitted,



Representative Keith Ammon, Chair

APPROVED MINUTES

Submitted by Marc Brown

**Commission to Investigate the Implementation of Next Generation Nuclear Reactor
Technology in New Hampshire**

October 11, 2022

Attendance:

Commission Members: Representative Michael Harrington, David Shulock, Bart Fromuth, Marc Brown, Representative Keith Ammon, Cathy Beahm, Dan Goldner, Christopher McLarnon.
Absent: Senator Bill Gannon, Alex Fries, Matthew Levander

Public: Representative Doug Thomas, Michele Roberge, Douglas Maily, Jodi Grimblas, Bruce Berke, Vikram Mansharamani, Alvin See

Meeting:

1. Representative Harrington opened the meeting and followed with introductions from each Commission member; then members of the public introduced themselves.
2. The Commission members then voted on officers and unanimously voted for:
3. Chair — Representative Keith Ammon
4. Vice Chair – Representative Michael Harrington
5. Clerk – Marc Brown
6. A sign-up sheet was passed around for Commission members and guests.
7. Representative Ammon referenced the need to tap into resources; Representative Harrington brought a copy of Nuclear News Magazine and Marc Brown mentioned that the Nuclear Energy Institute and Georgia Power are members of Consumer Energy Alliance and could be helpful.
8. Representative Ammon emphasized that focus be on next generation technologies; Virginia Governor Glenn Youngkin committed Virginia to be the centerpiece of SMR manufacturing. Hopes that this will be a consensus building process.
9. Christopher McLarnon voiced skepticism on feasibility of nuclear power in the US because we don't build nukes here; China builds them cheaply and poorly
10. Bart Fromuth asked if we are getting any components from China
11. Representative Harrington responded that the US is not getting parts from China; referenced Sumner's failures in South Carolina; brought up the success that South Koreans have had constructing reactors. Stated that SMRs are generally 50-80 MW, can be shipped via rail. Commented that nuclear generation plant has ever been built by investors assuming

risk—always been rate based. NuScale has a design approved by the Nuclear Regulatory Commission.

12. Representative Thomas stated that he is personally bullish on nuclear technology; he is a de facto member of the NCSL energy supply task force; there are no less than 80 nuclear technologies out there—which ones survive? Mentioned that abandoned coal plants are good locations for SMRs. Asked Commission to focus on PR re: “new, safe nuclear technology.”
13. Representative Harrington thought Rep. Thomas’ comments regarding PR were well-stated and mentioned Germany’s overreaction to Fukushima.
14. Representative Ammon hopes that this Commission will utilize as many relationships as possible.
15. Commission scheduled next meeting for Monday, November 21st at 8:30 AM
16. Meeting adjourned ~ 11:00 AM

UNAPPROVED MINUTES – TO BE APPROVED AT A FUTURE MEETING

Submitted by David Shulock

**Commission to Investigate the Implementation of Next Generation Nuclear Reactor
Technology in New Hampshire**

November 21, 2022

Attendance:

Commission Members: Representative Keith Ammon, Representative Michael Harrington, Bart Fromuth, Cathy Beahm, Dan Goldner, Matthew Lavender, David Shulock, Christopher McLarnon (remote). Absent: Senator Bill Gannon, Alex Fries, Marc Brown

Public: Representative Doug Thomas, Bruce Berke, Vikram Mansharamani, Douglas Maily, Alvin See, Joe Fontaine, Michele Roberge, Griffin Roberge

Meeting:

1. A quorum was established, and Rep. Ammon opened the meeting at 8:33 a.m.
2. Rep. Ammon appointed David Shulock substitute clerk.
3. The commission unanimously approved the draft minutes of the commissions October 11, 2022, meeting.
4. Rep. Harrington stated he has worked with the Nuclear Energy Institute and that it is a good resource. He also recommended the American Nuclear Society as a resource. Rep. Harrington discussed the need for nuclear generation if the region goes forward with a climate agenda, stating that approximately 3000 new MW of carbon-free generation will be required in addition to any renewable generation. Rep. Harrington stated that advanced nuclear will be more load-following than existing nuclear generation.
5. Rep. Thomas agreed with Rep. Harrington and stated that he is a member of the bipartisan Energy Supply Task Force of the National Congress of State Legislators.
6. Marc Nichol, Senior Director of New Reactors at the Nuclear Energy Institute gave a presentation of the status of nuclear technology, commercial deployments, major topics related to advanced reactors, and issues relating to interfacing with the federal government. Some key points were that it would be \$449 Billion more expensive to reach 0 net carbon emissions if nuclear technology were be constrained going forward; advanced nuclear would provide black start capability to the grid; advanced nuclear builds in inherent safety features that in may cases would limit the planned emergency response to the property boundary; that waste handling technology is mature, but requires 8-10 years of licensing work prior to construction; advanced nuclear can be located on the sites of existing coal plants to take advantage of infrastructure and trained staff; and that there is strong federal support for advanced nuclear deployment. Mr. Nichol also stated that consideration had been given to lessening delay and cost overrun by integrating energy (steam) generation

into the reactor design, simplifying the design, conducting more work in the factory and less in the field, and allowing for parallel factory and field construction timelines. He stated that currently overruns are due to increases in labor and material costs over time. He stated that “one-stop” construction and operating permitting at the federal level reduces protest and litigation. He believes that state can support advanced reactor deployment by conducting feasibility studies, providing tax incentives, providing for advanced cost recovery, and working on workforce development and infrastructure. Last, there is currently a lack of fuel with the required 5-20% enrichment that will continue until sufficient demand for that level of enrichment is established.

7. Christopher Colbert, Chief Financial Officer of NuScale Power gave a presentation of his company’s technology. NuScale Power has engineered the first small modular reactor to undergo licensing at the Nuclear Regulatory Commission at a cost of \$500 million. The company has a goal of placing the first modular reactor online by 2029. NuScale’s modular reactor would produce 77 MW of electricity. The design would allow up to 12 modules to be combined at one facility and to operate independently or in sync. NuScale’s reactor has black start capability, and inherent safety features that do not require external power or support in an emergency, resulting in an impact area of approximately 300 meters. Mr. Colbert stated that the factory design takes years off of field construction; essentially, one could build a shell structure and easily then integrate the reactor. Mr. Colbert sees the design as useful in supporting renewables, replacing coal, and creating hydrogen during a period of energy transition. NuScale has a customer that plans to bring one of its reactors online in 2029. Original forecasts for the cost of that facility were at \$58 per MWh. Inflation and the rise in interest rates has driven that cost up. Mr. Colbert stated that despite the rise in cost, the reactor is still the best alternative.
8. Rep. Ammon stated that he plans on drafting the report due December 1, and that he will send the report around electronically for sign-off.
9. Rep. Thomas described an LSR that he plans on introducing next year. The bill would define clean energy, which appears numerous times in statute without a uniform definition. Rep. Thomas suggested that this committee work on a definition, and that it be similar to the European Union’s definition, which Rep. Thomas stated includes nuclear energy. Rep. Harrington agreed that clean energy should be energy that reduces fossil fuel use to reduce greenhouse gas emissions. Rep. Ammon stated he found support for this in the state’s 10-year energy plan.
10. Rep. Harrington stated that there has never been a nuclear facility built without taxpayer or ratepayer funding. We need to understand that we are a less regulated state now, and that all generation plants are merchant plants. Investors are unlikely to build a nuclear plant here until one has been successfully built elsewhere, and everyone sees that it can work. He stated that this is not unique to nuclear plants, that offshore wind is in a similar state.
11. The meeting was adjourned at 10:38 a.m.