

## **PRINCIPLES FOR SUCCESSFUL REACTOR DECOMMISSIONING**

With a significant uptick in nuclear plant closures, NRC is attempting to streamline the decommissioning process to protect nuclear corporations suffering from inadequate cleanup funds. This is not NRC's first attempt to protect nuclear licenses from the consequences of inadequate planning leading to substantial shortfalls in cleanup funds. With the closure of four New England reactors in the 1990's NRC permitted Yankee Atomic to engage in a rapid, unregulated decommissioning process that violated its own regulations. Citizens Awareness Network (CAN) sued NRC and Yankee Atomic; CAN won its lawsuit. The First Circuit Appellate Court found the decommissioning of Yankee Rowe illegal and in violation of the National Environmental Policy Act, the Administrative Procedures Act and the Atomic Energy Act. NRC's response to the Court's reprimand was to codify its actions in Rowe and effectively deregulate decommissioning; the agency instituted in the wake of the Yankee Rowe decommissioning and the Appellate Court Decision in CAN v. NRC a radical revision of its decommissioning regulation that deregulated cleanup standards and undermined the ability for the public or the state to participate in matters that vitally affect them. It also undercut the Agency's ability to effectively regulate the cleanup of contaminated sites. The Agency's own Inspector General's Report, NRC at a Crossroads, underscored the radical shift that NRC proposed and codified in 1996 (61 FR 39278; July 29, 1996).

NRC is now proposing another radical shift in policy and regulation. Its decision to focus on the vulnerability of reactor fuel pools and dry cask storage as the sole priority for Agency regulation of decommissioning abdicates its responsibility to impacted communities and states. The management and security of high-level radioactive waste is not formally part of the decommissioning process, it is covered by distinct and separate regulations. While the transfer of irradiated fuel from spent fuel pools to dry-cask storage facilities is necessary to complete decommissioning, license termination for the reactor ownership license may proceed separately under decommissioning, converting to a high-level waste storage license for the remaining dry-cask storage facility. This separation of decommissioning and high-level waste management is also evident in the NRC's decommissioning funding assurance regulation, which does not include high-level waste costs in the calculation of minimum decommissioning funding assurance requirements.

The purpose of decommissioning is to facilitate the safe dismantlement of the nuclear reactor facilities and remediation of the site to permit its release to unrestricted use by the public, which entails reduction of risk to the public from long-term exposure to radioactive materials produced and deposited on the site as a result of the licensed activities that took place there. The license termination step, which concludes the decommissioning process, is to ensure that licensees are held accountable for satisfying the objectives of radiological decommissioning and site remediation and the

promises made to reactor communities when the facilities were sited and licensed by NRC. The purpose of radiological risk reduction from irradiated fuel storage is covered by high-level waste regulations.

NRC intends to scale back oversight and involvement in the decommissioning process; this is an abdication of regulatory authority and negligence toward the agency's mandate to protect the public health and safety. Any regulatory revision to decommissioning regulations must address the proven experience and emerging problems confronting the protection of the public health and safety, and site remediation.

The primary focus of decommissioning must remain site remediation and restoration. NRC's draft regulations attempt to focus the Agency's concerns on spent fuel management. Spent fuel management is a separate regulatory concern created by the abdication of the federal government and the nuclear industry to create a scientifically sound and environmentally just solution for its high level radioactive waste problem. Tying decommissioning regulation and spent fuel regulations together may help the industry, but undermines the commitment that both industry and regulators made to effectively clean up nuclear reactor sites. Decommissioning should not be relegated to ensuring that nuclear corporations can use its Decommissioning Trust Funds to pay for "interim solutions" to its high level waste problem. These funds were created by a fee placed on ratepayers to ensure that the cleanup and release of these sites for unrestricted use was guaranteed.

