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Improving the Efficiency of NRC Power Reactor Licensing: The 1957 Mandatory Hearing Reconsidered

By Dr. Matt Bowen, Rama T. Ponangi, and Stephen G. Burns
November 2023

REPORT

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Table of Contents

Executive Summary	07
Introduction	09
I. Origins of the Mandatory Hearing	11
A. Precipitating Events	11
B. Legislative Action	14
II. Current Implementation	17
A. The Modern NRC License Process and the Mandatory Hearing’s Place within It	18
B. The Latest Mandatory Hearing Held for a Power Reactor Combined License	23
III. Legislative Proposals to Eliminate the Mandatory Hearing	29
A. The 1974 AEC Legislative Proposal	29
B. The 2008 NRC Legislative Proposal	30
IV. Conclusion	37
Notes	40



Acknowledgements

The authors thank the reviewers of this report for thoughtful, helpful suggestions and comments. This report represents the research and views of the author. It does not necessarily represent the views of the Center on Global Energy Policy. The piece may be subject to further revision.

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Improving the Efficiency of NRC Power Reactor Licensing: The 1957 Mandatory Hearing Reconsidered

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Executive Summary

Nuclear energy can play a vital role in helping the US—and the globe—meet mid-century climate goals. But any such role for nuclear depends on overcoming the significant if underappreciated challenges posed by the current nuclear licensing process in the US. Put simply, getting a new nuclear project licensed is time-consuming and expensive. This report, part of ongoing research on nuclear energy at the Center on Global Energy Policy, Columbia University SIPA, focuses on a singular element of the licensing process that has drawn particular scrutiny for the resources it demands: the so-called mandatory hearing.

Dating to a 1957 amendment to the Atomic Energy Act (AEA) of 1954, the mandatory hearing was put in place during the early period of nuclear reactor regulation as a way of forcing the Atomic Energy Commission (AEC) to be more transparent with the public about projects under consideration for development. It was intended to provide an open forum in which the details of reactor project applications were aired publicly and debated. But today, well over half a century since the 1957 amendment to the AEA, there are several compelling reasons to reconsider the mandatory hearing requirement:

- Nuclear energy is no longer in a “developmental” period—one rationale of the mandatory hearing’s creation. Whereas the United States had zero commercial nuclear power reactors in operation in 1957, it now has operated well over a hundred.
- Many changes to the power reactor licensing regime have occurred since 1957. The AEC was abolished in 1975, and the Nuclear Regulatory Commission (NRC) was created without the promotional duties related to nuclear power that contributed to the establishment of the mandatory hearing requirement. Also, at the time of the mandatory hearing’s creation, the Advisory Committee on Reactor Safeguards (ACRS) had not yet been established in statute, nor were its reports reviewing power reactor applications required by law to be made public—both are the case today.
- While the hearing requirement was created for reasons of public transparency, the public now has access to power reactor licensing information through public outreach and scoping meetings near the sites of proposed reactors and application documents and NRC staff evaluations on the NRC’s website, in addition to laws requiring greater transparency in the US government writ large.
- Reactor licensing is now mature and technically rigorous. For that reason, the review value of NRC commissioners in the mandatory hearing, which occurs after the safety and



Improving the Efficiency of NRC Power Reactor Licensing: The 1957 Mandatory Hearing Reconsidered

environmental reviews have concluded, is negligible, especially for subsequent deployments of the same reactor design.

Doubts over the value of the mandatory hearing to the licensing process relative to its time and cost demands have inspired several unsuccessful initiatives to eliminate it over the decades. Recently, the US Congress began efforts to revamp the NRC licensing processes for commercial reactors as part of a broader effort to encourage advanced reactor demonstration. At the time of writing, the fate of this effort remains uncertain. This report makes the following recommendations:

- To improve power reactor licensing efficiency—reducing cost and time demands without compromising safety and environmental evaluations by NRC staff—Congress should eliminate the mandatory hearing in Section 189a of the AEA.
- The Commission could utilize public meetings on license applications to summarize and evaluate the adequacy of staff licensing reviews, which would involve the same activities as the mandatory hearing while providing the NRC flexibility to tailor review resources to what is most important in each case, especially for subsequent deployments of the same reactor design.



Introduction

Nuclear energy is one of three basic forms of low-carbon energy that could be used to replace fossil fuels and meet global climate goals. In the US, one underappreciated challenge to deploying this option, however, is the time and cost demands of the nuclear licensing process.

In recent years, the US Congress has taken numerous actions to encourage advanced reactor demonstration,¹ and initiated an effort to modernize and improve US Nuclear Regulatory Commission (NRC) licensing processes for commercial power reactors. Two examples of the former are agreements that the Department of Energy (DOE) announced in 2020² with private entities to cost-share over \$5 billion of investment in the development and demonstration of advanced reactor designs and the 2022 Inflation Reduction Act, which created a technology-neutral investment tax credit that will be available to nuclear, solar, wind, and other low-carbon energy projects. In terms of congressional initiatives to modernize NRC licensing, the Nuclear Energy Innovation and Modernization Act (NEIMA)³ of 2019 includes a focus on improving the efficiency, timeliness, and cost-effectiveness of licensing reviews of commercial advanced nuclear reactors. As has been detailed elsewhere, existing NRC licensing processes, such as the design certification process in 10 CFR Part 52, require lengthy reviews. This is even the case for reactor designs that have already been licensed—and in some cases built—in other countries, causing delays that may compel companies not to complete the US licensing process.⁴ An inefficient licensing process—in terms of both cost and time—could hinder reactor deployment in the United States, reducing nuclear energy’s ability to contribute to addressing US energy and environmental challenges.

For this reason, the nuclear energy program at the Center on Global Energy Policy, Columbia University SIPA has undertaken to review NRC statutes and regulations related to advanced reactor development and deployment, with the aim of identifying legacy statutes and regulations that could be adapted to a modern context to improve power reactor licensing efficiency.

One element of the licensing process that has repeatedly come under scrutiny for the time and resources it demands is the “mandatory hearing,” also referred to as the “uncontested hearing.” (The two phrases are used interchangeably to refer to the same hearing; for the purposes of consistency and clarity, this report will exclusively use the former.) The hearing is mandatory because it is required by statute, and it is uncontested because when it occurs there are no contested issues between NRC staff and the applicant, the two parties participating in the hearing. This is in contrast to what is known as a “contested hearing,” which is held separately and allows members of the public to contest, for example, safety and environmental issues related to



Improving the Efficiency of NRC Power Reactor Licensing: The 1957 Mandatory Hearing Reconsidered

a proposed project. The mandatory hearing originates in an amendment to Section 189a of the Atomic Energy Act (AEA) of 1954, 42 USC 2239(a), dating to 1957, which required a public hearing for all power reactor licensing proceedings and persists in the law today.

This report analyzes the circumstances surrounding the creation of this hearing requirement (Chapter 1), the evolution of its role in the commercial power reactor licensing process as well as recent NRC experience with the hearing (Chapter 2), and prior proposals from the Atomic Energy Commission (AEC) and the NRC for Congress to eliminate it in order to improve power reactor licensing efficiency (Chapter 3).

The report is based on NRC data and information on the mandatory hearing, including the staff hours that were required for such hearings in the past as well as projections for staff resources needed to conduct them in the future; videos of mandatory hearings from past power reactor licensing proceedings, archived on the NRC website; congressional, AEC, and NRC documents, especially those related to the creation of the mandatory hearing in 1957, policy deliberations on potentially eliminating the mandatory hearing, and how the mandatory hearing fits in to the current power reactor licensing process.

The report contends that eliminating the mandatory hearing would improve NRC power reactor licensing efficiency—reducing cost and time demands—without limiting or compromising the safety and environmental evaluations performed by NRC staff.



I. Origins of the Mandatory Hearing

The mandatory hearing under Section 189a was created in the very early years of nuclear power. In 1946, the US Congress passed the first AEA, which created a five-member Atomic Energy Commission (AEC) to carry out programs in nuclear weapons and nuclear energy development—private, commercial reactor projects were not then allowed.

Years later, the security calculus that had driven the secrecy and government monopoly of nuclear energy development in the 1946 act changed. A particular concern was that the United States might fall behind the Soviet Union, the United Kingdom, and other countries in developing civilian nuclear energy—a prospect with important geopolitical and economic implications. A view emerged in the United States that the involvement of private industry in civilian nuclear energy could hasten the latter’s development. This led to the passage of the second AEA in 1954, which tasked the AEC with promoting commercial nuclear power, including private efforts. Thus, for instance, the AEC would implement programs that cost-shared reactor deployment with private entities as part of the power reactor demonstration program announced in January 1955.

However, the AEA of 1954 also tasked the AEC with regulating the safety of these private reactor projects, setting the stage for potential conflict. Among the new act’s safety regulations was a two-step procedure for approving construction and operation of reactors. When a private entity submitted an application to construct a reactor, the AEC would evaluate the preliminary safety and design information and, if it was acceptable, grant a construction permit. Later, after construction was nearly finished, the AEC would evaluate whether the final design and operational considerations met safety requirements and, if so, would grant the utility an operating license to load nuclear fuel and begin operations.⁵

A. Precipitating Events

The AEC received only a few applications to build power reactors in the first years following the 1954 act. Two construction applications were submitted in 1955 to build demonstration power reactors, and in 1956 the AEC received three more construction permit applications and issued four construction permits.⁶ The first construction permits were issued in June 1956 to Consolidated Edison Co. of New York and Commonwealth Edison Co. of Illinois for the construction of large-scale power reactor plants.⁷ But it was a reactor project in Michigan that played a principal role in the enactment of the Section 189a mandatory hearing.

Walker and Wellock provide a brief history⁸ of the licensing of the Fermi 1 reactor, which was built at



Improving the Efficiency of NRC Power Reactor Licensing: The 1957 Mandatory Hearing Reconsidered

a site in Newport, Michigan. In January 1956, the Power Reactor Development Company (PRDC), a consortium of utilities that included Detroit Edison Company, submitted an application to the AEC to build a fast breeder reactor. A panel of outside experts—the Advisory Committee on Reactor Safeguards (ACRS)⁹—found in an internal report to the AEC that there was “insufficient information available at this time to give assurance that the PRDC reactor can be operated at this site without public hazard.” The ACRS was also unsure whether the evidence needed to support the safety case would be available when construction was finished.

