NUCLEAR INFORMATION AND RESOURCE SERVICE

6930 Carroll Avenue, Suite 340, Takoma Park, MD 20912
301-270-NIRS (301-270-6477); Fax: 301-270-4291
nirsnet@nirs.org; www.nirs.org

NIRS BRIEFING PAPER

THE NRC'S REACTOR LICENSING PROCESS: AN OVERVIEW

Every atomic power reactor is licensed by the federal Nuclear Regulatory Commission (NRC). By law, the licensing process is open to public participation. In reality, the process is deliberately designed to be difficult to understand and to discourage effective public involvement. Even so, a determined and knowledgeable public *can* affect nuclear licensing decisions. The purpose of this briefing paper is to provide a basic overview of the licensing process, as a first step toward helping grassroots groups, individuals, and state and local governments determine whether they want to participate in this process. A final decision to participate should require a more detailed examination of the process and consultation with NIRS and other experts.

BACKGROUND—THE FIRST ATOMIC GENERATION

All of the nuclear reactors now operating in the U.S. were licensed under a "two-step" licensing process. First, electric utilities applied for a construction license from the NRC, outlining their plans to build a reactor, the type of reactor, information on the proposed reactor site, and so forth. Members of the public could, and often did, challenge construction licenses in adjudicatory (or courtroom-style) hearings on a variety of grounds. These hearings sometimes exposed utility plans to build expensive, unneeded atomic facilities, but more often served to ensure utility compliance with applicable environmental laws.

When construction of the reactor was nearly complete, the utility applied for an operating license. The public again could seek adjudicatory hearings to challenge the quality of construction of the reactor and other issues that had arisen since the initial construction license had been granted. Such hearings, which exposed construction and other flaws at numerous reactors, resulted in the cancellation of several reactors, including Zimmer (Ohio), Midland (MI) and Shoreham (NY). In other cases, such hearings revealed major construction deficiencies and forced utilities to undertake sometimes expensive rework and modifications (Comanche Peak, TX; Seabrook, NH) to meet existing safety requirements.

In many of these cases, despite much frustration and expense among public advocates, the licensing hearings functioned as intended: safety deficiencies and other flaws were uncovered and in a few cases utilities opted to cancel their plans rather than spend the money necessary to meet safety requirements.

In no case (other than for a proposed uranium enrichment plant in the 1990s) has the NRC ever denied a license to a utility that chose to continue its reactor to completion.

But, angry over having to spend money on safety improvements—which often was unrecovered from ratepayers since costs were due to poor planning and construction—nuclear utilities prevailed on Congress and the NRC to change the licensing process to further discourage effective public involvement.

BACKGROUND—NUCLEAR LICENSING IN THE 21ST CENTURY

In 1992, overturning a lawsuit brought by NIRS against the NRC over the agency's licensing "reforms" intended to make it harder for the public to intervene on reactor licenses, Congress instituted a new licensing process for atomic reactors. Since then, the NRC has modified its licensing procedures several times: all with the goal of making meaningful public participation still more difficult.

Sometimes erroneously called "one-step" licensing, the new process, which has yet to be fully tested, actually provides several alternatives—but only the utilities can choose which options will be pursued. At every step, participation by the public—including individuals, grassroots organizations, and even state and local governments—has been constrained. The goal of the new process is to provide every possible advantage to nuclear utilities.

At its core, the new licensing process offers a combined **Construction/Operating License** to utilities seeking to build new reactors. In other words, the major opportunity for public involvement comes when the utility first applies for a license to build a reactor: not when the reactor is near-completion and construction deficiencies can thus be addressed—not to mention when public awareness is highest that a utility is actually building a reactor in their neighborhood.

But before a utility even applies for a construction/operating license (COL), the utility can make further choices to further deter public involvement. For example, the utility can apply for an **Early Site Permit** (ESP). This permit allows a utility to address all environmental issues, including—if the utility wishes—emergency evacuation planning, for a proposed site, without ever stating that it actually will build a reactor, nor stating the design of the reactor it may build. An ESP is valid for 20 years and can be renewed.

A utility can also reference a **pre-approved standardized reactor design** when it applies for a COL. If the utility chooses this option, then no reactor design issues can be brought up in the COL process—only how a particular design meshes with a particular site. The pre-approval process for a standardized reactor design is done by rulemaking, without any public hearings, although the public can submit written comments on a proposed standardized design.

