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To:	RulemakingComments Resource
Subject:	[External_Sender] Beyond Nuclear Comments on NRC Decommissioning Rulemaking [Docket ID NRC-2015-0070
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To the Office of the Secretary
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
ATTN: Rulemakings and Adjudications Staff

Greetings:
On behalf of Beyond Nuclear, I am attaching comments on Docket ID NRC -2015-0700, Regulatory Improvements for Production and Utilization Facilities Transitioning to Decommissioning.

Thank you,
Paul Gunter
--
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August 30, 2022

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Beyond Nuclear Comments on NRC Decommissioning Rulemaking [Docket ID NRC-2015-0070], Regulatory Improvements for Production and Utilization Facilities Transitioning to Decommissioning

Beyond Nuclear is providing its comments as noticed by the US Nuclear Regulatory Commission (NRC) in the Federal Register, March 3, 2022 for a rulemaking on regulatory improvements to the decommissioning of US nuclear facilities [Docket ID NRC-2015-0070].

Since May 2018, the proposed decommissioning rule has been before the commission. In response to a commissioners' rulemaking request, the NRC staff issued a paper (SECY-18-0055) outlining a set of proposed rule changes. The staff identified that the goal of the rulemaking was to "*provide for a safe, effective, and efficient decommissioning process; reduce the need for exemptions from existing regulations and license amendment requests; address other decommissioning issues that the NRC staff considers relevant; and support the principles of good regulation, including openness, clarity, and reliability."* [1] [Emphasis added]

One significant decommissioning issue that the NRC has formally recognized as "relevant" regards critical scientific linkage between the role of the decommissioning of permanently closed nuclear power stations and providing "reasonable assure" of the functionality and safety of future reactor operations for commercial power units that are making application to extend their operating licenses by a second 20 year extension beyond 60 years, also known as the Subsequent License Renewal (60- to 80-years).

Beyond Nuclear asserts that the rulemaking needs to specifically address decommissioning's critical role in addressing numerous identified "technical knowledge gaps" in the scientific understanding of the age-related degradation of reactor systems, structures and components and that lack of understanding's contribution of risk arising out of uncertainty for the reliability and safety of extended reactor operations. The decommissioning of permanently closed reactors has a vital and strategic role in protecting the public health, safety and the environment during extended operations of nuclear power

[1] "Regulatory Improvements for Production and Utilization Facilities Transitioning to Decommissioning, Proposed Rule Making," US NRC, Federal Register, March 3, 2018, Summary, https://www.federalregister.gov/documents/2022/03/03/2022-03131/regulatory-improvements-for-production-and-utilization-facilities-transitioning-to-decommissioning

stations beyond 60 years, as well as, the majority of an aging US reactor fleet now operating in or approved for license extensions beyond 40 years. The significant increase in the number of permanently closed and decommissioning nuclear power stations in the United States in more than a decade has not resulted in a corresponding response by the US nuclear industry and the NRC to seize upon an unprecedented opportunity to strategically harvest and analyze the observable and measurable scientific data from the decommissioning process. It is identified by the NRC and the broader scientific community that a strategic and concerted effort is necessary to meet a "reasonable assurance" standard that aging and degrading nuclear power systems, structures, and components (SSCs) are able to meet their operational reliability and safety functions beyond 60 years of operation.

Background

Beyond Nuclear is providing the Interagency Agreement, "Strategic Approach for Obtaining Material and Component Aging Information," between the US Nuclear Regulatory Commission Office of Research and Pacific Northwest National Laboratory/US Department of Energy, 09/04/2015, NRC-HQ-60-15-T-0023. [**Exhibit 1**, Interagency Agreement, Statement of Work, "Strategic Approach for Obtaining Material and Component Aging Information," US Nuclear Regulatory Commission Office of Research and Pacific Northwest National Laboratory/US Department of Energy, 09/04/2015, NRC FOIA-2018-000831, Interim Response 11 to Beyond Nuclear]

The original interagency agreement and Statement of Work (SOW) itself acknowledges "major technical issues for this second subsequent license renewal (SLR) beyond 60 years" that involve "technical gaps" that presently challenge a reasonable assurance determination for the reliable operations and safety of nuclear power stations beyond 60 years. These knowledge "gaps" pertain to significant uncertainty relating to four critical age-related degradation mechanisms:

1) Reactor pressure vessel (RPV) neutron embrittlement at high fluence;
2) Irradiation assisted degradation (IAD) of reactor internals and primary system components;
3) Concrete and concrete degradation; and,
4) Electrical cable qualification and condition assessment.