Members of the Joint Committee on Atomic Energy (JCAE), the congressional committee in charge of overseeing the AEC, were upset when the ACRS safety concerns came to their attention. Procedurally, they believed that the AEA of 1954 required the AEC to keep them informed of such matters, which the AEC had failed to do. The JCAE requested a copy of the ACRS report, but the AEC would share it only on the condition that it be “administratively confidential,” which the JCAE refused. When the state of Michigan asked the AEC for a copy of the ACRS report, the AEC refused outright.¹⁰

Also contributing to the ire of the JCAE, in testimony to the joint committee in June 1956, AEC chairman Lewis Strauss mentioned that he was planning to attend a groundbreaking ceremony for the PRDC’s fast breeder reactor project—despite the license application still being under review by the AEC.¹¹

In August 1956, the AEC issued a “provisional” (defined in 10 CFR Part 50.35 at the time) construction permit for the PRDC project, by a vote of 3 to 1, despite the ACRS’s reservations. In October 1956, when the AEC granted a motion to intervene in the PRDC proceeding, the full ACRS report was finally released, though the AEC indicated at the time that this action was not to be considered a precedent.¹²

JCAE Report on AEC Regulatory Processes

The AEC’s actions in the PRDC case provoked a strong response from the JCAE. Senator Clinton P. Anderson, chairman of the JCAE, directed committee staff to conduct an investigation focused on three policy-related items: (1) requiring public hearings before the grant or denial of a construction permit by the AEC; (2) requiring all reports on reactor safety be made public as soon as completed; and (3) separating the AEC’s regulatory functions from its developmental and promotional functions.¹³

The JCAE study¹⁴ that emerged from this investigation called into question the AEC’s handling of reactor safety based on the provisional construction permit that it issued to PRDC, despite the ACRS raising substantial questions about the project in its report to the AEC. The JCAE committee staff were not yet ready to conclude that a separate agency was advisable, but they did suggest other reforms.



The committee staff observed that ACRS reports had been prepared on each of the early construction permit applications and submitted to the AEC, but the reports had not been made public. The study noted that the AEC's view was that the ACRS should advise the AEC only on the "limited" number of license applications for which the AEC technical staff determined such advice was desirable. The study also noted that the AEC opposed releasing ACRS reports into the public record.

With regard to the mandatory public hearing that Senator Anderson suggested be investigated, the JCAE study asserted that "the purpose of such a requirement would be to obtain an open forum in which matters of reactor safety and comparative merits of competing applications could be thoroughly aired and made known to the public, even in noncontested cases."¹⁵ The study assessed that, in noncontroversial applications, the requirement of an automatic hearing would be the "least burdensome" and consume the least amount of time for the AEC and the applicant to prepare for and conduct. According to the JCAE study, given the "numerous devices available to expedite proceedings," it was "likely" that a hearing could be completed within a day or so. The study noted that, at the time, it took at least six months on average for an applicant to prepare, and the AEC to process, a power reactor application, and thus the added time required to conduct a public hearing in a noncontested case would be unlikely to put a "significant" hardship on the applicant or the AEC.¹⁶

The JCAE study noted in particular the recommendations of an outside group of disinterested lawyers who met at the University of Michigan Law School Summer Institute on the legal problems of atomic energy in September 1956.¹⁷ That group recommended that "in order to help promote public understanding and acceptance of the atomic energy industry, the Atomic Energy Commission *during this present developmental period* should hold formal hearings on all applications for licenses for utilization and production facilities" (emphasis added).

According to Walker and Mazuzan,¹⁸ when Senator Anderson first raised the possibility of requiring the AEC to hold public hearings on all reactor construction permits and operating licenses, most AEC officials thought that such hearings would "cause extensive delays without greatly improving the licensing process." The view of the general counsel at the AEC, William Mitchell, was that holding hearings before a permit was issued might be desirable in some circumstances, but that the AEC should make the determination of when to hold them instead of them being mandated to by law. His concern was that any legal requirement would be "difficult to repeal even if the AEC or the Joint Committee later found it to be no longer useful."

B. Legislative Action

On March 21, 1957, Senator Anderson introduced S.1684 on the floor of the Senate, and his accompanying statement was that the bill was intended to require the AEC to follow certain procedures in connection with applications for construction permits or a license to operate nuclear reactors.¹⁹ The procedures, Senator Anderson argued, were meant to help increase public knowledge of reactor safety problems and assure fair and impartial administrative actions on applications. Section 1 of the bill statutorily established the ACRS; Section 2 required the ACRS to review applications under Sections 103 and 104b of the AEA of 1954, 42 USC 2133 & 2134(b) (Section 103 governs licensing of commercial power reactors) and to make its reports public, with exceptions for classified materials; and Section 3 required the AEC to hold a hearing after 30 days' notice and publication once in the *Federal Register* on each application under Sections 103 and 104b—this is the mandatory hearing.

Senator Anderson explained that he favored adding the mandatory hearing to the original 1954 act for the same reason that he supported it in 1957. Namely, he felt that since nuclear energy was perhaps the most important issue in industrial life at the time, the AEC needed to “do its business out of doors, so to speak, where everyone can see it.”²⁰

On March 25, 26, and 27, the JCAE held hearings on governmental indemnity and reactor safety.²¹ The hearings focused mostly on the indemnity legislation under consideration (today known as “Price-Anderson”), though at times discussed S.1684 (and its House companion bill, HR.6604).

Various individuals weighed in supporting S.1684, with somewhat different rationales and from different perspectives. Charles Haugh, vice president of the Travelers Insurance Co., seemed to believe it was important that the ACRS continue to exist, and noted that S.1684 would ensure this. Francis McCune, vice president and general manager of the atomics products division of General Electric Co., favored either mandatory public hearings or notice being given in some way so that a public hearing would happen if a “responsible group” wished it. He worried that, absent such procedures, findings might be subject to “retroactive attack[s]” that could breed insecurity among licensees. Arthur Berard, president of the National Electrical Manufacturers Association, supported wide dissemination of information on reactor hazards, and believed that S.1684 would assist in accomplishing that objective.

Benjamin Sigal, the general counsel for the International Union of Electrical, Radio, and Machine Workers, AFL-CIO, testified in support of S.1684. Sigal cited the PRDC case and noted that several unions had intervened and filed objections to the granting of the provisional construction permit within the 30 days permitted by AEC regulations. However, the AEC was carrying out a hearing



while construction was already underway and sums of money were being spent. In his remarks, Sigal suggested that the indemnity legislation not be adopted unless the objectives of S.1684 were accepted by Congress.

Another witness, John Jennings, president of Local 1004, United Papermakers and Paperworkers Union of America, identified himself as one of the intervenors in the PRDC case, and stated his concern that if Detroit Edison spent \$40 million on the reactor after being given a provisional construction permit and the AEC later found the reactor to be unsafe, the AEC might let it operate anyway given the amount of money that had been spent on it.²²

On May 7, 1957, the JCAE voted in support of legislation that had both the indemnity provisions and the ACRS and public hearing amendments. Although the JCAE report accompanying S.2051/HR.7383 focused mostly on the indemnity provisions, it stated that the provisions of S.1684 and HR.6604 were added because it was “felt that the Congress should...provide all possible statutory requirements for assuring that reactors should be as safe as possible.” Of the types of facilities (e.g., power reactors) for which an ACRS report was required, it specified they should “be licensed only after a public hearing.” The report also stated that, having established the ACRS in statute, the work of the ACRS would be best served if its reports were made public. It concluded that a “full, free, and frank discussion in public of the hazards involved in any particular reactor would seem to be the most certain way of assuring that the reactors will indeed be safe and that the public will be fully apprised of this fact.”²³

Regarding the legislative sections related to the ACRS and the mandatory public hearing, the JCAE report noted that the AEC “has not been in favor of these provisions as a formal statutory requirement.” According to Walker and Wellock, even though the AEC opposed all of these elements from S.1684, it “muted its objections” because the provisions were paired with the indemnity insurance provisions that the AEC desired.²⁴ Public Law 85-256 was approved on September 2, 1957.

Discussion

The mandatory hearing in Section 189a was created in a very different time, well before government transparency innovations such as the Freedom of Information Act (FOIA) in 1967, the Federal Advisory Committee Act (FACA) in 1972, and the Government in the Sunshine Act in 1976, as well as the advent of the internet and the public access to information (including nuclear review and application documents) that it has allowed. The US nuclear energy program was shifting from a security calculus that drove the government monopoly and secrecy of nuclear energy development to a focus on civilian nuclear energy, the development of which was widely seen as requiring the involvement of private industry. The AEA of 1954 tasked the AEC with spearheading this effort,



Improving the Efficiency of NRC Power Reactor Licensing: The 1957 Mandatory Hearing Reconsidered

giving it responsibility for both nuclear energy promotion and nuclear safety regulation. The AEC's handling of the PRDC Fermi 1 reactor licensing²⁵—including issuing a provisional construction permit despite expressed concerns from the ACRS as well as withholding information from Congress and the state of Michigan related to safety—undoubtedly played a role in Congress' legislative response to force the AEC to be more transparent with the public by creating the mandatory hearing and requiring ACRS reports be made public.



II. Current Implementation

The AEC interpreted PL 85-256 to mean that a hearing was required at the construction permit stage, at the operating license stage, and on any significant amendments to the application at either stage. In a 1968 law review article, Harold P. Green, a former staff attorney at the AEC, assessed that this led to a “multitude” of hearings that, except in a few cases involving outside intervenors, were conducted in a “pro forma” manner with only the applicant and AEC regulatory staff participating.²⁶ Safety issues were generally resolved before the hearing, so the roles of the applicant and AEC staff became establishing a record to support issuing the construction permit, operating license, or amendment. Green assessed that the multi-hearing procedure invited intervention and was also an exercise in “time-consuming, expensive futility.”²⁷

In part for these reasons, in 1962 Congress amended the 1954 act again, this time limiting the mandatory hearing to the construction permit stage.²⁸ This is how Section 189a of the AEA of 1954, as amended, remains today. (Thus it applies to both the 10 CFR Part 50 and 10 CFR Part 52 licensing pathways, and will apply to the under-development 10 CFR Part 53 licensing pathway.)

In Green’s description of the mandatory hearings that the Atomic Safety and Licensing Board (ASLB)—an internal, independent body within the AEC established in 1962 to adjudicate disputes—conducted previous to 1968, the mandatory hearing usually involved only presentations of testimony by the applicant and the AEC staff, subject to cross-examination. The ASLB did not conduct a “de novo” evaluation of the evidence, but merely determined whether the staff’s review had been “adequate” to support the findings requisite for issuing a construction permit.²⁹ Today, the mandatory hearing comes at the end of a much more mature, transparent, and lengthy licensing process that includes multiple opportunities for members of the public to learn about, provide input on, and/or challenge a given power project—all facilitated by technology and easy access to information on the NRC’s website in real time, which did not exist in 1957. Moreover, a major part of power reactor licensing today is the environmental review required by the National Environmental Policy Act (NEPA), 42 USC 4321 et seq., signed into law in 1970.³⁰ The environmental review added another level of regulatory diligence and oversight, and led to a whole new degree of licensing requirements and assessments, public participation, and transparency that also did not exist in 1957.

This chapter describes the NRC power reactor licensing process in its current form, including the opportunities it presents for public education and engagement as well as the mandatory hearing. It then compiles examples of licensing proceedings that have held mandatory hearings in the past two decades, and notes the instances where there were contested hearings as part of the

proceedings. Finally, the chapter summarizes the mandatory hearing from the most recently issued power reactor combined license (Turkey Point 6 & 7) and puts the hearing in its broader context.