**THE PRINCIPLES FOR THE RESPONSIBLE AND THOROUGH CLEANUP OF REACTOR SITES. NRC MUST REQUIRE LICENSEES TO HAVE FULLY FUNDED DECOMMISSIONING FUNDS UPON CLOSURE.**

Decommissioning trust funds for reactor cleanup are notoriously underfunded; the Agency permits nuclear corporations to seriously under-fund their decommissioning funds with the rationale that over time and with the ability for shuttered reactors to remain in SAFSTOR for up to 60 years, the funds required for cleanup would accumulate eventually. In addition, under utility owned nuclear facilities, utilities could request rate increases from state public service entities to cover any shortfalls in the fund. This was certainly the case at Yankee Rowe and Connecticut Yankee. These captive ratepayers covered the substantial shortfalls for inadequate and incompetent financial planning. With NRC's approval of merchant fleets of nuclear reactors, no captive ratebase exists to subsidize inadequate planning by licensees; contaminated sites can languish for indeterminate periods of time with no surety that the corporation responsible for cleanup will exist in 60 years. This undermines the impacted community as well as the states that remain in part responsible to represent ratepayers as well as state interests.

DECOMMISSIONING FUNDS CAN ONLY BE USED FOR RADIOLOGICAL CLEANUP. NO AMENDMENTS TO PERMIT LICENSEES TO RAID THE FUND FOR OPERATING EXPENSES.

The decommissioning funding assurance regulation (10 CFR Part 50.75) was established to ensure licensees possess the resources for the cleanup of radiological contamination at reactor sites. Its express purpose is to permit the site to be released for unrestricted use (if possible) after cleanup is completed. However, NRC has permitted licensees, through an exemption process, to substantially undermine the financial viability of the trust funds by permitting their use for non-radiological purposes. For example, Entergy Nuclear Vermont Yankee, LLC (ENVY) has advanced a series of propositions for the use of Vermont Yankee's decommissioning fund that have nothing to do with radiological cleanup. However, these appropriations have everything to do with Entergy's corporate structure, the licensee's financial vulnerability and its lack of adequate operational funds. With NRC approval, Entergy intends to use decommissioning funds to pay its \$600,000 in local taxes, its legal as well as lobbying expenses, costs for fuel transfer from the fuel pool to dry cask storage, and for guarding the high level waste installation through the 2050's. Permitting these withdrawals is unacceptable; it seriously undermines the fund and substantially delays radiological cleanup. NRC should institute a process to hold parent companies accountable for the financial shortfalls of their LLCs.

NRC's regulatory posture toward the use of decommissioning funds undermines state's interests in ensuring a timely, safe, and effective decommissioning, and creates a massive subsidy to the industry at the expense of taxpayers and utility ratepayers. States permitted utilities to charge their customers for the cost of decommissioning trust fund contributions because those ratepayers benefited from the power generated by nuclear reactors. Now, the NRC is effectively allowing licensees to profiteer from a failed nuclear waste policy, on the backs of ratepayers and taxpayers: that is, the inability to implement a solution for its high level waste problem through the establishment of a nuclear waste dump by 1998, as required by the Nuclear Waste Policy Act. By granting exemptions from decommissioning trust fund regulations, NRC is now permitting nuclear reactor licensees with inadequate financial resources to raid the decommissioning fund for not just the establishment of dry cask storage, but, even more significantly, for the guarding of the waste on site.

Through suing DOE for this failure under the Nuclear Waste Policy Act, the industry has been able to win settlements reimbursing the corporations for the transfer of irradiated fuel from spent fuel pools to dry-cask storage (with settlements amounting to about 80% of the licensees' claimed expenses). Despite permitting licensees exemptions from decommissioning trust fund regulations in order to access the trust funds for fuel transfer expenses, NRC has not required licensees to reimburse the trust funds with the settlement proceeds. This practice constitutes a massive misappropriation of

decommissioning funds by allowing licensees' parent companies to profit from the decommissioning funds. More importantly, it compromises public health and safety by justifying delays in the conduct of decommissioning and site remediation activities for potentially decades (through licensees' exercise of the SAFSTOR option), until trust funds have accumulated sufficient value to cover radiological decommissioning costs.

