

November 3, 2023

Susan F. Tierney
Chair
Energy and Environmental Systems Board
National Academies of Sciences, Engineering, and Medicine
500 Fifth Street, NW
Washington, DC 20001

Subject: National Academies of Sciences, Engineering, and Medicine Report, “Laying the Foundation for New and Advanced Nuclear Reactors in the United States” (2023)

Dear Ms. Tierney:

On behalf of the American Nuclear Society (ANS), the professional society for those working in the field of nuclear technology, I am pleased to provide ANS observations on the National Academies of Sciences, Engineering, and Medicine (NASEM) report, “Laying the Foundation for New and Advanced Nuclear Reactors in the United States” (2023).

The NASEM report is a comprehensive assessment of the potential associated with advanced reactors as well as the challenges that will be experienced trying to deploy them. ANS believes the report was generally well-written, even-handed, and provided supporting information and references to back its findings and recommendations. ANS agrees with most of the report’s recommendations, such as those related to the Advanced Reactor Demonstration Program (Recommendation 4-3) and construction cost and schedule (Recommendation 6-8). However, ANS is very concerned with both the content and tone of Chapter 8 of the report: “The Public Acceptance Challenge.” This concern is summarized below, and detailed comments on the chapter are provided in the attached table.

Chapter 8 paints a far too pessimistic picture of public acceptance, betraying an apparent lack of familiarity on the part of the NASEM committee with historical nuclear power plant siting and operations experience in the U.S. Recommendation 8-5 calls for implementation of a consent-based siting approach for all advanced nuclear facilities. The NASEM committee’s desire to impose an unproven, one-size-fits-all approach on all nuclear facilities in the U.S. is both misguided and counter to public interest. In essence, the committee recommends that there be a special overlay of siting requirements on all nuclear power plants, above and beyond those imposed on other power generating facilities. The NASEM committee offers no explanation for why consent-based siting is needed for nuclear power facilities, but not for solar farms, windmills, geothermal power stations, hydroelectric facilities, fossil power plants, etc. Recommendation 8-5, if implemented, would not only be unfair, it is clearly unnecessary, given the excellent relations between almost all commercial nuclear power reactors in the U.S. and their host communities. At bottom, the recommendation is an academic solution in search of a real problem. Nuclear power plant siting must already comply with extensive and

comprehensive requirements set forth in laws and regulations. From a practical perspective, imposing additional ill-defined siting requirements on nuclear power facilities (but not on other power generating facilities) would have the sole effect of making it more difficult for the public to realize the benefits of clean and reliable nuclear energy. A better recommendation would have been to encourage advanced reactor owner-operators to continue the good practices developed after decades of nuclear power plant operations in the U.S.

Thank you for your consideration of these comments.

Sincerely,

Craig H. Piercy



Executive Director / CEO
American Nuclear Society

Ken Peterson



President
American Nuclear Society

Attachment 1 included

cc: Mr. K. John Holmes, Director/Scholar, Energy and Environmental Systems Board

Ms. Elizabeth Zeitler, Associate Board Director, Energy and Environmental Systems Board

Mr. Richard A. Meserve, Chair, Committee on Laying the Foundation for New and Advanced Nuclear Reactors in The United States

Attachment 1
 Comments on Chapter 8 of the NASEM Report
 “Laying the Foundation for New and Advanced Nuclear Reactors in the United States” (2023)

Location	Comment
General	<p>Like the recent NASEM study of advanced reactor fuel cycles, the NASEM panel was extremely lacking in members with actual practical industry experience. The membership on the panel was heavily tilted to academia, national labs, and government backgrounds. Only one member had substantial nuclear industry experience (Dr. Talabi) and no members had nuclear owner-operator experience. That lack of practical experience is reflected in the report’s shortcomings in Chapter 8: “The Social Acceptance Challenge.”</p> <p>Similarly, the reviewers of the report listed on p. vii were heavily tilted to government and non-governmental organizations. There appear to be no reviewers with a nuclear plant owner-operator background.</p>
Recommendation 8-5 p. 6	<p>This recommendation is misguided (at best) and would be extremely and unnecessarily adverse for new nuclear reactors if it were to be implemented. The recommendation calls for consent-based siting to be implemented across the board for nuclear facilities, including new nuclear reactors. For nuclear power plants, no cogent need for the recommendation has been shown. There is no identified problem finding communities interested in hosting a nuclear power plant. Utility companies are well-versed in the processes and challenges associated with siting power plants, transmission lines, and other facilities. No one argues with the need for openness and effective communication. However, imposing a new process overlay on nuclear facilities that does not exist for competing technologies is not only unnecessary, but also unfair.</p> <p>The genesis of this recommendation may be a misplaced desire to extend the proposed consent-based siting process for nuclear waste facilities, as made in the “Blue Ribbon Commission” report, to be more generally applicable to all nuclear facilities. Irrespective of the motivation, there has been no identification of a real need for it. It is a solution in search of a problem. The recommendation should be deleted.</p>