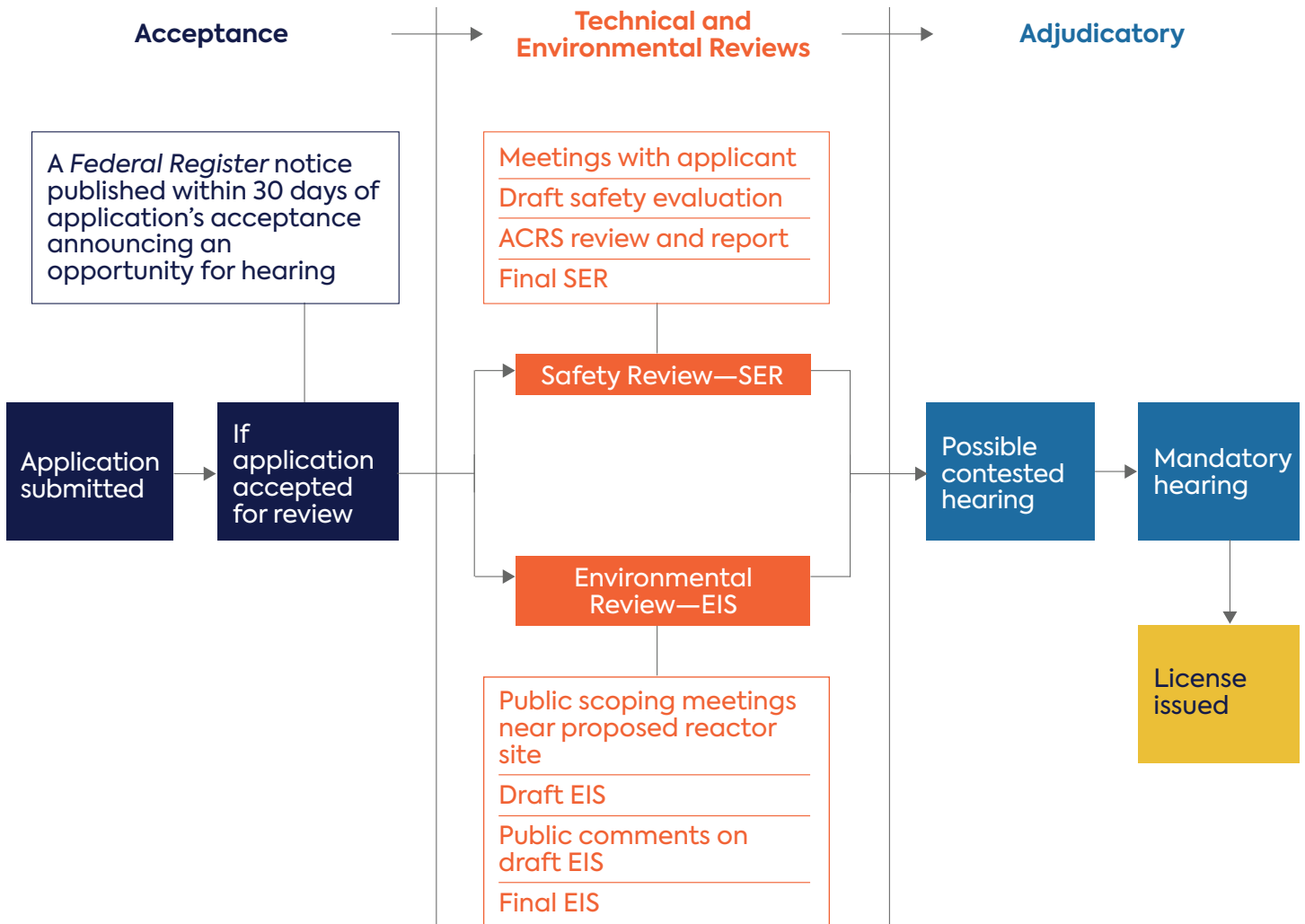
A. The Modern NRC License Process and the Mandatory Hearing’s Place within It

All power reactors operating in the United States today were licensed under 10 CFR Part 50, except for the most recent reactor project (Units 3 and 4 at the Vogtle Plant in Georgia), which was licensed under 10 CFR Part 52. As was the case in 1957, the Part 50 process involves two steps: a construction permit and an operating license. The NRC developed an alternative licensing process—10 CFR Part 52³¹—in 1989 to improve regulatory efficiency and add greater predictability to the process. Part 52 uses a combined operating license application (COLA) that authorizes both the construction and subsequent operation of a commercial power reactor. Additional licensing options in Part 52 include early site permits (ESPs), whereby an applicant can request approval for a given site without specifying the particular design of the reactors that would potentially be built there. Part 52 also includes design certifications (DCs), whereby the NRC would review a reactor design not attached to a particular site. After they have been issued, ESPs and DCs can be referenced in COLAs and eliminate staff re-review of regulatory issues settled in the ESPs or DCs, though a COLA need not reference an ESP or DC and could simply include the information contained in either. Since all of the mandatory hearings conducted in recent decades in connection with potential power reactor projects have occurred as part of the Part 52 process, this chapter focuses on Part 52.

Figure 1 depicts at a high level how the NRC power reactor COLA process functions under Part 52. After an applicant submits a COLA, the NRC assesses whether the application is sufficient to begin its review. If the NRC staff determine that the application includes the required information, the NRC publishes a notice of receipt in the *Federal Register*.



Figure 1: The NRC COLA process and opportunities for public education and engagement



Source: Authors' analysis.

According to 10 CFR 2.309, at this point would-be intervenors have nominally 60 days to file a hearing request based on at least one contention, which, if accepted, would lead to a contested hearing. The *Federal Register* Notice of Hearing specifically allows members of the public to contest the license application if they can (1) submit a hearing request in a timely fashion, (2) show that they have standing, and (3) show that they have submitted an admissible contention, e.g., a safety, security, or environmental concern that meets the admissibility criteria under the NRC's regulations. For example, an individual or group residing or located within 50 miles of the reactor project (historically the criterion for demonstrating standing in cases involving large light water reactors)³² may petition within 60 days of the application being noticed in the *Federal Register* to intervene believing that

Improving the Efficiency of NRC Power Reactor Licensing: The 1957 Mandatory Hearing Reconsidered

there is, e.g., a safety issue related to the reactor project that has not been discovered or correctly analyzed. This process—which is not the focus of this report and thus not covered in detail—can go on for years, consuming both NRC and applicant resources along the way.³³

After the *Federal Register* notice, a public meeting is held near the proposed site for the public to become more familiar with the safety and environmental elements of the project. During the course of the licensing review, several public meetings of this type are held to explain aspects of the project, including planned location, reactor design, the regulatory process, and how the public can participate in the licensing process.

All of the documents and correspondence related to a given application are published in the NRC online database, Agencywide Documents Access and Management System (ADAMS), which is the official recordkeeping system through which the NRC makes certain collections of documents publicly available. They are also deposited in the NRC Public Document Room in Rockville, MD, with some limited exceptions, including documents containing proprietary information or safeguards information (though potential parties may request access to proprietary or safeguards information³⁴). The agency uses a variety of media approaches—e.g., press releases and social media—to apprise relevant federal, state, and local officials, as well as news outlets in and around the proposed plant region, of the receipt of the license application.³⁵

The NRC staff then begins two main threads as part of its review of the application: (1) a safety evaluation report (SER), and (2) an environmental impact statement (EIS). The reviews analyze site characteristics (including surrounding population, seismology, meteorology, geology, and hydrology), anticipated response to hypothetical accidents, discharges from the plant into the environment, emergency plans, and other aspects of the proposed project.

The SER involves an assessment against a variety of NRC regulations to determine whether the plant meets the associated safety standards. The ACRS reviews every power reactor license application, and its reports are made public. As part of this process, it also evaluates the draft SER, and NRC staff incorporate their comments into the final SER. The final SER summarizes the NRC staff's review of the proposed facility's anticipated effect on public health and safety. The NRC staff's safety review includes numerous public meetings to address staff questions and exchange information with the applicant, as well as written requests for additional information, which are publicly available in ADAMS.

As part of the environmental review, the NRC holds public scoping meetings in the vicinity of the proposed project to provide a venue for members of the public to present information and opinions. The meetings typically involve state and local government officials, representatives of Indian tribes, and other members of the public who request participation. The NRC staff produces a draft EIS,



on which the agency then solicits comments from federal, state, and local agencies. Interested members of the public are also able to provide comments on the draft EIS, and the final EIS addresses all comments received. Similar to the safety review, the NRC staff hold numerous public meetings on environmental topics as well as public requests for additional information.

Each reactor design application receives its own webpage on the NRC website. For example, a member of the public can visit a webpage that depicts the actual and anticipated schedule for Kairos Power's Hermes reactor licensing review for a potential test reactor in Tennessee.³⁶ The NRC webpage shows the public meetings that have already occurred (e.g., public outreach, explaining the environmental review, and soliciting comments on the draft EIS), a project overview and list of pre-application activities, the construction permit application documents, and key milestones of the project that either have occurred or have yet to happen. Members of the public can sign up to receive updates on the Kairos project or any other reactor project.³⁷ The NRC website provides a list of public meetings scheduled,³⁸ and the NRC issues press releases for significant public meetings.

After the FSER and FEIS have been issued, the licensing process enters what the NRC describes as the "adjudicatory" phase of the licensing process. If the Atomic Safety and Licensing Board (ASLB) has determined that a given individual or entity contesting an application has satisfied the aforementioned criteria (i.e., a timely contention request, adequate standing, and an admissible contention), this can lead to a "contested" hearing.

Contested hearings involve the preparation of extensive written filings (e.g., statements of position by legal counsel and pre-filed written testimony by experts), evidentiary exhibits, related procedural motions, proposed cross-examination questions, and post-hearing proposed findings of fact and conclusions of law. The process can take many months to complete, depending on the number and nature of the admitted issues. For a contested hearing, the ASLB then decides, based on the evidence submitted and the governing regulatory standards, whether an applicant has met the burden of proof. In addition, both ASLB contention admissibility and post-hearing merits rulings can be, and regularly are, appealed to the Commission, which can add many more months to the process.

Regardless of whether there is a contested hearing, the next step in the licensing process is the mandatory (or "uncontested") hearing, which involves a "sufficiency" review wherein the presiding officer determines whether the safety and environmental record is sufficient to support a license being issued. This decision is made based on whether the NRC staff's review is adequate and has reasonable support in fact and logic. This is in contrast to the more in-depth review described above for a contested hearing.

Table 1 shows the licenses issued by the NRC over the past 20 years by site or applicant for applications that were subject to a mandatory hearing, as well as the type of license, the date

Improving the Efficiency of NRC Power Reactor Licensing: The 1957 Mandatory Hearing Reconsidered

of the mandatory hearing, and who carried it out. Many of these license applications included contested proceedings where someone submitted a hearing request, which could have been rejected at the outset, accepted and later rejected in response to application changes or motions for summary disposition, or accepted and resulting in a contested hearing (as occurred in the cases of the South Texas, Turkey Point, and Vogtle projects). All contested hearings were held by the ASLB, subject to review by the Commission.