In addition, high-level waste lawsuit settlements will not cover the escalating costs of guarding spent fuel storage installations, which could carry on indefinitely, as recognized by the NRC's recently promulgated continued storage rule. NRC's practice of granting licensees exemptions to access trust funds for that and other non-decommissioning purposes—such as local property taxes—exacerbates the risks to public health and safety and increases the subsidy to licensees, their parent companies and shareholders at states' expense. It will not only further delay decommissioning and site remediation, but runs the risk of depleting decommissioning funds to the point that decommissioning cannot be completed with the available trust fund balances. NRC has not adequately addressed the issue of parent company liability for decommissioning, site remediation, and, ultimately, license termination under new corporate ownership structures that prevail today in the use of limited liability corporations (LLCs) as the sole possessors of the ownership licenses.

Under these circumstances, the existing regulations and NRC's current regulatory practices could well result in financial liability for decommissioning falling to ratepayers and/or taxpayers to subsidize nuclear licensees' lack of sufficient financial resources to protect and remediate their own sites, with parent companies protected from ultimate liability through the LLC ownership structure. Instead, NRC should prohibit the use of decommissioning funds for non-decommissioning purposes. In addition, NRC should require licensees to establish separate or auxiliary funds for other regulated activities, including the storage and management of high-level waste. Should the federal government implement a long-term management solution before such funds were fully expended, excess monies could be returned to the licensee.

#### **NRC SHOULD RESTORE NATIONAL ENVIRONMENTAL POLICY ACT COMPLIANCE.**

Decommissioning should be reclassified as a Major Federal Action requiring NEPA compliance and the participation of the EPA in decommissioning. Cleaning up highly contaminated sites requires significant oversight. It should not be driven by licensees or their lack of adequate funding. The First Circuit Appellate Court justices opined in *CAN v. NRC* that decommissioning is a major federal action and requires NEPA compliance. "An agency cannot skirt NEPA or other statutory commands by exempting a licensee from compulsory compliance, and then simply labeling its decision 'mere oversight' rather than a major federal action. To do so is manifestly arbitrary and capricious." NEPA compliance was required and mandated by the court for decommissioning. Doing so would reinstate the use of NRC

resident inspectors and increase NRC oversight and public participation. It would reinstate EPA oversight beyond ground water contamination to address the significant chemical contamination at decommissioning sites. It could also support the requirement for an Emergency Planning Zone (EPZ) until the high level nuclear waste is transferred and secured in dry cask storage.

It is essential for NRC to define decommissioning as a major federal action. As the Appellate Court opined “. . . it is undisputed that decommissioning is an action which, even under the Commission’s new policy, requires NEPA compliance 10 C.F.R. 51.95(b).” The Agency’s choice to streamline the process for licensees and deregulate NRC requirements abdicated the agency’s responsibility to protect the health and safety of the workers, the public, the environment, and also undermined citizen due process.

**NRC SHOULD RESTORE ALL DECOMMISSIONING SAFEGUARDS INCLUDING THE HEARING RIGHTS OF THE PUBLIC.**

NRC’s radical 1996 revision of the decommissioning regulation eviscerated the hearing rights of the public, as well as states. Public meetings do not constitute the hearing rights required by the Atomic Energy Act and affirmed in *CAN v. NRC*. Adjudicatory hearings offer citizens the right to cross examination and discovery. A public meeting does not afford citizens the level of institutional accountability necessary given the dangers of enviro-toxic contamination inherent in the cessation of reactor operations. Informational meetings, as experienced at Yankee-Rowe, Connecticut Yankee and Vermont Yankee, do not effectively address the concerns of local residents since the local community—and, for that matter, states—have no power to effect change in the licensee’s choices. In *CAN v. NRC*, both the Federal District Court and the Appellate Court chastised the agency for this approach. If the community has concerns, and there is no regulatory recourse save one "meeting" with NRC, the Commission will, in fact, create greater polarization between the community and the regulator. This can lead to intensified mistrust of the agency and further costly legal battles as is seen in the decommissioning of Vermont Yankee. Advisory boards, such as Vermont’s Community Advisory Panel and similar bodies established in other decommissioning reactor communities, do not take the place of hearings.