The 2015 agreement undertaken between the NRC and the federal laboratory system clearly states,

> "*Understanding the causes and control of degradation mechanism forms the basis for developing aging management programs (AMPS) to ensure the functionality and safety margins of NPP [nuclear power plants] systems, structures, and components (SSC). The resolution to these issues should provide reasonable assurance of safe operation of the components in the scope of license renewal aging during the subsequent period of extended operation*." [Emphasis added]
>
> *"Because of the cost and inefficiency of piecemeal sampling, there is a need for a strategic and systematic, approach to sampling materials from SSC in decommissioning plants."* [Emphasis added]
>
> *"Understanding and managing material and component degradation is a key need for the continued safe and reliable operation of NPP* [nuclear power plants]*, but has significant uncertainties. In many cases, the scientific basis for understanding and predicting long-term environmental degradation behavior of materials in NPPs is incomplete. A strategic approach*

to examination and testing of materials and components from decommissioning can dramatically increase our knowledge-acquisition rate in this very important area." [Emphasis added]

And,

"*The primary objective of this project is to develop a long-range strategy for obtaining information from these plants as they go through decommissioning. The focus will be on timely acquisition of experiential real-world aging-degradation information that can significantly improve the agency's risk-informed and performance-based regulatory approach, but has been very difficult or impossible to obtain from the operating fleet*." [2] [Emphasis added]

Beyond Nuclear emphasizes here that this document, calling for the *"timely acquisition of experiential real-world aging-degradation information,*" was contracted in 2015, seven years ago in anticipation of second license extension applications. [Emphasis added] As identified in these comments later on, Beyond Nuclear is concerned that the NRC is still struggling with the US nuclear industry for sufficient cooperation and collaboration to provide the "*timely acquisition*" of these necessary strategic materials for laboratory analysis as needed to meet the legal standard of "reasonable assurance" for operational reliability and safety during the projected extension period. Meanwhile, the Subsequent License Renewal process was launched with the agency in receipt of its first application on January 30, 2018 which was approved on December 4, 2019 for Florida Power and Light's Turkey Point Units 3 and 4. As many as 18 reactor units are now engaged in the NRC second license renewal application process with more applications anticipated to follow. However, Beyond Nuclear contends that the knowledge base for the necessary understanding of known and emerging age-related degradation mechanisms is not keeping pace with the acceleration of the application process and significant uncertainty associated with aging reactor safety-related systems, structures and components.

The material degradation of SSC in nuclear power stations is typically managed through the collection of the industry's operating experience, maintenance and reaction to events. However, given that many operational systems, structures and components are not fully accessible to inspection, maintenance or replaceable, the decommissioning experience presents a unique learning opportunity to proactively and strategically obtain and examine samples subjected to a host of known and still emerging age-related degradation mechanisms from "*experiential real world*" reactor environments on how to predict or even prevent operational failures with safety risks and environmental consequences.

Specifically, in 2015, the NRC Office of Research Statement of Work (SOW) tasked PNNL that it "*shall*" identify and document specific information and technical data "*gaps*" and "*shall*" determine the significance and deposition of technical gaps. PNNL was contracted and tasked to selectively review domestic and international sources of technical information of generic nature on material degradation

[2] Exhibit 1, Interagency Agreement, "Strategic Approach for Obtaining Material and Component Aging Information," US Nuclear Regulatory Commission Office of Research and Pacific Northwest National Laboratory/US Department of Energy, September 4, 2015, NRC-HQ-60-15-T-0023, pp. 2-3, NRC FOIA-2018-000831, Interim Response #11 to Beyond Nuclear, https://beyondnuclear.org/wp-content/uploads/2022/08/Exhibit1_20150904_SOW_RES-PNNL.pdf

on long term operations, extrapolating to subsequent license renewal period out to 80 years of operation.