Table 1: Recent mandatory hearings per Section 189a of the AEA

Site or applicant	Type of license issued	Mandatory hearing date, implementing body
South Texas Project 3&4	COL	11/19/15, Commission
North Anna 3	COL	3/23/17, Commission
William States Lee III 1&2	COL	10/5/16, Commission
Virgil C. Summer 2&3	COL	10/12–13/11, Commission
Vogtle 3&4	COL	9/27–28/11, Commission
Levy Nuclear Plant 1&2	COL	7/28/16, Commission
Fermi 3	COL	2/4/15, Commission
Turkey Point 6&7	COL	12/12/17, Commission
Clinton	ESP	11/07/06, ASLB
Grand Gulf	ESP	11/29/06–12/01/06, ASLB
North Anna	ESP	06/29/07, ASLB
Vogtle	ESP	3/23–25/09, ASLB
PSEG	ESP	3/24/16, ASLB
Clinch River	ESP	8/14/19, Commission
Shine Medical Technologies	Medical radioisotope CP	12/15/15, Commission
Northwest Medical Isotopes	Medical radioisotope CP	1/23/18, Commission

Source: NRC website.

The NRC estimates that future combined license mandatory hearings will consume 6,000–6,750 technical/legal hours of NRC staff time.³⁹ According to the NRC,⁴⁰ the technical staff hours for mandatory hearings are charged directly to the applicant, because that labor is necessary for



getting the application they submitted approved. They are charged at whatever the current NRC average cost per professional staff-hour rate is for a given year (e.g., \$300 per hour for fiscal year 2023⁴¹). Multiplying both technical and legal hours estimated for future combined license mandatory hearings would imply a cost of \$1,800,000 to \$2,025,000 per reactor license application. This is only a cost estimate for NRC resources, however, and it is reasonable that an applicant would need to dedicate comparable resources to preparing for the hearing, which would imply a total cost to the NRC and applicant of perhaps \$3,600,000 to \$4,050,000.

B. The Latest Mandatory Hearing Held for a Power Reactor Combined License

A review of the last COL issued—to build AP1000s at the Turkey Point nuclear power plant—as well as its licensing context, including public meetings, can help to illustrate in detail how the mandatory hearing has been conducted for power reactor applications in recent years.

Background on the Turkey Point AP1000 Combined License Application

On June 30, 2009, Florida Power and Light submitted a combined license application (COLA) to the NRC to build two AP1000s at an existing power plant site, Turkey Point. On September 4, the NRC completed the acceptance review of the application and docketed it for review.⁴²

The NRC's webpage on the Turkey Point 6 and 7 application lists eight public meetings⁴³ held in relation to the project (shown in Table 2). The NRC held the first of these meetings in January 2008—a year and a half before the application was submitted—and the last in December 2012.

**Improving the Efficiency of NRC Power Reactor Licensing:
The 1957 Mandatory Hearing Reconsidered**

Table 2: Partial list of public meetings held as part of the Turkey Point 6 and 7 license

Date	Location	Purpose
January 16, 2008	Rockville, MD	Discuss pre-application meteorological topics
December 5, 2008	Rockville, MD	Discuss geotechnical and hydrological conditions at the proposed site
March 26, 2009	Rockville, MD	Discuss underground injection control and site seismic characteristics
April 23, 2009	Homestead, FL	As part of public outreach, explain how the review would work, including details of the safety and environmental reviews
July 28, 2009	Rockville, MD	To orient NRC staff on the components and contents of the application following submission of the COLA in June 2009
July 15, 2010	Homestead, FL	Provide an opportunity for members of the public to submit comments on the scope of the EIS that was being prepared by the NRC staff
July 22, 2010	Teleconference	Discuss FPL’s activities related to selected information needs, with FPL providing a status of its activities
December 7, 2012	Miami, FL	Discuss request for additional information responses that the NRC received from FPL related to the alternative site selection process

However, this list from the Turkey Point 6 and 7 webpage is incomplete, as it does not contain dozens of other public meetings. All told, NRC staff spent approximately 89,000 hours on the safety and environmental reviews of the application, and conducted approximately 80 public meetings and teleconferences.⁴⁴

As part of the review, the applicant’s documents related to safety and environmental issues were posted on the NRC’s webpage devoted to the Turkey Point 6 and 7 project.⁴⁵ The webpage lists the reference documents, application information, review schedule, safety evaluations, environmental impact statement, topic reports, combined licenses, requests for additional information, public meetings, and contact information for the NRC staff who worked on the Turkey Point COL application. Many additional review documents for the Turkey Point 6 and 7 project can be found in ADAMS.⁴⁶

For the technical review, on August 1, 2016, the *Federal Register* gave notice of an upcoming ACRS subcommittee meeting on the Turkey Point application, to be held on August 18–19, 2016, in



Rockville, Maryland, with opportunity for input from members of the public. On August 26, 2016, the *Federal Register* provided notice that a full public ACRS meeting to review the Turkey Point license application would be held on September 8–10, 2016, likewise in Rockville, Maryland, and with opportunity for public input. A public ACRS report on the staff safety evaluation was published on September 16, 2016.⁴⁷ The NRC staff's final safety evaluation report was issued on November 14, 2016.

For the environmental review, in addition to the public scoping meeting in Homestead, Florida, mentioned in Table 2, the NRC published a draft EIS on March 9, 2015.⁴⁸ The NRC staff's final EIS for the Turkey Point 6 and 7 project was published in October 2016,⁴⁹ with a supplement in December 2016.⁵⁰

By the end of 2016, both the safety and the environmental review had concluded.

For the Turkey Point 6 and 7 project, there was a contested proceeding spanning from 2010 to 2017, involving both site-specific litigation and petitions affecting multiple dockets,⁵¹ with the ASLB finally terminating the contested proceeding in 2017.

The Turkey Point 6 and 7 Mandatory Hearing

One year after the final EIS and SER had both been published, the mandatory hearing required by Section 189a was held for the Turkey Point 6 and 7 project.⁵² To illuminate the structure of the mandatory hearing and illustrate the types of questions that commissioners ask, the roughly four and a half hour hearing is summarized below. (It should be noted that there are also months of activities, including exhibits, written testimony, and responses to pre- and post-hearing questions from the Commission, surrounding the mandatory hearing that are not included in this summary.)

On December 12, 2017, the hearing began with opening remarks from NRC chair Kristine Svinicki, who also admitted exhibits and swore in witnesses. FPL staff provided an overview of the application. Chair Svinicki asked FPL about its integrated resource plan, its method for evaluating the building of the project, its knowledge management programs, and its cooperation with other AP1000 projects. Commissioner Jeff Baran asked about Hurricane Irma and whether the proposed units would be able to handle such an event. Commissioner Stephen Burns asked about 10 CFR Part 52 and its implementation so far, including challenges encountered as well as pre-construction activities and insights from AP1000 construction in China. NRC staff then gave their overview presentation on the application. Commissioner Baran did not have questions for this panel. Commissioner Burns asked the NRC staff, given the previous AP1000 COLs, what unique challenges the Turkey Point application posed, as well as a question about construction cost estimates in the application. Chair Svinicki asked about the differing numbers of staff hours that have been required for previous COLs, whether there had been efficiency improvements for subsequent COLAs, and knowledge management practices given internal NRC restructuring.

Improving the Efficiency of NRC Power Reactor Licensing: The 1957 Mandatory Hearing Reconsidered

Next, FPL and NRC staff presented on safety aspects of the application. Following the presentations, Commissioner Burns asked questions related to deep well injection and whether the related tests were required by the state of Florida or some other commitment FPL was making. He asked the NRC staff whether they had particular guidance on reviewing deep water effluents other than 10 CFR Part 20. Finally, Commissioner Burns asked about storm surge, sea level rise, and data sources and projections for both. Chair Svinicki asked questions regarding the approach to security and advantages and disadvantages of the consolidated center FPL proposed. She asked the NRC staff to explain how they quantified “significantly” from 10 CFR 100.21(h) in determining if a proposed location “significantly” exceeded 100 people per square mile. Commissioner Baran asked a series of questions related to sea level, and whether the 1-foot assumption of sea level rise in the analysis was conservative enough.

The final panel examined environmental aspects of the application. FPL and NRC staff gave presentations, and then Chair Svinicki asked about engagement with local and state authorities, community entities, and Miami-Dade County. She asked NRC staff how they identified and evaluated new information given the exorbitant amount of time required for staff review, and whether there was any information that qualified as novel. Commissioner Baran asked about the site selection process and how Turkey Point ended up finishing first in the second phase after not being part of the first phase. He asked what factors drove Turkey Point to receive the highest score, whether Turkey Point was handled differently than other sites, and whether it successfully passed through screening because it was an existing site. He also asked whether Turkey Point was required to meet exclusionary criteria and whether it would have qualified if it wasn’t an existing power plant site, given the presence of the American crocodile in the vicinity and other environmental factors. Finally, Commissioner Baran asked about National Park Service and Environmental Protection Agency concerns and disagreements on the final EIS. Commissioner Burns asked whether any new information had been identified that would require a change to the final EIS, including the draft settlement between FPL and the city of Miami and any information about hurricanes.

Chair Svinicki then closed the meeting, which ran for just over four hours (excluding a lunch recess). The archived video of the Turkey Point 6 and 7 mandatory hearing is the source used to construct the summary in this sub-chapter and can be viewed on the NRC website.⁵³

According to the NRC, technical staff devoted 5,591 hours to the mandatory hearing for Turkey Point—a number that excludes any hours from legal counsel.⁵⁴ Using the fiscal year 2017 hourly rate of \$263 per hour in 10 CFR 170.20 (as of June 2017), this would imply a cost of around \$1,470,433, with perhaps a comparable expenditure on the part of the FPL.



Discussion

Clearly, Senator Anderson’s desire (described in Chapter 1) that the AEC “do its business out of doors” is now fulfilled in myriad ways as part of today’s NRC power reactor licensing process. In particular, the advent of the internet and the publication of license application documents, draft NRC staff assessments, ACRS reviews, and final SERs and EISs on the NRC website is a sea change from how the relatively new AEC licensing process was constructed when the mandatory hearing was created. NEPA, and the associated EIS element of the licensing process, was added in 1970. The public meetings that take place as part of today’s licensing process provide the public with many opportunities to ask questions and provide input on the safety and environmental reviews. The NRC’s approach to open government is described on its website,⁵⁵ and its public meetings policy, which lays out the agency’s transparency objectives, was first adopted in 1978 and most recently revised in 2021.⁵⁶

As currently conducted, the mandatory hearing does not play an important role in educating the public on a given reactor project and/or eliciting public input as part of the licensing process, given all that has preceded it. Instead, the hearing consists of NRC commissioners listening to presentations from NRC staff and the applicant and asking questions of them.

In the case of Turkey Point 6 and 7, any member of the public with an interest in the project could have found the associated *Federal Register* notices, attended in person or called into the public meetings to receive updates, read the publicly available licensing application and review documents (from the applicant, NRC staff, or ACRS), and/or signed up for alerts on the project. This would all have been in addition to the regular news reporting that was taking place. The first public meetings with the NRC on the project were held almost ten years before the mandatory hearing, so the mandatory hearing was hardly the first time interested members of the public would have learned about the project, nor was it their first opportunity to learn about the details discussed at the hearing.