**THE DECOMMISSIONING PLAN SHOULD BE REINSTATED AND REPLACE THE PSDAR.**

Under the 1996 revision to the decommissioning regulations, the NRC also eliminated the requirement that licensees submit a decommissioning plan. Instead, licensees are only required to submit a Post-Shutdown Decommissioning Activities Report (PSDAR) within two years of final shutdown. The PSDAR is a brief document, lacking any meaningful detail as to the methodology and site-specific plans, essentially conveying that the licensee will figure it out as decommissioning proceeds. This fundamental change has eliminated any meaningful

level of transparency and accountability for the conduct of decommissioning, allowing the licensee to proceed in relative secrecy and without NRC oversight.

The decommissioning plan must be a thorough guide and road map for the cleanup process; it is an instrument to hold a licensee accountable for the cleanup commitments it establishes in the plan. A 30-page narrative or report (PSDAR) identifying the licensee's actions does not qualify as a plan and does not establish verifiable licensee commitments. The rulemaking must reinstitute the requirement that licensees submit a complete, thorough, and substantive decommissioning plan; and that NRC review and approve the plan, and oversee its implementation.

**NRC MUST RESTRICT THE USE OF THE SAFSTOR DECOMMISSIONING OPTION AND REQUIRE LICENSEES TO CHOOSE THE MOST PROTECTIVE DECOMMISSIONING METHOD TO MINIMIZE THE EXPOSURE OF WORKERS AND THE PUBLIC TO RADIATION.**

Existing decommissioning rules permit licensees to select among three methods for decommissioning at their sole discretion and without guidance as to the particular hazards and considerations they may pose to worker and public health and safety. DECON, or rapid dismantlement, involves dismantling reactor facilities and disposing of radioactive waste within just a few years after closure, while ambient radiation levels are still quite high. This has resulted in occupational safety hazards and contamination of workers; releases of radiation into the environment; and higher levels of radioactivity being deposited in radioactive waste dumps, as well as higher disposal costs.

SAFSTOR presents increasingly problematic outcomes. Under SAFSTOR, the licensee may exercise its discretion to defer decommissioning for an indeterminate period of time, so long as it is completed with 60 years from the date of closure. Licensees operating reactors in states with merchant power markets, where the licensee is not a utility company and has no access to rate making to pay for the cost of decommissioning, have opted for SAFSTOR as their decommissioning method of choice. It appears this is the case for two reasons: they have not continued to invest in the decommissioning trust funds they acquired along with the reactors, and they are seeking to defer liability for decommissioning fund shortfalls indefinitely, as well as to take advantage of NRC exemptions for use of the decommissioning fund. In addition, by delaying decommissioning for sixty years, it is possible that the licensee or its parent company may have declared bankruptcy or no longer exist, complicating NRC enforcement of the license.

The lenient use of SAFSTOR makes it possible for radioactive contamination onsite to spread unchecked, as well as to complicate the eventual dismantlement of the reactor facilities, due to structural degradation, corrosion, and animal infestation of the facilities.

Examination of licensees decommissioning trust fund status reports, which include tables showing annual decommissioning trust fund projections out to the projected license termination dates, show that SAFSTOR is typically the most expensive decommissioning method as expenditures for mothballing the site accumulate over decades. The use of SAFSTOR must be justified and require selection of the earliest possible decommissioning date. Along with our above recommendations on decommissioning funding assurance and exemptions for use of the decommissioning fund, this would mitigate some of the worst outcomes that are possible under present regulations.