Specifically, the NRC Office of Research SOW further tasked the national laboratory,

> "*PNNL shall evaluate what relevant ex-plant [harvested] material is projected to be available for potential harvesting. PNNL shall work with the NRC COR* [contracting officer's representative] *to develop a questionnaire and interview the cognizant individuals at the plants who possess critical knowledge."* [3]

PNNL publicly published its contracted Technical Letter Report (PNNL-27120) in December 2017

As contracted, in early December 2017, the PNNL staff released its Technical Letter Report as PNNL-27120 on the public website of PNNL. In addition to the technical report being cleared and publicly posted to PNNL public website, it was also cleared and publicly posted to websites of the Department of Energy's Office of Scientific and Technical Information (OSTI) and the International Atomic Energy Agency's International Nuclear Information System (INIS). Beyond Nuclear downloaded a copy of the public Technical Letter Report as part of its research of NRC Subsequent License Renewal Application safety and environmental reviews. [4] [**Exhibit 2**, "Criteria and Planning Guidance for Ex-Plan Harvesting to Support Subsequent License Renewal (PNNL-27120)," December 2017, Pacific Northwest National Laboratory, US Department of Energy, Contract DE-AC05-76RL01830].

Per contract, the published PNNL-2017 technical letter identified more than 60 references in answer to the NRC Office of Research request to identify the technical knowledge "gaps" that need to be addressed through strategic harvesting of aged representational samples (base metals, weld samples, electric cable, concrete cores) from decommissioning units for the requested scientific analysis. With regard to subsequent license renewal review process, the federal laboratory recognized that a high priority must be given to addressing "*technical gaps*" to understand the various degradation mechanisms' initiation, growth, and detection. As an example, the strategic harvesting of electrical cable was one of the sample sets given a "*high priority*" because of the wide variety of types and electrical ratings for cable jacketing and insulation, the extremely harsh operational environment (operational wear and environmental conditions from radiation, humidity, heat, etc.), and the extensive deployment of electrical cable throughout nuclear power stations including areas inaccessible to surveillance, maintenance and the limited sample sets being collected from maintenance and operational events.

The 2017 Technical Letter Report further recommended that the strategic harvesting of aged materials at decommissioning should be "*required*" in order for the NRC to meet the legal standard of "*reasonable assurance*" of operational safety into a projected license renewal period beyond 60 years.

> "*Addressing these questions is expected to provide reasonable assurance that systems, structures, and components (SSCs) are able to meet their safety functions. Many of the remaining questions regarding degradation of materials will likely require a combination of laboratory studies as well as other*

[3] Ibid, p.8

[4] Exhibit 2, "Criteria and Planning Guidance for Ex-Plan Harvesting to Support Subsequent License Renewal (PNNL-27120)," December 2017, Pacific Northwest National Laboratory, US Department of Energy, Contract DE-AC05-76RL01830, downloaded from government website by Beyond Nuclear, https://beyondnuclear.org/wp-content/uploads/2022/08/Exhibit2_pnnl-27120_harvesting_Dec2017.pdf

research conducted on materials sampled from plants (decommissioned or operating)." [5] [Emphasis added]

"Addressing many of the remaining technical gaps for SLR may require a combination of laboratory studies and other research conducted on materials sampled from plants (decommissioned or operating). Evaluation of materials properties of SSCs from decommissioned NPPs will provide a basis for comparison with results of laboratory studies and calculations to determine if long-lived passive components will be capable of meeting their safety functions during operation beyond 60 years." [6] [Emphasis added]

"A key challenge to addressing the gaps in materials aging and degradation through 80 years of operation is the ability to perform tests that mimic the aging process in operating plants. Often, such tests are performed (and materials performance data obtained) through accelerated aging experiments, where the material under test is subjected to higher stresses (mechanical, thermal, and/or radiation) than those seen in operation. Such tests enable the experiments to be completed in a reasonable timeframe but need to be benchmarked with performance data from materials that have seen more representative service aging. Where available, benchmarking can be performed using surveillance specimens. In most cases, however, benchmarking of laboratory tests will require harvesting materials from reactors." [7] [Emphasis added]

The PNNL statements clearly indicate that "reasonable assurance" findings can in some critical cases only be gleaned after strategic harvesting and laboratory testing from decommissioning reactors is concluded. Therefore, given the unique importance of decommissioning, Beyond Nuclear argues that the content of 2017 report indicates that material harvesting at decommissioning and the associated laboratory testing needs to be completed with findings before subsequent license renewal applications can be accepted and approved.