Moreover, whatever little value the mandatory hearing may have added came at an enormous expense. The overview presentations and those on safety and environmental aspects of the license applications amounted to about three hours of presentations, in addition to around 90 minutes of questions. This required thousands of staff and applicant hours and likely over several million dollars in costs for both entities combined, and perhaps more importantly added months to the licensing process.

Given the combined technical strength of the NRC staff and ACRS reviews, it would be highly unlikely for the NRC commissioners themselves to uncover a significant safety issue on account of

Improving the Efficiency of NRC Power Reactor Licensing: The 1957 Mandatory Hearing Reconsidered

the mandatory hearing alone, especially for subsequent deployments of the same reactor. Again, taking the Turkey Point 6 and 7 mandatory hearing as an example, that application was the fifth AP1000 project to be licensed, though the review still involved 89,000 NRC staff hours. It involved a Commission-certified AP1000 design whose certification had, of course, also been reviewed and approved by the NRC staff and the ACRS, and all three entities had reviewed and approved the previous four AP1000 COLAs. By the time the mandatory hearing for the fifth project occurred, there was little new ground for the NRC to cover in the fifth AP1000-related mandatory hearing. In line with this view, a 2023 Idaho National Laboratory (INL) report analyzing past mandatory hearings assessed that they “serve little purpose.”⁵⁷

The commissioner review conducted as part of the mandatory hearing could easily be accomplished through other means. The Commission has authority over its staff, with full power to be informed and raise issues. There are multiple other avenues for commissioners to ask questions, such as meetings with the applicant and NRC staff (and, of course, the commissioners could read the publicly available application and review documents as any member of the public can), that do not involve the time and expense of holding a more formal public hearing. If the NRC had the statutory flexibility, the NRC commissioners could instead hold a meeting or a series of meetings to discuss issues as they come up in a given licensing proceeding, which would not necessitate the large amount of staff resources or the months of delay that the mandatory hearing currently incurs.



III. Legislative Proposals to Eliminate the Mandatory Hearing

At least two times in the past 50 years, the AEC (1974) and the NRC (2008) have examined measures to improve the licensing efficiency of power reactors, concluded that eliminating the mandatory hearing would improve efficiency without compromising safety, and sent proposals to Congress along these lines. Related to the later proposal, congressional deliberations in the past decade have included discussion of legislative drafts that would eliminate the mandatory hearing, and Senate and House hearings discussed this policy option. Such legislation has not yet reached a vote on the floor of either chamber. This chapter reviews these previous reform efforts as a starting point for discussions today.

A. The 1974 AEC Legislative Proposal

In 1973, President Nixon observed in a message to Congress regarding the energy challenges facing the United States at the time that nuclear power was one important source of energy that could be grown to meet demand. Nixon also observed the need to “streamline our governmental procedures” for licensing energy facilities.⁵⁸ Later that year, the president directed the Atomic Energy Commission to take steps to improve the efficiency of nuclear reactor licensing and construction and reduce the time to bring new reactors online from 10 to 6 years.⁵⁹ President Nixon also proposed that the AEC’s licensing and regulatory functions be transferred to an independent agency, and that the responsibility for carrying out nuclear energy research and development be performed by a new agency.⁶⁰

As part of the streamlining efforts, in December 1973 an AEC task force recommended that the mandatory hearing be eliminated.⁶¹ On March 8, 1974, the AEC forwarded to Congress draft legislation that would eliminate the mandatory hearing in Section 189a of the AEA. In their analysis of this proposal, Shapar and Malsch⁶² observe that, as a practical matter, the public hearings required by Section 189a were not vehicles for dissemination of public information, and “underlying the Commission’s proposed amendment to section 189(a) is the belief that a public hearing, unless requested by an interested person, serves no significantly useful purpose and can result in the expenditure of technical resources which could be devoted to other regulatory matters.”

On March 13, 1974, the Atomic Energy Commission requested that the bill be introduced, and Joint Committee on Atomic Energy chairman Melvin Price and Senator John O. Pastore introduced identical bills to improve and shorten nuclear power plant licensing: HR.13484 and S.3179.⁶³ These



Improving the Efficiency of NRC Power Reactor Licensing: The 1957 Mandatory Hearing Reconsidered

bills were discussed in subsequent hearings,⁶⁴ with some panelists supporting and others opposing eliminating the mandatory hearing.

The legislation that was ultimately passed—the Energy Reorganization Act of 1974 (ERA)—did not, however, include the mandatory hearing proposal, likely because it was focused on more fundamental changes to the AEC. The ERA dismantled the AEC and created the US Nuclear Regulatory Commission in its place, giving it the regulatory responsibilities for commercial nuclear power, but not the promotional duties related to nuclear energy. The latter duties were transferred to a new Energy Research and Development Administration, which later became the US Department of Energy.

B. The 2008 NRC Legislative Proposal

Thirty-two years after the AEC was abolished, the NRC put together a task force to explore further efficiencies in the NRC’s review of new reactor license applications pursuant to 10 CFR Part 52.⁶⁵ The task force evaluated the NRC’s environmental, technical, and adjudicatory review processes for new reactor applications and provided options and made recommendations to improve processes while maintaining safety.

When the task force published its report in 2007, it estimated that it would take approximately 42 months for the NRC to complete a review of a COL application. The technical and environmental reviews for issuing a final safety evaluation report and final environmental impact statement were estimated to take 30 months, while 12 months were allotted for adjudicatory proceedings, including the mandatory hearing.

While no COL had been issued before the NRC task force carried out its work, there had been several early site permits (ESPs) issued. These are not a complete construction permit, but they were still deemed to require a mandatory hearing pursuant to Section 189a of the AEA, as they were considered a “partial” construction permit. The task force found that each hearing required more than 1,000 hours of work for the ASLB alone, and the staff resources needed to support three ESP proceedings varied from approximately 2,000 to 3,000 hours for each one. ASLB board members estimated that a COL mandatory hearing could require 2,000 to 10,000 hours of work by a board.

The task force noted that when the mandatory hearing was enacted into statute in 1957, the requirement was an important procedural device for ensuring openness and increasing public confidence. However, the task force also found that the goals of the mandatory hearing were already being met in a variety of ways under laws that were not in existence when the mandatory hearing was created. Those other ways included: the Freedom of Information Act (1967), the Federal



Advisory Committee Act (1972), the Government in the Sunshine Act (1976), and the public processes in the National Environmental Policy Act (NEPA) (1970). In addition, when Congress created the mandatory hearing requirement, the AEC had both promotional responsibilities for nuclear energy and the responsibility for safety regulation. But when the AEC was abolished in 1975, the newly created NRC was given safety regulation responsibilities without the promotional responsibilities for nuclear energy (which today reside with the DOE).

The task force did not believe that the current practice associated with mandatory hearings was justified—both in terms of any safety significance and the developed legal landscape surrounding them (described in the previous paragraph). To support this view, the task force report cited the thoroughness of the contemporary NRC’s technical review, the fully developed NEPA process, the aforementioned openness statutes that had been passed into law, and the fact that, unlike in 1957, Advisory Committee on Reactor Safeguards reviews were now public, as required by law.

The task force’s report did not directly estimate how much time eliminating the mandatory hearing would save in the licensing process in all cases. Instead, it estimated how much time could be saved in the adjudicatory process following two different pathways.⁶⁶

- If there were no contested hearing and only a mandatory hearing that was conducted by the Commission instead of the ASLB, the adjudicatory portion could be reduced by 8–10 months.
- If there was a contested hearing and NRC policy was revised to reflect a policy where this contested hearing fulfilled the mandatory hearing requirement in Section 189a, the adjudicatory portion of the licensing process could be reduced by 3–6 months in that instance.

The first estimate likely contributed to the Commission’s subsequent decision to hold the mandatory hearing itself instead of having the ASLB do so. The second would imply that eliminating the mandatory hearing (and thus, in cases where there was a contested hearing, nothing would be required afterwards) might save on the order of 3–6 months during the adjudicatory phase of the licensing process—at least in the case where there was a contested hearing. (The aforementioned 2023 study by Idaho National Laboratory⁶⁷ estimated that the mandatory hearing added 4–7 months of time to the licensing process when measured from either the publication of the FSER or the FEIS, whichever came later. The INL estimate was calculated from actual licensing experiences and is relatively close to the 3–6 month estimate implied in the 2007 task force report.)

Chairman Klein and Commissioner Merrifield (the latter of whom led the task force) sent the report to the other three commissioners on April 18, 2007, and urged them to act expeditiously on the recommendations.⁶⁸ Commissioner McGaffigan agreed that the mandatory hearing was “obsolete” for the reasons given in the report and supported proposing legislation to amend Section 189a

Improving the Efficiency of NRC Power Reactor Licensing: The 1957 Mandatory Hearing Reconsidered

to delete the mandatory hearing requirement. However, he suspected that there might be great difficulties in the “current Congress” passing such legislation (“long the odds are against us”), though he also reflected that the situation could change. He assessed that the case for reform would either build or evaporate over time, and noted recent examples in which mandatory hearings “significantly” extended time to completion where there were no contentions admitted.⁶⁹

Commissioner Jaczko believed that, overall, the agency was not yet at a point where it could meaningfully evaluate the new reactor licensing process (10 CFR Part 52), as it had not yet been used. He stated that he believed mandatory hearings played a “pivotal” oversight role in ensuring adequate protection of public health and safety and the environment, and opposed seeking legislative changes to eliminate the requirement. He thought that the Commission should conduct the mandatory hearings, as it was ultimately responsible for any decision regarding a license application.⁷⁰

Commissioner Lyons stated that he did not anticipate mandatory hearings on uncontested issues would be the probable source of new insights into licensing matters. He contended that the extensive staff work, applicant work, and review by public interest groups and possible contested issues would result in a far deeper review than a mandatory hearing that does not take a de novo approach, which he felt was not justified, reasonable, or even possible short of setting up an entire “shadow” NRC. In sum, he did not believe that mandatory hearings on uncontested issues were a good investment of regulatory resources, and preferred that hearings only be held on admitted contentions brought by parties to a proceeding.⁷¹

On June 22, 2007, a staff requirements memorandum was issued that recorded which task force recommendations the Commission approved (and disapproved).⁷² On the mandatory hearing, the Commission approved the proposal that the Commission itself conduct the mandatory hearing (i.e., not the ASLB) absent legislation eliminating the requirement for a hearing, including in instances when a request for a hearing is not made. The NRC also approved obtaining legislative authority from Congress to eliminate the statutory requirement in Section 189a of the AEA to hold a hearing even if no individual asked for one.