ENTOMB has, as far as we know, never been selected as a decommissioning method, but is clearly only appropriate under very specific circumstances under which reactor facilities are too contaminated to be safely dismantled and/or disposed of, for example, reactors that have had major accidents, such as Chernobyl. The possibility that ENTOMB could be utilized for any purpose other than as an option of last resort is unacceptable.

**NRC SHOULD INCLUDE A FOURTH DECOMMISSIONING OPTION TO ENCOURAGE LICENSEES TO SELECT THE MOST PROTECTIVE APPROACH POSSIBLE.**

NRC should encourage licensees to select the most protective decommissioning method possible by promulgating a fourth option. This method would balance the risks of DECON and SAFTSTOR described above, following one of the most successful reactor decommissionings to date: the Rancho Seco reactor in California. Currently, licensees are permitted to choose a combination of DECON and SAFSTOR, dismantling and decontaminating some parts of the reactor site immediately and postponing decommissioning of others until later.

NRC should formalize a fourth method that establishes best practices for achieving the objectives of decommissioning in a timely manner. This method would involve thorough planning of decommissioning activities while attending to the most immediate risks first (e.g., eliminating high-density storage of irradiated fuel in spent fuel pools) would also ensure the retention of the reactor workforce's most relevant skill sets and institutional knowledge and enable decommissioning and site remediation to be completed in a reasonable period of time. For instance, transfer of irradiated fuel from high-density pool storage could occur in the first five to seven years, while monitoring, site surveys and decommissioning planning are conducted. Dismantlement and decontamination of the reactor facilities could take place beginning afterward, reducing ambient radioactivity levels before Major dismantlement and decontamination activities start, thereby reducing the risk to workers, the public, and the environment. And site remediation could be completed within twenty to twenty-five years of closure of the reactor.

This decommissioning option could be labeled Planned Decommissioning and Site Remediation (PDSR). Rancho Seco's owner, the Sacramento Municipal Utility District, was able to complete decommissioning within about twenty years, even though the decommissioning trust fund was underfunded at the time it closed the reactor (1989). By approaching decommissioning in roughly the fashion outlined above, SMUD was able to accumulate funds for the most expensive parts of decommissioning, while retaining a comparatively large percentage of the pre-existing workforce.

#### NRC SHOULD PERMIT AGREEMENT STATES TO ADMINISTER AND OVERSEE DECOMMISSIONING.

The outcome of decommissioning ultimately has the greatest impact on states and local communities. They have a direct and long-term stake in the issues most germane to the process, and they also tend to have oversight of overlapping regulatory issues and standards that are outside of NRC's jurisdiction but which impact decommissioning activities, such as remediation of non-radiological pollution (e.g., toxic chemicals like PCBs). Certain reactor sites, like Yankee-Rowe, were able to complete radiological decommissioning to NRC's standards, but have severe chemical contamination problems that have made it impossible for the sites to be released for unrestricted use. NRC would retain authority over certifying license termination, but permitting states to exercise agreement state authority over the rest of the process, and to promulgate their own rules per their agreement state authority, would conserve NRC resources while providing states and the public a beneficial and appropriate role in the process.

#### SITE-SPECIFIC ADVISORY BOARDS SHOULD BE ESTABLISHED AS A FORMAL MECHANISM FOR LOCAL AND STATE PARTICIPATION DURING CLEANUP.

It is essential that the community in the effluent pathway of reactors as well as states that have oversight responsibilities, including advocacy for ratepayers, have the opportunity to participate in pollution reduction and prevention during decommissioning. This participation must be meaningful. The passive community participation in which limited information is fed to citizens to allay their fears is ineffective. Holding a meeting in a community to "inform" them of decommissioning is inadequate. The Appellate Court rejected this approach in the Yankee-Rowe case. A process must evolve which is responsive to the concerns of affected citizens who will continue to bear the burdens of long term exposure to low-level radiation and contamination. Citizens must have a substantive role in decommissioning in order to clarify, negotiate and protect their community's interests and to satisfy the requirements of a constitutional democracy.