It is important to know that the licensing processes, other than the standardized design rulemaking, can be (although are not necessarily so) adjudicatory hearings, which resemble courtroom-style trials, but without many of the procedural safeguards attorneys are accustomed to in normal courtrooms. In addition, while the NRC can adopt many courtroom protections in licensing hearings (for example, the right of discovery of information, the right of cross-examination—rights that were standard in the first generation of reactors), the NRC can also choose to hold a purely informal licensing hearing process, with no legal safeguards (however, because of a 2004 federal court ruling, the NRC's ability to hold an entirely informal hearing may be constrained, if advocacy groups can demonstrate formal procedures,

for example cross-examination, are necessary to fully develop the factual record). In all of its stages, the licensing process is tilted toward the utilities.

However, public involvement in the process remains important, and can also serve as a means of bringing out issues to policymakers, the media and the public which might otherwise never be addressed, as part of a broader public challenge to a proposed nuclear reactor. While full-scale involvement in the process can require an attorney, numerous experts, and a very expensive intervention, it is also possible, though often quite time-consuming, for grassroots groups and individuals to participate on their own without legal representation.

THE REACTOR LICENSING PROCESS—FROM BEGINNING TO END

As stated earlier, the reactor licensing process offers several alternatives for nuclear utilities. Members of the public can only react to the choices utilities make, the public has no say as to which of the processes a utility may choose to pursue. However, there is at least some opportunity for public involvement at every possible step of the process. It should be clear, however, that involvement at each step can be daunting, can be expensive, can be frustrating, and on one level—that of actually "winning" a case and causing a license to be denied—is likely to be futile. The deck is that stacked. Thus, participation in the process should be seen as one piece of an overall effort to defeat a proposed reactor.

At every step of the process, legitimate "contentions" must be offered in order to obtain public adjudicatory hearings. These contentions, which must be supported by expert testimony, are filed with an **Atomic Safety and Licensing Board** (ASLB), a three-judge panel of NRC employees, typically including two technical experts and one attorney. The contentions must reflect material issues of genuine dispute and must show how the utility's application has failed to meet regulatory or legal requirements. Perhaps surprisingly, this seemingly high barrier is not so hard to surmount—nearly every utility application for a new nuclear project has issues of genuine dispute and areas where it does not meet regulatory or legal requirements.

However, there is a very short time period, normally about 60 days (the exact deadline is included in the *Federal Register* notice announcing the hearing opportunity) available to provide such contentions to an ASLB, and, as mentioned, contentions must be supported by expert testimony. In some cases, for example, local land use, an "expert" might merely be someone who lives and works near to the proposed reactor. On emergency evacuation planning, an expert might be a local police chief or other emergency responder. More often, however, an expert must have genuine credentials, be prepared to submit an affidavit in support of the contentions, be prepared to submit reports on his/her disputes with the application, be willing to be deposed by lawyers for the utilities, and be prepared to testify before the ASLB. Even grassroots groups and individuals representing themselves will need expert support to get a contention approved for hearing by an ASLB.

As part of a broader strategy challenging a proposed nuclear reactor, a license intervention can be an effective means of providing information, exposing shortcomings, pressuring state and local governments, and building support among the public to oppose new atomic reactors.

STANDARDIZED REACTOR DESIGNS

Nuclear reactor manufacturers can apply for certification of a standardized reactor design. The manufacturer submits detailed blueprints and specifications of a reactor to the NRC, which reviews the documents, may request additional information, and ultimately approves the design. When the design is approved, the NRC issues a proposed rule, which is published in the *Federal Register*. The public can

then comment on the proposed rule, and attempt to point out shortcomings in the design or improvements that should be made to the design. In reality, the design certification is so complex that it is virtually impossible for even experienced nuclear engineers to offer anything but general recommendations, which are routinely ignored by the NRC (note: for some types of upcoming radical "advanced" reactors, such as the Pebble Bed Modular Reactor, that may not be the case because its many flaws are self-evident and inherent in the design; in those cases widespread public participation may be critical).