Ten months later, NRC pulls down the technical report and replaces it with a "scrubbed" version

On September 26, 2018, more than 10 months after PNNL-27120 had been publicly released onto three government scientific websites, Beyond Nuclear attended an NRC public meeting on subsequent license renewal and harvesting. Beyond Nuclear staffer, Paul Gunter, started to ask questions about the 2017 Technical Letter Report in reference to providing "*reasonable assurance*" to extreme license extensions. NRC staff was surprised by the public questions and declined to answer. Following the NRC public meeting, the NRC immediately removed the federal laboratory's technical letter from all three government websites at PNNL, DOE/OSTI and the IAEA/INIS. A subsequent NRC email communication to the staff of the Office of Research and Nuclear Reactor Regulation that day said that the federal laboratory had inexplicably published and posted the technical report before the NRC staff had completed its comments and edits. However, the contracted report was cleared through multiple internal checks and balances to prevent an inadvertent release by the PNNL authors for "unlimited distribution" to also publicly post the technical document to the DOE and IAEA as numbered (PNNL-27120) without any "DRAFT" marking as well as correctly identifying on the report's inside cover as sponsored under contract with the NRC Office of Research. Beyond Nuclear further notes that, to date,

[5] Ibid., PNNL-27120, p. v
[6] Ibid., PNNL-27120, p.1
[7] Ibid., PNNL-27120, p.2

PNNL has never published a retraction of the December 2017 technical letter report nor has PNNL or the NRC provided an explanation of how an alleged inadvertent release might have occurred despite the laboratory's multiple checks and balances designed to prevent such an occurrence that was then republished by the DOE and the IAEA.

This still unexplained occurrence is confirmed by the September 26, 2018 NRC's responsive email that identifies,

> *"However, there is no indication within the report released on the website that the report is still a draft and the inside cover also indicates, correctly, that the work was done under NRC sponsorship. This leaves the impression, as reinforced by Gunter, that the contents of the report could be construed as NRC position."* [8] [**Exhibit 3**, "Gunter question during today's meeting r. PNNL harvesting report," 09-26-2018, NRC email, FOIA-2018-00831, Interim Response #1]

Beyond Nuclear submits, that without laboratory retraction nor an NRC explanation, the findings of the PNNL technical letter report (2017) arguably should be reviewed as the NRC position for establishing the criteria and guidance planning to provide "*reasonable assurance*" of nuclear power station systems, structures and components operational reliability and safety for subsequent license renewal reviews. In fact, Beyond Nuclear contends it is unreasonable to proceed without review.

NRC "scrubs" PNNL report of "gaps" & recommendation to "require" harvesting at decommissioning

Within several months of the public release of the PNNL technical letter, on March 20, 2018 the NRC office of Nuclear Reactor Regulation (NRR), Materials Division for License Renewal (MDLR) sent an internal email to the NRC Office of Research, the PNNL contractor, negatively reacting to the PNNL report's findings and recommendations for strategic harvesting as a required part of the decommissioning process linked to Subsequent License Renewal review process.

Eight members of the NRC technical staff from the Office of Nuclear Reactor Regulations Materials Division for License Renewal anonymously provided their general comments on PNNL-27120. Here are some of those excerpted NRC staff comments:

"The word 'gap' is overused—63 times."

"Consider a different word choice instead of 'technical gap' which has a pejorative connotation of no knowledge or no basis for regulatory decisions."

"The phrase 'real world' should be replaced with more accurate terminology—for example, 'in service conditions,' 'in-service conditions,' 'service aging,' or 'operating reactor service time,' depending on the context. Otherwise it implies that current guidance is not based on real knowledge."

"Harvesting components is GREAT and getting more data/information is a nice to have. But there are places in the report that seem to indicate that without this information from harvesting that going into SLR [Subsequent License Renewal] *is a concern. I am not sure this is the correct messaging, considering NRC just issued GALL/SLR* [Generic Aging Lessons Learned/Subsequent License Renewal] *and SRP/SLR* [Standard Review Plan/Subsequent License Renewal]."

[8] Exhibit 3, NRC email, September 9, 2018, NRC FOIA 2018-000831, Interim Response 1, https://beyondnuclear.org/wp-content/uploads/2022/08/Exhibit3_20180926_email_nrr_gunter.pdf

"*Throughout the report the tone seems to be that harvesting activities NEED to be performed otherwise failure of components will lead to unsafe operation of plants. I disagree with this notion—the whole premise of aging management is to inspect /manage so that issues are detected before they happen or early enough before there is a loss of intended function of a component. The inspection/aging management is normally commensurate with how much we know about the material and degradation. For example—If we know less there should be more inspections. If we know more—inspections may not need to be as frequent."*

"The report is full of statements that could lead a reader to believe that we have an inadequate basis for the GALL-SLR Report and by extension, we should not be issuing renewed renewed licenses for plants in the [------(b)(5)------] *time frame. I am confident that this is not the authors' intent. The report either has to be significantly toned down in regard to knowledge gaps or we need to include the basis on why we are moving forward with SLR in light of knowledge gaps."*

"I get what the authors are trying to state. However, if I were an intervener, I would use this document to shutdown SLRAs [Subsequent License Renewal Applications]. *I did not see any 'robust' text in the report that tempered the words or put them into a context that we are confident in the means of managing aging effects for the four classes of SSCs* [systems, structures, components] *of concern (e.g., concrete, cables). For example, this statement:* [------(b)(5)------] *If this is our basis for why GALL-SLR Report is adequate, it's pretty weak compared to the below underlined sentences. Further, the same paragraph goes on to state,* [------(b)(5)------].