Location	Comment
Chapter 8 pp. 155-174	The section on the Public Acceptance Challenge is far too pessimistic and the recommendations are misplaced. The report inappropriately convolves public acceptance issues related to waste management with those related to reactor siting. The report also fails to recognize that public attitudes vary widely by region, which will impact the initial deployment of new reactors. If the need to change nuclear power plant siting to a consent-based process is so compelling, why is there no shortage of communities that desire a new nuclear power plant project?
p. 156	<p>Finding 8-1 cites a “critical” need “to integrate public participation and consent into design, siting, and long-term operations.” It is not at all clear what that means, and the report does not explain it. Exactly how do the report authors propose to modify the “nth of a kind” reactor design to reflect public consent? For that matter, what modifications to the initial design are envisioned?</p> <p>Moreover, this discussion of public “consent” is not even the right terminology. What is sought is public acceptance, not public consent. The concept of consent implies a process in which there is a formal determination and documentation of consent by a community or group. The United States does not require this for other energy production technologies. Why should it be required of nuclear power?</p>
p. 156	Recommendation 8-1 calling for “socio-technical approaches” to “become part of the nuclear energy research and development (R&D) cycle” should be deleted. The implication that nuclear energy R&D needs an entire overlay of social science is not justified and it defies common sense. Why should this be applied to nuclear technology and not to other technologies? The report should give some finite examples of outcomes that might occur as a result of this recommendation in the event it is implemented. Otherwise, it is an unproven theory and an impractical suggestion.
pp. 156-157	The “box” on Yucca Mountain contains inaccurate and incomplete information. It ignores the fact that Yucca Mountain was supported by the local community in Nevada. It implies that WIPP was successful because the project community relations were handled better, which is completely at odds with reality. WIPP was opposed vigorously by the State of New Mexico, but DOE continued to push for completion and the political dynamics were very different from those of Yucca Mountain. It is the politics, not the approach to communication, that determined the difference in outcomes.

Location	Comment
p. 158	<p>The report states “The one poll that consistently reveals support for nuclear power is the industry’s own. The Nuclear Energy Institute and the American Nuclear Society commission their own polls. With one exception (around the time of Chernobyl), these polls have consistently shown levels of support for nuclear power to be higher than levels of opposition.</p> <p>While NEI regularly polls on attitudes toward nuclear energy, ANS does not. Also, ANS is not an industry organization, it is a professional society. These factual errors related to ANS should be corrected.</p>
Top of page p. 159	<p>The report cites a reconsideration of shutting down all nuclear power plants in Germany. While Germany did temporarily extend the operation of some of its few remaining nuclear plants, it has now shut them all down (as of April 2023) and the likelihood of restarting any of them is very low.</p>
Insights from the Social and Decision Sciences, paragraph 2 p. 159	<p>The report emphasizes public opposition to nuclear power. However, the report does not acknowledge the fact that even solar and wind projects experience public opposition, despite their favorable overall public opinion ratings.</p>
p. 163	<p>The first full paragraph refers to a non-existent “revolving door” between civilian nuclear power and retired Navy personnel. It is true that in the early phase of nuclear power, many workers, particularly operators, were recruited from the Navy. While former Navy personnel still migrate to the commercial sector, the Navy is no longer the primary source of workers.</p> <p>Also, while the report refers to retired Navy personnel moving to industry, most former Navy personnel who move on to commercial nuclear power are not retirees. They do not stay in the Navy long enough to retire.</p> <p>The paragraph theorizes that the presence of former Navy personnel in commercial nuclear power lowers the level of public trust among the “broader population.” There is no factual basis provided for the theory. ANS members who have actually worked in nuclear power facilities have seen no evidence that the unsubstantiated hypothesis is true.</p>

Location	Comment
p. 163	<p>Finding 8-2 mentions the “secrecy and security required by the institutions that develop, deploy and regulate nuclear power” and postulates that it works counter to community support. ANS disagrees with the premise of the statement. The practices of the Nuclear Regulatory Commission work in the opposite direction, forcing public disclosure of documents pertaining to nuclear safety, ensuring that meetings are open to the public to the maximum possible extent, and requiring an extensive role for the public and interested groups in the licensing and oversight process. Companies that operate nuclear power plants are well aware of the need for openness and transparency, and they dedicate resources to developing and maintaining good relations with the public and the media.</p> <p>The NASEM report provides no examples of this “secrecy” that is cited.</p>
Opposition Rooted in Factors that Are Common Across Technologies p. 166	<p>The report overemphasizes environmental justice. There is no evidence that opposition to nuclear power is rooted in environmental justice concerns. In fact, with the exception of early uranium mining on and near Native American lands, nuclear energy has a strong environmental justice record. Yes, opponents of nuclear energy raise the issue of environmental justice, but that does not make their allegations valid.</p>
Recommendation 8-3 p. 168	<p>Recommendation 8-3 proposes that academic institutions promote “socially conscious engineering.” There is no evidence presented that this will result in a beneficial effect. Moreover, ANS believes that typical U.S. nuclear engineering programs already use a holistic approach to education that includes non-technical areas.</p>
Finding 8-5 p. 170	<p>The finding perceives inadequate public engagement during the reactor design process and a lack of “design for values” (whatever that means). Interestingly, the discussion preceding the finding focuses on siting, not design; there is no information provided in the report to justify the finding about design. Even if the allegation against reactor designers is true, the consequences of the “guilt” are unclear. The NASEM committee provides no practical proposal of how public engagement is supposed to be integrated with design, nor any evidence that it would provide beneficial outcomes.</p>