As mentioned previously, subsequent to the appearance of the task force report, the Commission did change its policy from having the ASLB conduct the mandatory hearing to having the Commission itself do so. In 2008, the NRC sent a draft bill and legislative memorandum to Congress proposing to eliminate the mandatory hearing and explaining the rationale for such a move.⁷³ The letter noted that “The Commission has found that there is not much added value in holding uncontested hearings” and that the Commission’s means and methods for promoting public access to its actions had become “numerous and significant.” The letter assessed that elimination of



the mandatory hearing would obviate the need for the Commission to expend resources on such proceedings and streamline its licensing process, saving time and scarce resources.⁷⁴

Draft legislation proposing to eliminate the mandatory hearing was not considered in Congress in the years following the proposal, however (possibly due to the financial crisis of 2008 and then competition from other legislative priorities, among other factors). In 2016, two drafts based on the NRC's 2008 draft law proposal were discussed in hearings held by the Senate Environment and Public Works Committee (April 21, 2016) and the House Energy and Commerce Committee (April 29, 2016), with some panelists voicing support for eliminating the mandatory hearing and others opposing the idea.

In the House hearing, a draft of “The Nuclear Utilization of Keynote Energy Policies Act”⁷⁵ containing a section that would eliminate the Section 189a mandatory hearing was discussed. Jeff Merrifield, a former NRC commissioner who led the 2007 NRC task force that recommended eliminating the mandatory hearing and now worked at Pillsbury Law, assessed that there were already “extraordinary” opportunities for the public to participate in the licensing process, and the mandatory hearing was an “antiquated” legacy of the 1950s that was not needed and was consuming far too much time. Geoff Fettus of the Natural Resources Defense Council (NRDC), on the other hand, asserted that eliminating the mandatory hearing would do much harm to public confidence that all technical issues had been thoroughly and adequately considered by the NRC, and that the hearing had a “proven track record” of highlighting weaknesses in the NRC's staff review. The House Energy and Commerce Committee ultimately voted out a new version of the bill, HR.1320, that only required a study of the impacts of eliminating the mandatory hearing, though this bill did not pass into law.⁷⁶

The Senate hearing likewise contained conflicting views on eliminating the mandatory hearing. The hearing focused on a draft of the Nuclear Energy Innovation and Modernization Act (NEIMA)⁷⁷ containing a section that would eliminate the mandatory hearing. Ed Lyman from the Union of Concerned Scientists (UCS) testified that the mandatory hearing played a “unique” and “important” role in filling a gap in instances where a contested hearing does not occur. Arguing in the opposite direction, Maria Korsnick of the Nuclear Energy Institute noted that the public does not participate in the mandatory hearing, thus eliminating it did not mean cutting the public out. Similar to the House, the version that the Senate Environment and Public Works Committee ultimately reported to the Senate did not contain the section eliminating the mandatory hearing.⁷⁸

In the questions for the record coming out of the Senate hearing, the NRDC was asked for other instances since 1992 of problems being identified in mandatory hearings. The NRDC said that since 1992 there had been multiple instances of mandatory hearings identifying crucial safety concerns

Improving the Efficiency of NRC Power Reactor Licensing: The 1957 Mandatory Hearing Reconsidered

that might not have been rectified otherwise. The two examples given by NRDC were the Clinton ESP and Vogtle COL hearings. In the first, the NRDC noted that the ASLB stated that the NRC staff's review "did not supply adequate technical information or flow of logic to permit a judgment as to whether the Staff had a reasonable basis for its conclusions." In the second, the NRDC stated that "as part of the 2012 mandatory hearing process" the Commission "rejected" the staff's evaluation of the surveillance of the "squib valves" and imposed a license condition requiring implementation of a substantially more rigorous surveillance program prior to the load of fuel in the reactor.⁷⁹

The NRDC and UCS testimonies in both hearings cited a memo written by Diane Curran, a lawyer at law firm Harmon, Curran, Spielberg & Eisenberg. The Curran memo asserted that mandatory hearings have a "proven track record" of highlighting weaknesses in the NRC staff's review process for early site permits and regulatory questions requiring resolution by the Commission. As evidence, it cites the cases of the Clinton site ESP and the North Anna ESP. In the former, the memo quotes the ASLB as criticizing various sections of the NRC staff's review, while also acknowledging that the ASLB board recommended the ESP be granted. For the North Anna ESP, the memo⁸⁰ quotes a statement from the majority decision regarding the Final Environmental Impact Statement (FEIS), "which contained 'paucity of analysis, investigation, and information' regarding the subject of Environmental Justice," and notes a dissenting opinion from one ASLB judge that criticized the FEIS for failing to provide an adequate analysis of alternative sites and system design alternatives. The memo also noted that while the Commission approved the adequacy of the staff's alternative analysis, it ordered NRC staff to provide more detail in future FEISs.⁸¹

After the 2016 hearings, the mandatory hearing discussion resurfaced in Congress in 2023. On July 18, 2023, the House Energy and Commerce Committee held a hearing⁸² on several pieces of legislation, including a discussion draft of the "Efficient Nuclear Licensing Hearings Act,"⁸³ which would remove the mandatory hearing requirement. At the hearing, the NRC executive director of operations, Dan Dorman, acknowledged the NRC's legislative proposal to Congress in 2008 that the mandatory hearing be eliminated and testified to the committee that removing the requirement would affect neither the interest of any party seeking a hearing nor the NRC's safety conclusion.⁸⁴ In the 118th Congress, no legislation eliminating the mandatory hearing has reached a vote on the floor of either chamber as of October 2023.

Discussion

The AEC and the NRC have in the past proposed to Congress to eliminate the mandatory hearing, assessing that it provides little benefit relative to the cost and time involved. Similarly, the same 2023 INL report cited earlier looked at mandatory hearings held since 2009 and found that the licensing



delay due to the mandatory hearing ranged from 4–7 months, but was most commonly 6 months; it recommended eliminating the uncontested hearing.⁸⁵ Some testimonies to Congress in the past have agreed with this view, while others have held that the mandatory hearing remains valuable.

However, in the recent NRDC and UCS testimonies, as well as in the Curran memo, none of the cases cited as evidence of the value of the mandatory hearing—the Clinton ESP, the North Anna ESP, the Vogtle COL—actually uncovered issues that rose to a level of seriousness that altered the outcome of the licensing process. As much as the Curran memo made of ASLB criticisms of the NRC staff evaluations in both cases, those same ASLBs found the staff’s review of the license applications to be adequate. The examples largely concern the sufficiency of the documentation and not new safety issues.

The Clinton ESP was part of a group of applications that were the first the NRC processed as part of the 10 CFR Part 52 licensing pathway, and it was the first mandatory hearing held as part of an ESP application. As the Commission itself noted, this was separately also the first mandatory hearing held as part of any new reactor licensing pathway in over 20 years. As the Commission additionally observed, for these new license applications, the ASLBs were being presented with “enormous technical documents and are trying to determine where to focus their attention.”⁸⁶ The ASLBs, in other words, were to some degree trying to figure out how to approach the mandatory hearing for these ESPs. As part of the Clinton ESP, a dispute arose between NRC staff and the ASLB over how much work the former should be required to do in response to the latter’s requests (i.e., whether the ASLB’s review was beginning to border on a “new review” as opposed to an adequacy review). The Commission, in its July 26, 2006, order, clearly felt that the ASLB had gone too far in some places in terms of what it was requesting from NRC staff and the additional burdens the ASLB was placing on them. The Commission thus directed the board to modify its order to reflect the Commission’s clarification of expectations regarding the conduct of mandatory hearings.

In the case of the North Anna ESP, neither the ASLB majority nor the Commission made a condition related to the matter of environmental justice in their respective final orders. While the Commission agreed with the assessment of ASLB judge Alex Karlin (in his dissenting opinion) that the “FEIS does not show that the Staff’s alternative site review *at the candidate site level* was sufficiently detailed,”⁸⁸ the Commission concluded that the “Staff’s underlying review was sufficiently detailed to qualify as ‘reasonable’ and a ‘hard look’ under NEPA—even if the Staff’s description of that review in the FEIS was not.”⁸⁹ The Commission did direct the staff to include more details in future FEIS analyses of alternative sites, but this alone hardly qualifies as an important policy change brought about by the mandatory hearing.⁸⁷

Similarly, the Vogtle COL was the first such license issued under 10 CFR Part 52, and thus the

Improving the Efficiency of NRC Power Reactor Licensing: The 1957 Mandatory Hearing Reconsidered

mandatory hearing conducted for it was the first of its kind. With respect to NRDC's responses to congressional QFRs on squib valves, the public NRC staff evaluation of the AP1000 design already included a surveillance program for the components in question, and the public ACRS review had already highlighted the issue; the mandatory hearing in question did not discover a new technical issue related to squib valves by any stretch. ASME codes related to squib valve performances were under development, as all parties publicly understood. The ACRS had recommended in its public report that "a regulatory requirement be established focused on the development of the ISI/IST program, including a review of the lessons learned from the valve design and qualification process,"⁹⁰ and the Commission followed that recommendation. That the Commission placed certain conditions on the Vogtle 3 and 4 license related to preservice testing and operational surveillance was not an authority derived from the mandatory hearing—the Commission has the authority to place those same conditions on a license in the absence of a mandatory hearing. Any questions that the Commission had on the topic of squib valves could have been answered through meetings and other communications with the applicant and NRC staff during the licensing process to arrive at the same decision. Most importantly, in all of these examples, the mandatory hearing presiding officer never disputed the NRC staff's conclusions regarding the findings necessary to issue the requested permits or licenses.



IV. Conclusion

Nuclear energy is one low-emission option to address today's energy and environmental challenges, and Congress and the DOE have recently made large investments in advanced reactor development in the form of cost-share agreements and tax credits.⁹¹ In this context, taking a renewed look at NRC power reactor licensing efficiency makes sense; in fact, in 2019, Congress directed the NRC to work on, among other things, improving its licensing efficiency in the Nuclear Energy Innovation and Modernization Act.⁹²

The University of Michigan Law School report cited by JCAE staff in their 1957 report recommended the mandatory hearing for the “developmental” period of nuclear energy, which has clearly passed.⁹³ When the mandatory hearing was created in law, the United States had zero commercial nuclear power reactors in operation. Today, well over a hundred US commercial reactors have been deployed, with pressurized water reactors and boiling water reactors alone accounting for over 4,000 reactor-years of operational experience.

Since 1957, many changes to the power reactor licensing regime have occurred. The AEC was abolished in 1974, and the NRC was created without the promotional duties related to nuclear power that its predecessor possessed. The ACRS, which is still established in statute today, has played an integral part in the power reactor licensing process for over 65 years, and its reports are made public, as required by law. Thus, the details related to the AEC's mishandling of the PRDC Fermi 1 reactor licensing—e.g., suppressing ACRS concerns from the JCAE, the state of Michigan, and the public in general—are simply no longer relevant to the licensing of power reactors.

Senator Anderson's desire for the AEC to conduct its business where everyone can see it and to inform the public is now fulfilled in a variety of ways: public outreach and scoping meetings near the sites of proposed reactors and the placement of application documents and NRC staff evaluations in the public realm, especially on the NRC's website. Laws passed after 1957 such as the Sunshine Act, FOIA, and FACA require and provide avenues that promote greater transparency from the US government writ large, including the NRC.