"Big picture, I think the entire report needs to be scrubbed for text that points to gaps and if issued we need to have a stronger basis for why we will grant renewed licenses before the harvesting and testing is completed."

"In the Abstract, the author states: [------(b)(5)------] *How did we issue the GALL-SLR Report with technical gaps and how are we going to be able to issue a renewed license if there are technical gaps to reaching a reasonable assurance conclusion?"* [9] [**Exhibit #4**, "MDLR (Materials Division for License Renewal) comments on PNLL"s [sic] Guidelines for Harvesting Materials for SLR," NRC email, 03-20-2018, FOIA 2018-00831, Interim Release #5 to Beyond Nuclear, pp.46-51]

On March 31, 2019, the NRC staff published its Revision 1 of the publicly posted December 2017 PNNL Technical Letter Report as "Criteria and Planning Guidance for Ex-Plan Harvesting to Support Subsequent License Renewal" as PNNL-27120 Rev. 1 which was publicly posted only to the NRC Agencywide Documents and Access Management System (ADAMS) on April 2, 2019.[10] [**Exhibit 5**, *"Criteria and Planning Guidance for Ex-Plan Harvesting to Support Subsequent License Renewal,(PNNL-*

[9] Exhibit 4, "MDLR comments on PNLL"s (sic) Guidelines for Harvesting Materials for SLR," NRC email, March 3, 2018, NRC FOIA 2018-000831, Interim Response # 5, pp.46-51] Freedom of Information Act Exemption (b)(5) refers to "Information withheld pursuant to the deliberative process privilege." See pp. 46-51 https://beyondnuclear.org/wp-content/uploads/2022/08/Exhibit4_20180320_NRR-PNNL_general-comments_concerns.pdf

[10] Exhibit 5, "Criteria and Planning Guidance for Ex-Plan Harvesting to Support Subsequent License Renewal (PNNL-27120 Rev.1)," March 2019, Pacific Northwest National Laboratory, US Department of Energy, Contract DE-AC05-76RL01830, https://beyondnuclear.org/wp-content/uploads/2022/08/Exhibit5_pnnl-27120_rev1_March2019.pdf

27120 Rev.1)" March 2019, Pacific Northwest National Laboratory, US Department of Energy, Contract DE-AC05-76RL01830].

The March 31, 2019 revised version, in fact, "scrubbed" the previous report's references to numerous technical knowledge "gaps" in the agency and industry's understanding of the origins and progression of material age-related degradation in systems, structures and components without explanation or justification.

Contrary to the PNNL-27120 original finding that "*benchmarking of laboratory tests will require harvesting materials from reactors,*" the NRC revision simply "scrubbed" all of the laboratory's references to "require" strategic harvesting from decommissioning nuclear power plants for laboratory analysis.

Beyond Nuclear contends that the NRC March 2019 revision diminishes the critical role and significance of decommissioning opportunities to strategically harvest the "experiential real world" aged samples for laboratory analysis without any explanation.

After retracting the original technical report in September 2018, PNNL, DOE and IAEA websites never republished the NRC 2019 sanitized version.

Of more concern, the NRC "scrubbed" version made no attempt to provide information, justification or explanation as to how and why the sanitized version deleted scores of now simply missing laboratory references to technical "knowledge gaps" and recommendations to "require" strategic harvesting. Ironically, there is occurring simultaneous to a growing number of reactor units scheduling the prompt decommissioning in the United States which NRC has considered as an opportunity for scheduling strategic harvesting and laboratory research aimed at addressing knowledge gaps and uncertainties in the face of accelerating license renewals applications.