So far, four reactor designs have received NRC certification—the Westinghouse AP 600 reactor, which, due to its relatively small size (600 Megawatts) is of little interest to U.S. utilities, the Westinghouse AP 1000 reactor, a 1,000 MW model; the Westinghouse System 80+, a 1300 MW reactor, and the General Electric Advanced Boiling Water Reactor, a 1250-1500 MW reactor. Several more designs, however, are applying for certification, such as a version of the Areva European Pressurized Reactor now being constructed in Finland.

If a utility chooses to use a pre-approved standardized design, then no reactor design issues can ever be brought up in either ESP or in COL hearings—only more specific contentions about the use of a particular design at a particular site (for example, whether a cooling tower must be built because of potential effect on local water supplies). A utility, however, could choose to use a non-standardized design if it wishes; in that case, design issues could be brought up in such hearings.

EARLY SITE PERMITS

Nuclear utilities can opt to obtain an Early Site Permit for future reactor construction. Under this option, a utility chooses a site on which it wants to build reactors, and provides information on that site to the NRC. The utility submits an environmental report on the proposed site to the NRC, which then must prepare a legally-binding **Environmental Impact Statement** (EIS). Groups wishing to challenge an ESP, however, cannot wait until an EIS is prepared. Instead, they must quickly review the environmental report (if it's even available), and prepare their contentions so that they can request an adjudicatory hearing on the ESP.

NIRS has participated in all three ESP cases that have occurred to date and can thus provide grassroots groups and state and local governments insight into what contentions might be accepted and which may not.

For example, at North Anna, Virginia, water use has become a major issue in the ESP process. The North Anna site is on a man-made lake, which is used both for cooling water for existing reactors at North Anna as well as fishing and recreation for thousands of people. Addition of a proposed third reactor would upset the water temperature and balance in the lake, and potentially have detrimental effects on the local population. As a result of the currently ongoing hearing on these issues, a nearby county government has joined in to oppose the utility's current plans.

While emergency evacuation plans can be addressed at the ESP stage, in the case of a new proposed Grand Gulf, Mississippi reactor, the utility did not want to deal with emergency evacuation issues at the ESP stage (perhaps because NIRS had photographs of "emergency evacuation routes" that had been washed out and impassable for years). Thus, if the Entergy Corp. decides to try to build a new reactor at Grand Gulf, those issues can be brought up at the COL stage. However, if NIRS had not intervened at the ESP stage, then those issues would have been settled and not eligible for further hearing—an important reason for grassroots groups to participate at every stage of the process.

While it is not essential for utilities to obtain an ESP in order to build a new nuclear reactor, it *is* essential for grassroots groups to monitor the ESP process closely if a utility chooses this process, and to intervene in that process if at all possible—if only to protect one's rights for further participation at the more important COL stage.

COMBINED CONSTRUCTION/OPERATING LICENSE

This is the heart of the reactor licensing process. While a utility can choose or not to pursue an ESP or standardized reactor design, it must obtain a combined construction/operating license (COL).

The possible contentions that can be brought up at this stage depend largely on the choices the utility previously has made. For example, if the utility has obtained an ESP, and referenced a pre-approved standardized reactor design, then the only issues that may be the subject of hearings are those relating to the placement of this particular design at this particular site, and these cannot be issues previously litigated. This prospect leaves very few possible issues for groups to raise—an important reason why it is important to be involved in the process as early as possible.

However, as in the case with Grand Gulf, the utility may have decided not to pursue some issues at the earlier possible stages; thus, emergency evacuation planning can become an issue of contention if Entergy decides to apply for a license for that reactor.

If the utility has not chosen to obtain an ESP, or to use a standardized design, then possible contentions are much wider and broader, and could include any issue where regulations and requirements may be skirted, avoided, or simply unaddressed.

The important point with the COL is that the challenge to the reactor must be made when the utility applies for a construction license, not after construction already has begun. And, again, the contentions must be filed quickly, and with support from recognized experts. Late-filed contentions are never accepted, unless new information made it impossible to file earlier. Contentions without expert backing are also never accepted, although the definition of an "expert" may vary depending on the nature of the contention.

It is important to understand that depending on the nature of the contentions filed and accepted, the ASLB has the authority to conduct "informal" hearings—without traditional courtroom rights of discovery, cross-examination, etc. instead of the more normal adjudicatory hearings. "Informal" hearings are more likely to be seen as an opportunity for the public to vent its frustrations than as a means of resolving genuine disputes. For some grassroots groups, especially those with limited budgets and expert backing, informal hearings may provide a sufficient means of disseminating critical information to the media and public that more formal hearings need not be undertaken; in most cases, however, formal hearings should be sought and fought for.