The potential value of mandatory hearings is even harder to discern in cases where subsequent deployments of the same reactor design are being considered—a point illustrated by the Turkey Point 6 and 7 example discussed in Chapter 2. In such cases, the NRC is even more unlikely to uncover a technical issue with the reactor design based on the mandatory hearing. Consider another future possibility: TVA has done planning with regard to the potential construction of new power reactors, and is in the process of putting together a construction permit application for a GE-Hitachi BWRX-

Improving the Efficiency of NRC Power Reactor Licensing: The 1957 Mandatory Hearing Reconsidered

300 at the Clinch River site. The utility has publicly mused about the possibility of building 20 reactors in the coming decades.⁹⁴ If TVA were to move forward with building 20 BWRX-300s and the utility submitted a Part 50 or Part 52 license application for each one, that would mean 20 mandatory hearings for the same reactor design, built by the same utility, in the same region of the United States. Based on staff resource estimates for the mandatory hearing and current NRC fees, NRC staff resources taken up could total over 100,000 staff hours (worth tens of millions of dollars) with a comparable amount of resources likely expended by TVA separately. If each mandatory hearing added six months to the licensing process, the cumulative delay would be 10 years.

The NRC has inherent authority to supervise and provide oversight of the staff's review, and encourages that novel and important policy decisions be brought to the NRC early in the process. Yet removing the statutory requirement for the mandatory hearing would not prevent the Commission from enacting a policy of holding a public hearing or meeting in the case of, say, a first-of-a-kind reactor deployment, and the agency might decide to pursue such a policy. As the TVA example above illustrates, holding the same hearing for subsequent deployments of the same reactor makes little sense. Unfortunately, the Commission does not have the statutory flexibility to carry out a more rational approach.

As Chapter 1 outlined, the mandatory hearing was not created as a platform for anyone who opposes a particular nuclear project to delay or stop it. Indeed, as the Turkey Point example illustrates, there is not a role for the public in a mandatory hearing given its nature. Anyone with concerns about a particular nuclear project can pursue multiple avenues to organize their opposition, including with state and local officials, the regional utilities involved, and the media (national, local, and social). Some state legislatures have passed laws banning new reactors, reflecting public sentiment in their states against new nuclear projects; conversely, other states have passed laws supporting and encouraging new nuclear builds, and these are also reflective of public support in those regions for new nuclear projects.

As Chapter 2 outlined, there are multiple avenues to public education and participation in the modern NRC power reactor licensing process. Any individual or group that has standing for a given nuclear power plant project and believes they have a credible technical or environmental concern is also able to request a hearing through the contested hearing pathway, which is a process separate from the mandatory hearing that members of the public can elect to pursue.

Finding

The licensing context surrounding the Section 189a mandatory hearing has changed dramatically since 1957. The mandatory hearing is simply not providing value to the NRC power reactor



licensing process commensurate with the added time and cost imposed on applicants. The public transparency drivers that led to the mandatory hearing requirement are currently being met by other statutes and Commission policies. If the mandatory hearing's purpose is to be re-envisioned as an opportunity for the Commission to review its staff's work—which was not at all the purpose that led to its creation in 1957—this objective could be accomplished in a variety of ways that do not involve the same resource and time burdens as the mandatory hearing. The Commission can directly interact with staff, for example, to seek clarifications.

Recommendation

Congress should eliminate the mandatory hearing in Section 189a of the AEA. This would improve NRC power reactor licensing efficiency—reducing cost and time demands—without limiting or compromising the safety and environmental evaluations performed by NRC staff. The Commission could utilize public meetings on license applications to summarize and evaluate the adequacy of staff licensing reviews and findings in a public forum with significantly lower burden on applicants and NRC staff. This would involve the same activities of the mandatory hearing while providing the NRC with greater flexibility to tailor license application reviews to what is most important—especially for subsequent deployments of the same reactor design.

Notes

1. E.g., the Nuclear Energy Innovation Capabilities Act of 2017 (NEICA), PL115-248; and the Energy Act of 2020 (passed as part of the Consolidated Appropriations Act, 2021, PL116-260).
2. See four DOE announcements: <https://www.energy.gov/ne/articles/us-department-energy-announces-160-million-first-awards-under-advanced-reactor>; <https://www.energy.gov/ne/articles/doe-approves-award-carbon-free-power-project>; <https://www.energy.gov/ne/articles/energy-departments-advanced-reactor-demonstration-program-awards-30-million-initial>; <https://www.energy.gov/ne/articles/energy-departments-advanced-reactor-demonstration-program-awards-20-million-advanced>.
3. The Nuclear Energy Innovation and Modernization Act (NEIMA), PL115-439, <https://www.congress.gov/115/plaws/publ439/PLAW-115publ439.pdf>.
4. MIT, “The Future of Nuclear Energy in a Carbon Constrained World,” 2018, page 139, <https://energy.mit.edu/wp-content/uploads/2018/09/The-Future-of-Nuclear-Energy-in-a-Carbon-Constrained-World.pdf>
5. J. Samuel Walker and Thomas R. Wellock, “A Short History of Regulation, 1946–2009,” Nuclear Regulatory Commission, 2010, page 9, <https://www.nrc.gov/docs/ML1029/ML102980443.pdf>.
6. US Joint Committee on Atomic Energy, “A Study of AEC Procedures and Organization in the Licensing of Reactor Facilities,” staff study, April 1957, page 7 in footnote 15.
7. JCAE, “A Study of AEC Procedures and Organization in the Licensing of Reactor Facilities,” page 8 in footnote 16.
8. Walker and Wellock, “A Short History of Regulation.”
9. Recognizing the importance of having an independent group of experts to “review and provide advice on reactor safety matters” in the early stages of its establishment, the AEC established the Reactor Safeguards Committee in 1947. In 1950, a second advisory committee was established for assessing “siting issues, including seismic and hydrological characteristics of proposed sites—the Industrial Committee on Reactor Location Problems. In 1953, these two committees were combined to form the Advisory Committee on Reactor Safeguards (ACRS). At the point of its creation, and while reviewing the Fermi 1 reactor application, the ACRS was not a statutory body but an independent advisory body created by the AEC. See Nuclear



Newswire, “The Enduring Legacy of ACRS: Reviewing Safety–Licensing to Protect the Public,” February 24, 2023, <https://www.ans.org/news/article-4679/the-enduring-legacy-of-acrs-reviewing-safetylicensing-to-protect-the-public/>.

10. Walker and Wellock, “A Short History of Regulation,” pages 12–13.
11. Walker and Wellock, “A Short History of Regulation,” page 12.
12. JCAE, “A Study of AEC Procedures and Organization in the Licensing of Reactor Facilities,” page 30. Also GT Mazuzan and JS Walker, *Controlling the Atom: The Beginnings of Nuclear Regulation 1946–1962*, US Nuclear Regulatory Commission, 1997, <https://www.osti.gov/servlets/purl/510380>. Pages 122 to 182 provide additional detail on the PRDC case, including the intervenors.
13. JCAE, “A Study of AEC Procedures and Organization in the Licensing of Reactor Facilities,” pages 1–2.
14. JCAE, “A Study of AEC Procedures and Organization in the Licensing of Reactor Facilities.”
15. *Ibid.*, page 17.
16. *Ibid.*, page 24.
17. University of Michigan Law School, “Workshops on Legal Problems of Atomic Energy,” 1956, https://repository.law.umich.edu/cgi/viewcontent.cgi?article=1006&context=summer_institute.
18. Mazuzan and Walker, *Controlling the Atom*, page 191.
19. Congressional Record–Senate, March 21, 1957, 4093–4094, <https://www.congress.gov/bound-congressional-record/1957/03/21/senate-section>.
20. *Ibid.*
21. Hearings before the Joint Committee on Atomic Energy on Governmental Indemnity and Reactor Safety, March 25, 26, and 27, 1957.
22. The individual testimonies cited in the preceding paragraphs all come from the previously cited hearings before the Joint Committee on Atomic Energy on Governmental Indemnity and Reactor Safety, March 25, 26, and 27, 1957.
23. Report to accompany HR 7383/S.2051 from the Joint Committee on Atomic Energy, May 9, 1957. Report number 435 in the US House of Representatives, report number 296 in the US Senate.
24. Walker and Wellock, “A Short History of Regulation,” page 14.

Improving the Efficiency of NRC Power Reactor Licensing: The 1957 Mandatory Hearing Reconsidered

25. The AEC decision had been challenged but was ultimately sustained by the Supreme Court in *Power Reactor Development Corp. v. International Union*, 367 US 396 (1961). The court sustained the AEC's approach in the earlier version of section 50.35, which allowed the Commission to defer a definitive safety finding until operation is licensed. The court reversed a DC Circuit opinion that overturned the AEC's decision. See *International Union v. United States*, 280 F.2d 645 (DC Circuit 1960). The AEC's final decision that reached judicial scrutiny was *In re PRDC*, 1 AEC 128 (1959).
26. Harold P. Green, "Safety Determinations in Nuclear Power Licensing: A Critical View," *Notre Dame Law Review* 633 (1968), <http://scholarship.law.nd.edu/ndlr/vol43/iss5/1>.
27. *Ibid.*
28. Public Law 87-615, August 29, 1962, <https://www.congress.gov/87/statute/STATUTE-76/STATUTE-76-Pg409.pdf>.
29. Green, "Safety Determinations in Nuclear Power Licensing: A Critical View."
30. Although the AEC initially challenged full implementation of NEPA, the DC Circuit Court of Appeals disagreed with the agency and the AEC dropped further opposition to the application of NEPA to licensing under the AEA. See *Calvert Cliffs' Coordinating Committee, Inc. v. U.S. Atomic Energy Commission*, 449 F.2d 1109 (D.C. Cir. 1971), *cert. denied*, 404 U.S. 942 (1972).
31. Nuclear Regulatory Commission, "Part 52—Licenses, Certifications, and Approvals for Nuclear Power Plants," <https://www.nrc.gov/reading-rm/doc-collections/cfr/part052/full-text.html>.
32. In *Calvert Cliffs 3 Nuclear Project LLC*, CLI-09-20, 70 NRC 911, 915-16 (2009), the Commission wrote: "[I]n certain circumstances—such as construction permit and operating license proceedings for power reactors—we recognize a 'proximity,' or geographic, presumption. In such proceedings, we presume that a petitioner has standing to intervene if the petitioner lives within, or otherwise has frequent contacts with, the zone of possible harm from the nuclear reactor. In practice, we have found standing based on this 'proximity presumption' if a petitioner (or a representative of a petitioner organization) resides within approximately 50 miles of the facility in question."
33. There are substantial applicant and agency resources that are often required simply to address the admissibility of proposed contentions, and the NRC's contention admissibility standards are found in 10 C.F.R. § 2.309(f)(1). The applicant and NRC staff must prepare answers in written form to the proposed contentions (both NEPA and safety related), engage in preparations for and participate in oral arguments, and in many cases file other related motions. The ASLB



then issues a decision on contention admissibility, which may be the subject of appellate proceedings before the Commission. This ruling typically occurs months after initiation of the hearing, and this is just the initial phase of the contested hearing process. If an ASLB admits one or more contentions, this triggers additional adjudicatory activities, including the “mandatory disclosure” and NRC staff hearing file processes, which can be resource-intensive. It is possible that petitioners may also submit new and/or amended contentions based on the draft EIS and safety review documents and that would then require additional expenditures of applicant and agency resources. Under NRC regulations, such evidentiary hearings (at least on NEPA issues) cannot be held until after the final EIS is issued. So by design the hearings occur later in the overall environmental review process.