Location	Comment
Recommendation 8-4 pp. 170-171	<p>Recommendation 8-4 proposes that “the advanced nuclear industry” guided by “experts who understand the effect of social interactions on design choices” devote resources to public engagement during the front-end design phase to ensure products are best aligned with “values.” It is not at all clear whose values the designs are to be aligned with. The recommendation is ill-defined and it appears to be based on unproven hypotheses. The purported benefit – minimizing opposition – is completely speculative and ignores the timing difference between design, siting, and deployment. For this recommendation to be taken seriously, it would need to be accompanied by a concrete example of what the report actually envisions happening.</p>
Best Practices in Community Engagement, paragraph 2 p. 171	<p>The paragraph states:</p> <p style="padding-left: 40px;">Based on historical experience of nuclear waste repository siting, in no democracy has a “decide-announce-defend” method of site selection worked. The only democracy attempting to rely on that method, the United States, has not been able to complete the process 35 years after Congress selected the Yucca Mountain site as the only one to be examined and 20 years after Congress and the President approved the site (see Box 8-1 above).</p> <p>Unfortunately, the statement above is replete with inaccuracies. First of all, in 2022 Switzerland successfully completed its geologic repository site selection using a method similar to the U.S. Nuclear Waste Policy Act process (i.e., determine the most suitable site) – not a process based on consent. See “Site selection in Switzerland: The narrowing-down methodology and its application,” Piet Zuidema, Andreas Gautschi and Stratis Vomvoris, American Nuclear Society International High-Level Radioactive Waste Management Conference, Charleston SC, April 12-16, 2015. See also “Site proposed for Swiss repository,” World Nuclear News, September 12, 2022.</p> <p>Second, the process followed to site (successfully) the WIPP repository in New Mexico followed the “decide-announce-defend” model and was emphatically not consent-based.</p> <p>ANS agrees with the statements in the NASEM report about the importance of credibility and transparency. Unfortunately, in this instance, the NASEM report comes up short on both.</p>

Location	Comment
<p>Last paragraph p. 172</p>	<p>The report states that experts in community engagement “... should staff the community engagement process if engineers or executives do not have the requisite experience.”</p> <p>The NASEM committee is apparently unfamiliar with the standard approach at U.S. nuclear power plants, which involves the use of community relations and communications professionals complemented by technical staff and management, as appropriate. Typically, technical staff and management are trained in communications as part of their emergency planning and media relations duties. The model has been very successful, and it should not be ignored in the report.</p>
<p>Finding 8-6 p. 173</p>	<p>The finding bemoans the lack of experience in the “advanced reactor community” with dealing with siting issues for advanced reactors. The fact is that the nuclear power industry has extensive experience with community relations, and no significant adverse issues have emerged so far in the area of advanced reactor siting. The communities of Kemmerer, Wyoming and Clinch River, Tennessee, for example, seem quite satisfied with the prospect of hosting advanced reactors. Perhaps the situation is not quite as dire as perceived by the NASEM panel.</p>
<p>Recommendation 8-5 pp. 173-174</p>	<p>The recommendation to implement a consent-based siting approach for advanced reactor facilities is a bad idea, and it betrays an apparent near-total lack of understanding of power plant siting issues on the part of the NASEM panel. For some reason the NASEM committee seeks to apply an unproven, one-size-fits-all approach (consent-based siting) to advanced reactors. A better recommendation would be to encourage advanced reactor owner-operators to continue the good practices developed after decades of nuclear power plant operations in the U.S. See the body of the letter for more discussion of this recommendation.</p> <p>ANS is well aware that consent-based siting has been successfully applied to two geologic repositories in other countries and supports trying the approach on the siting of nuclear waste facilities in the U.S. However, ANS also recognizes that consent-based siting is not a panacea, nor is its success assured. The U.S. has strong state governments and the countries where consent-based siting has worked do not. Addressing state opposition remains the key hurdle to siting nuclear waste facilities in the U.S., irrespective of the approach taken. With respect to this NASEM report on advanced reactors, the overriding point is there is no evidence that an additional overlay of consent-based siting requirements is needed for nuclear power plants. In fact all evidence in the U.S. points to the opposite conclusion.</p>