Communities should be given the opportunity to participate in decommissioning from its onset. Therefore, CAN proposes that Site-specific Advisory Boards be offered to reactor communities as a formal mechanism of community participation during



decommissioning, since the process of site clean-up could span decades if not lifetimes. These boards must be independently convened in order to be effective. The Advisory Board would meet regularly to give meaningful input into decisions concerning health and safety, pollution prevention and reduction. The boards would function to educate the community regarding the impacts of the technology that exist in their neighborhood. They should include diverse interests such as local government, public interest groups, representatives of towns in the effluent pathway (including representatives from adjacent states), Native Americans, reactor worker representatives, and Federal and State regulators such as the NRC, public health and environmental departments, etc. An ecology of democracy must develop for local residents, scientists, technologists, industry, and regulators to work together to solve the contamination problems inherent in the nuclear fuel cycle. Costs for expert consultation should be borne by the licensee, either by allocation from NRC or, in the case of agreement state regulation as recommended herein, state regulatory authorities with oversight of the decommissioning process.

#### ANY PROPOSED NRC RULEMAKING MUST ESTABLISH AGENCY INSPECTIONS AND ENFORCEMENT DURING DECOMMISSIONING.

NRC currently provides no meaningful oversight and enforcement of decommissioning activities. There are no resident inspection staff after permanent shutdown of the reactor, and there are no regular inspections during the decommissioning process. With no meaningful public involvement, no hearing rights, and no detailed planning required for decommissioning, the lack of NRC oversight means licensee compliance with regulations is impossible to verify and enforce at all, much less on a timely basis. NRC must provide for a meaningful oversight process for decommissioning, including dedicated inspection staff with relevant specialization and expertise, regular inspections and reporting, substantive public information and engagement, and timely enforcement mechanisms.

#### NRC MUST INCREASE ANNUAL LICENSE FEES FOR CLOSED REACTORS.

NRC is required under federal law to collect fees from its licensees (and license applicants) in amounts that total 90% of the agency's annual budget. Each year, NRC proposes a revised fee schedule to Congress and, upon approval, updates 10 CFR Part 171 of its regulations. It has been NRC practice to charge vastly reduced fees to reactor licensees during decommissioning, and over the last few years, the gap between operating and decommissioning reactor license fees has widened significantly. In 2013, operating reactor license fee was \$4,390,000; the decommissioning reactor license fee was only \$231,000, or nineteen times less. In 2015, the operating reactor license fee had risen nearly 15%, to \$5,030,000, but the decommissioning reactor license fee had actually decreased by 3.5%, to \$223,000.

This clearly reflects the NRC's oversight and enforcement posture toward decommissioning. That must change not only to better align the agencies priorities toward providing meaningful oversight of decommissioning activities for the reasons detailed above, but also to correct a conflict of interest in the lopsided fee structure. In effect, NRC has provided a perverse incentive both to devalue public health and safety issues involved in decommissioning and site remediation and to enforce safety standards for operating reactors less stringently.

On the one hand, by charging such small fees for decommissioning reactors, NRC cannot justify devoting staff and technical resources to decommissioning-specific issues that could better inform its understanding of the needs and priorities for regulation and enforcement. And on the other hand, because the agency takes such a significant hit to its budget with each reactor that closes, it could inculcate a culture within the agency that views enforcement of safety regulations as a threat to the agency's budget and the job security of NRC staff.

This conflict must not be allowed to continue, and NRC must ensure that it has adequate resources to provide greater oversight and enforcement of decommissioning, particularly as more reactors are closing and decommissioning becomes a more prevalent public health and safety concern.