In fact, there is the appearance that the NRC revisionist authors were deliberate to not explain or reveal deletions. As one NRC email obtained through the Freedom of Information Act by Beyond Nuclear reads,

> "*I'd suggest reworking the first sentence to avoid commenting on whether or how technical gaps are addressed by GALL-SLR* (Generic Aging Lessons Learned/Subsequent License Renewal)… *The main concern of NRR* [Nuclear Reactor Regulation] *interviewers is that the document makes SLR* (Subsequent License Renewal) *look like it is dependent on harvesting*."[11] [**Exhibit 6**, "Re: TLR update," NRC email, August 27, 2018, FOIA 2018-000831, Interim Response #5]

Furthermore, PNNL's scientific authors of the original PNNL-27120 December 2017 Technical Letter Report, to date, never provided a written retraction of their report as released and republished by the Department of Energy (DOE) and the International Atomic Energy Agency (IAEA). To reiterate, neither the national laboratory nor the NRC have provided an explanation of the 2017 public release despite federal laboratory checks, balances and protocols for publishing vetted scientific technical information.

In a follow-up investigative report, The Seattle Times news outlet, the Washington statewide paper for Pacific Northwest National Laboratory, published a November 1, 2021 feature article on the mysterious

[11] Exhibit 6, "Re: TLR update," NRC email, August 27, 2018, FOIA 2018-000831, Interim Response #5, https://beyondnuclear.org/wp-content/uploads/2022/08/Exhibit6_-20180817_scale-back-gaps_avoid-cmt_GALL-SLR.pdf

retraction of the PNNL report. Staff reporter Hal Bernton requested an interview with the PNNL principal author who declined to speak about the scientific report's original release and the subsequent NRC retraction of PNNL-27120, its extensive scrubbing and revision without explanation.[12] [**Exhibit 7**, "Nuclear power plant operators want to run for eight decades, but a federal lab in Washington state found 'critical gaps' in knowledge about how reactors age," Seattle Times, November 1, 2021]

Beyond Nuclear connecting decommissioning to the NRC Status Report on Harvesting 06-27-2022

Beyond Nuclear was invited by the NRC to participate as a presenter and a panelist at a virtual public meeting on the Status of NRC Harvesting Activities, June 27, 2022.[13] [**Exhibit 8**, "Mind the Gap(s): Decommissioning's Critical Link to Operating License Extensions," Beyond Nuclear PowerPoint, June 27, 2022]

Beyond Nuclear's presentation provides several key public takeaways relative to the critical scientific linkage provided by strategic harvesting/laboratory analysis at decommissioning and "*reasonable assurance*" of the reliability and safety of operating reactors projected into the Subsequent License Renewal period. As the meeting summary states:

"*Mr. Gunter's stated that the key takeaways in the public interest are 1) Prompt decommissioning is broadly favored compared to 'SAFSTOR1', and the NRC should avoid more missed strategic opportunities to perform autopsies prior to burial and destruction of scientific evidence; 2) Strategic harvesting of 'high priority' aged material samples must be planned and coordinated with the stages of dismantlement; 3) Extreme license extensions cannot reasonably proceed absent verification and validation of the material science needed to close 'high priority' technical knowledge gaps in age related degradation mechanism management; and 4) As industry currently benefits from recurring license extensions, Congress and the NRC should increase operating license fees to sufficiently fund strategic harvesting at decommissioning sites for laboratory analysis."*[14] [**Exhibit 9**, "Summary of June 27, 2022, Public Meeting on Status of NRC Harvesting Activities," July 8, 2022, US NRC]

Thank you for this opportunity to comment on the NRC Decommissioning Rulemaking.

---signed by Paul Gunter---

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[12] Exhibit 7, "Nuclear power plant operators want to run for eight decades, but a federal lab in Washington state found 'critical gaps' in knowledge about how reactors age," Seattle Times, November 1, 2021, https://beyondnuclear.org/wp-content/uploads/2022/08/Exhibit7_SeattleTimes_20211101_-aging-knowledge-gaps.pdf

[13] Exhibit 8, "Mind the Gap(s): Decommissioning's Critical Link to Operating License Extensions," Beyond Nuclear Power Point, NRC Status Report on Harvesting, June 27, 2022, https://beyondnuclear.org/wp-content/uploads/2022/08/Exhibit8_BNpresent_20220627_NRC-stakeholder-mtg_harvesting-status.pptx

[14] Exhibit 9, "Summary of June 27, 2022, Public Meeting on Status of NRC Harvesting Activities," US NRC, July 8, 2022, https://beyondnuclear.org/wp-content/uploads/2022/08/Exhibit9_20220627_status-harv_nrc-mtg-sum_ML22188A210.pdf

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