34. E.g., 87 Fed. Reg. 7503, 7506 (February 9, 2022); 85 Fed. Reg. 39214, 39126 (June 20, 2020).
35. Nuclear Regulatory Commission, “Backgrounder on Nuclear Power Plant Licensing Process,” accessed May 22, 2023, <https://www.nrc.gov/reading-rm/doc-collections/fact-sheets/licensing-process-fs.html>.
36. Nuclear Regulatory Commission, “Hermes-Kairos Application,” <https://www.nrc.gov/reactors/non-power/new-facility-licensing/hermes-kairos.html>.
37. Nuclear Regulatory Commission, “Subscribe to E-mail Updates,” <https://www.nrc.gov/public-involve/listserver.html>.
38. Nuclear Regulatory Commission, “Public Meeting Schedule,” <https://www.nrc.gov/pmns/mtg>.
39. Email from Scott Burnell, public affairs officer at the NRC, April 28, 2023.
40. Email from Scott Burnell, public affairs officer at the NRC, June 23, 2023. The legal hours are not directly billed to the applicant, but they are included in the combined license estimate for mandatory hearings to give a complete picture of how many hours it takes to conduct such a hearing. According to the NRC, a range of 500–1,000 legal hours may be a reasonable estimate of the time required at the present time.
41. As set by NRC in June 2023: <https://www.federalregister.gov/documents/2023/06/15/2023-12696/revision-of-fee-schedules-fee-recovery-for-fiscal-year-2023>.
42. Nuclear Regulatory Commission, “Issued Combined Licenses for Turkey Point, Units 6 and 7 Application,” <https://www.nrc.gov/reactors/new-reactors/large-lwr/col/turkey-point.html>.
43. Nuclear Regulatory Commission, “Public Meetings for Turkey Point, Units 6 and 7 Application,”

**Improving the Efficiency of NRC Power Reactor Licensing:
The 1957 Mandatory Hearing Reconsidered**

<https://www.nrc.gov/reactors/new-reactors/large-lwr/col/turkey-point/public-meetings.html>.

44. Florida Power & Light Co. (Turkey Point Nuclear Generating Units 6 and 7), CLI-18-1, 87 NRC 39, 43 (2018), <https://www.nrc.gov/docs/ML1913/ML19130A239.pdf>.
45. NRC Turkey Point 6 and 7 webpage: <https://www.nrc.gov/reactors/new-reactors/large-lwr/col/turkey-point.html>.
46. Searching on the Turkey Point 6 docket number of 05200040 on the ADAMS webpage (<https://www.nrc.gov/pmns/mtg?do=search.form>) yields over 1,000 documents.
47. Appendix F, Report by the Advisory Committee on Reactor Safeguards, September 16, 2016, <https://www.nrc.gov/docs/ML1627/ML16272A055.pdf>.
48. NRC press release: <https://www.nrc.gov/docs/ML1506/ML15069A635.pdf>.
49. Turkey Point FEIS: <https://www.nrc.gov/docs/ML1630/ML16306A364.pdf>.
50. Turkey Point EIS supplement: <https://www.nrc.gov/docs/ML1633/ML16337A147.pdf>.
51. Florida Power & Light Co., *supra*, 87 NRC at 45–50, <https://www.nrc.gov/docs/ML1913/ML19130A239.pdf>.
52. NRC scheduling note: <https://www.nrc.gov/reading-rm/doc-collections/commission/agenda/2017/agenda-20171212.pdf>.
53. NRC website video archive: <https://video.nrc.gov/>.
54. Email from Scott Burnell, public affairs officer at the NRC, April 28, 2023.
55. Nuclear Regulatory Commission, “The NRC Approach to Open Government,” <https://www.nrc.gov/public-involve/open.html>.
56. Nuclear Regulatory Commission, “Enhancing Participation in NRC Public Meetings,” 86 Fed. Reg. 14964 (March 19, 2021), <https://www.govinfo.gov/content/pkg/FR-2021-03-19/pdf/2021-05787.pdf>.
57. Stephen J. Burdick, John C. Wagner, and Jess C. Gehin, “Recommendations to Improve the Nuclear Regulatory Commission Reactor Licensing and Approval Process,” Idaho National Laboratory/RPT-23-72206, April 2023, https://inldigitalibrary.inl.gov/sites/STI/STI/Sort_65730.pdf.
58. President’s Message to the Congress, 119 Congressional Record 12892 (April 18, 1973).



59. President's Message to the Congress, 119 Congressional Record 36463, (November 9, 1973).
60. "Statement by the President Announcing a Series of Actions to Deal with the Nation's Energy Crisis," June 29, 1973, in 9 Weekly Compilation of Presidential Documents 867 (1973).
61. AEC Regulatory Staff Task Force Report, "Study of the Reactor Licensing Process," December 1973.
62. Howard K. Shapar and Martin G. Malsch, "Proposed Changes in the Nuclear Power Plant Licensing Process: The Choice of Putting a Finger in the Dike or Building a New Dike," 15 *William & Mary Law Review* 539 (1974), <https://scholarship.law.wm.edu/wmlr/vol15/iss3/5>.
63. Hearings before the Joint Committee on Atomic Energy on Nuclear Powerplant Siting and Licensing, 93rd Cong. 2nd sess., vol. 2, 985–1005 (1974), page 979–1005.
64. Hearings before the Joint Committee on Atomic Energy on Nuclear Powerplant Siting and Licensing, 93rd Cong. 2nd sess., vol. 1.
65. Nuclear Regulatory Commission, "Report of the Combined License Review Task Force," 2007, <https://www.nrc.gov/docs/ML0717/ML071730403.pdf>.
66. *Ibid.*, page 7.
67. Burdick, Wagner, and Gehin, "Recommendations to Improve the Nuclear Regulatory Commission Reactor Licensing and Approval Process."
68. The memorandum was sent to the three commissioners on April 18, 2007. The commissioners replied on May 24, 2007 (McGaffigan), April 27, 2007 (Jaczko), and June 20, 2007 (Lyons). The memorandum and their responses can be found at <https://www.nrc.gov/docs/ML0717/ML071730453.pdf>.
69. Commissioner McGaffigan's comments can be found in <https://www.nrc.gov/docs/ML0717/ML071730453.pdf>.
70. Commissioner Jaczko's comments can be found in <https://www.nrc.gov/docs/ML0717/ML071730453.pdf>.
71. Commissioner Lyon's comments can be found in <https://www.nrc.gov/docs/ML0717/ML071730453.pdf>.
72. Nuclear Regulatory Commission, "Staff Requirements Memorandum," June 22, 2007, <https://www.nrc.gov/reading-rm/doc-collections/commission/comm-secy/2007/2007-0001comdek-jsmsrm.pdf>.

**Improving the Efficiency of NRC Power Reactor Licensing:
The 1957 Mandatory Hearing Reconsidered**

73. Letter to Speaker Nancy Pelosi from NRC chairman Dale Klein, June 9, 2008, <https://www.nrc.gov/reading-rm/doc-collections/congress-docs/correspondence/2008/pelosi-06-09-2008.pdf>.
74. Ibid.
75. Hearing for the Subcommittee on Energy and Power of the Committee on Energy and Commerce, US House of Representatives, April 29, 2016, <https://www.govinfo.gov/content/pkg/CHRG-114hrg23503/pdf/CHRG-114hrg23503.pdf>.
76. Ibid.
77. Hearing for the Environment and Public Works Committee, US Senate, “Enabling Advanced Reactors and a Legislative Hearing on S.2795,” April 21, 2016, <https://www.epw.senate.gov/public/index.cfm/2016/4/enabling-advanced-reactors-and-a-legislative-hearing-on-s-2795>.
78. Ibid.
79. “Responses to Questions for the Record on ‘H.R. 4979, the Advanced Nuclear Technology Development Act of 2016 and H.R. ___, Nuclear Utilization of Keynote Energy Policies Act’ from Geoffrey H. Fettus of the Natural Resources Defense Council Before the Subcommittee on Energy and Power, Committee on Energy & Commerce, United States House of Representatives,” June 9, 2016, responses.
80. Ibid., attachment A.
81. The Curran memo can be found as an attachment to “Responses to Questions for the Record on ‘H.R. 4979, the Advanced Nuclear Technology Development Act of 2016 and H.R. ___, Nuclear Utilization of Keynote Energy Policies Act’ from Geoffrey H. Fettus of the Natural Resources Defense Council Before the Subcommittee on Energy and Power, Committee on Energy & Commerce, United States House of Representatives.”
82. US House Energy and Commerce Committee, Energy, Climate, and Grid Security Subcommittee Legislative Hearings, “American Nuclear Energy Expansion: Updating Policies for Efficient, Predictable Licensing and Deployment,” July 18, 2023, <https://energycommerce.house.gov/events/energy-climate-and-grid-security-subcommittee-legislative-hearing-american-nuclear-energy-expansion-updating-policies-for-efficient-predictable-licensing-and-deployment>.
83. The discussion draft is available at <https://www.congress.gov/118/meeting/house/116255/documents/BILLS-118pih-EfficientNuclearLicensingHearingsAct.pdf>.



84. US House Energy and Commerce Committee, Energy, Climate, and Grid Security Subcommittee Legislative Hearings, “American Nuclear Energy Expansion.”
85. Burdick, Wagner, and Gehin, “Recommendations to Improve the Nuclear Regulatory Commission Reactor Licensing and Approval Process.”
86. Exelon Generation Company, LLC (Early Site Permit for Clinton ESP Site), CLI-06-20, 64 NRC 15, 27 (2006), <https://www.nrc.gov/docs/ML0903/ML090360507.pdf>.
87. Ibid.
88. Dominion Nuclear North Anna, LLC (Early Site Permit for North Anna ESP Site), CLI-07-27, 66 NRC 215, 229 (2007), <https://www.nrc.gov/reading-rm/doc-collections/commission/orders/2007/2007-27cli.pdf>.
89. Ibid., page 230.
90. Final Safety Evaluation Report, September 2012, Appendix F, <https://www.nrc.gov/docs/ML1227/ML12271A049.pdf>.
91. For example, the DOE cost-share agreements totaling around \$5 billion announced in 2020 to support advanced reactor demonstration or the Inflation Reduction Act and its 30 percent technology-neutral tax credit that nuclear would qualify for.
92. NEIMA.
93. JCAE, “A Study of AEC Procedures and Organization in the Licensing of Reactor Facilities.”
94. Dave Flessner, “TVA Developing Plans for 20 Small Nuclear Reactors to Power Tennessee Valley by 2050,” *Chattanooga Times Free Press*, October 26, 2022, <https://www.timesfreepress.com/news/2022/oct/26/tva-developing-plans-tfp/#/questions>.



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