No utility has yet applied for a COL. However, NIRS has experience with a uranium enrichment plant that applied for a COL. The process is somewhat different (for the uranium enrichment plant an informal hearing was not an option), but also provides a lot of insight into how the ASLBs will conduct COL hearings.

It is absolutely essential for any group wishing to challenge a nuclear reactor license in a formal process to file contentions on a COL application. For various reasons, including funding, expertise, etc., a group

may not want to undergo the formal process; but for those that do, plans to file contentions must be made well in advance of the utility's actual submission of its COL application. Groups should be thinking about local conditions and situations, where the utility is likely to fail to meet regulatory requirements, and then must be prepared to review the license application as quickly as possible to determine other possible shortcomings in the applications that might make valid contentions.

When construction of the reactor is nearly complete, the utility will notify the NRC and, assuming there are no obvious problems, will receive its operating license. However, although the NRC and Congress have tried hard to prevent public participation at this stage, it may be possible for grassroots groups to raise issues if the utility is unable to pass a series of tests required before reactor start-up. These tests, called ITAACs, are intended to determine if the reactor can operate properly. If the reactor flunks these tests, it may be possible to raise this issue before a licensing board or other judicial body.

APPEALS OF LICENSING DECISIONS

Make no mistake, the licensing process is weighted in favor of the utility. That's why it is so important to make participation in the licensing process a part of a larger strategy to build public and state and local government opposition to a new reactor. Appeals of ASLB decisions are made to the NRC Commissioners themselves—hardly an unbiased body. Indeed, history shows that ASLBs are more likely to rule in favor of intervenors, and then be overturned by the Commissioners in favor of the utilities than the other way around.

However, Commissioner decisions can be appealed to the federal appellate courts. While many of these federal courts are quite conservative and inclined not to want to rule against the NRC on technical issues, in some cases they have overturned NRC decisions and set new policy against NRC wishes. To reach the appellate court level, however, one must first go through all of the other stages of the process.

COSTS OF PARTICIPATION

Groups considering participating in the licensing process should be aware of the potential costs involved.

A full-fledged license intervention, involving numerous contentions, attorneys and paid experts, can easily cost $100,000-$500,000. While this is doable for most state governments and some local governments, it is rarely possible for grassroots groups.

However, it may be possible to cut these costs substantially. Groups can seek out pro bono attorneys. NRC regulations permit individuals and groups to represent themselves before licensing boards, thereby virtually eliminating attorneys fees—although, to be effective groups would need one or more persons to immerse themselves in licensing procedures so as not to be thrown out on technical grounds. Experts might be found in one's own neighborhood, depending on the contention(s) chosen. A particularly interesting case might attract an otherwise expensive expert to work for reduced fees or even free. NIRS has conducted meaningful interventions without attorneys and without paying substantial expert fees. On the other hand, NIRS also has been forced to spend large amounts pursuing interventions as well.

There is no such thing as a free intervention. The costs of time, of copying legal briefs and testimony and postage to many different people have to be considered. In our view, it is nearly pointless to intervene in a licensing process unless there is an overall strategy to be sure information from the intervention reaches the media, other grassroots groups, the public, and policymakers. Interventions, by themselves, have never stopped a nuclear reactor from operating. However, interventions, coupled with

a deliberate and effective outreach and political strategy, can provide the spark to build the public and governmental opposition that *can* prevent an unnecessary, expensive and dangerous nuclear reactor from being built.

Deciding whether to intervene in a licensing process can be a difficult decision with many factors in play. NIRS will provide our advice to any grassroots group or governmental body faced with such a decision, based on the individual case.

OTHER PUBLIC PARTICIPATION PROCESSES

While this paper focuses on the NRC's reactor licensing process, it is important to note that there are other, potentially effective, formal avenues of public participation as well. These can include proceedings before state utility regulators on how the utility can recover the costs of building a reactor; state environmental permit proceedings, for example, reactors typically must obtain water use and other state permits; state legislative hearings; advocacy before local governments—for example, some may challenge the NRC's interpretation of environmental effects on their communities, and more. The potential effectiveness of participation in these types of processes should be examined on a state-by-state, case-by-case basis.

--*Michael Mariotte, September 2006*