

**NUCLEAR INFORMATION AND RESOURCE SERVICE**  
**1424 16<sup>TH</sup> STREET NW SUITE 404**  
**WASHINGTON, DC 20036**  
**TEL. 202 328 0002**  
**<http://www.nirs.org>**

March 10, 2003

Ms. Sheri Eldridge-Bananck  
Air Resources Division  
New Hampshire Department of Environmental Services  
6 Hazen Drive  
Concord, NH 03302

By FAX 603-271-7053 and EMAIL [sbanack@des.state.nh.us](mailto:sbanack@des.state.nh.us)

**COMMENTS OF NUCLEAR INFORMATION AND RESOURCE SERVICE ON  
THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES  
AIR RESOURCES DIVISION  
CHAPTER Env-A 3200: NO<sub>x</sub> BUDGET TRADING PROGRAM**

Dear Ms. Eldridge-Banack:

On behalf of Nuclear Information and Resource Services (NIRS), I am filing public comments regarding the New Hampshire Department of Environmental Services Air Resources Division (DES) proposed rule on Cap and Trade: NO<sub>x</sub> Budget Trading Program (ENV-A-3200) as it pertains to providing pollution credits to Florida Power and Light's Seabrook Nuclear Generating Station.

NIRS is opposed to extending NO<sub>x</sub> credits to the Seabrook nuclear generating station. At issue is whether Seabrook operators deserve a credit for not releasing smog-forming nitrogen oxide (NO<sub>x</sub>), as New Hampshire's fossil fuel generators do. Renewable energy generators in New Hampshire, such as wind turbines, or other projects that generate or save power without creating air pollution are already eligible for the credit program. Under the DES proposal, Seabrook would also receive pollution allowances for power up-rates in electrical generating capacity.

NIRS is most concerned with the national precedent that the New Hampshire action would set for eventually subsidizing the existing 103 operating reactors with not only NO<sub>x</sub> but carbon dioxide allowances, thus fueling speculations for renewed nuclear power plant construction and expanded nuclear fuel production.

**SIGNIFICANT GREENHOUSE GAS EMISSIONS FROM THE SEABROOK  
NUCLEAR FUEL FABRICATION PROCESS ARE NOT ACCOUNTED FOR BY  
THE PROPOSAL**

While the DES program acknowledges that the Seabrook nuclear power plant itself does not burn fossil fuel and does not have a smokestack, the proposal does not acknowledge, in fact, ignores that the nuclear fuel cycle including uranium mining, milling and fuel fabrication process for Seabrook's fuel contributes atmospheric greenhouse gas emissions including CO<sub>2</sub>, CFC and NO<sub>x</sub>. This nuclear fuel production program relies upon fossil fuel (largely coal) to process, enrich and fabricate nuclear fuel. NIRS argues that the current greenhouse gas contributions from the nuclear fuel cycle do not constitute a fixed contribution of greenhouse gases but rather are subject to limited sources of high grade ore, which once depleted, result in greater greenhouse gas emissions from the processing of lower grade ores.

“Over the lifetime of a typical 1 GW (1000 MWe) PWR (Pressurized Water Reactor), about 6.7 Mt (Metric Tons) of CO<sub>2</sub> are produced during fuel enrichment and fabrication, 0.69 Mt during uranium mining and 0.84 Mt during power station construction. The high concentration uranium ores mined at present are quite limited and the CO<sub>2</sub> emissions from nuclear power rise considerably as lower concentration ore grades need to be used, as shown in Figure 13. A programme of replacement of coal-fired power stations by nuclear power stations would use up the higher grade ores within 30 years or so, after which nuclear stations would emit CO<sub>2</sub> at the same or greater rates than coal-fired stations.”<sup>1</sup>

Uranium enrichment plants located in Paducah, Kentucky and Portsmouth, Ohio that produce nuclear fuel for Seabrook and other nuclear power stations are the nation's largest contributors of CFC-114, a chemical coolant that destroys the earth's ozone layer. Emissions from these two fuel enrichment plants represented 88% of all U.S. industrial sources and 14% of all industrial CFC-114 emissions worldwide in 1999. Uranium enrichment also produces mercury, arsenic, cadmium and airborne hydrochloric acid aerosol along with chlorine gas.<sup>2</sup>

Therefore, NIRS challenges the legitimacy of the claim that Seabrook nuclear power station is currently a “non-emitting” generator. While Seabrook is currently licensed for 40 years, if Seabrook operators follow the current industry trend, Seabrook Station will make application for an additional 20 year license extension for a total 60 year operating license. Potentially, Seabrook nuclear power station could be operational after high-grade uranium ores have been exhausted therefore relying upon fuel produced with lower grade ore and resultant higher greenhouse emissions from the fuel production cycle. Current and future emissions of CFC-114 from fuel enrichment additionally disqualify Seabrook as a “non-emitting” generator.

---

<sup>1</sup> “The Impact of Energy on Environment and Development,” Robert Hill, IVth Nobel Prizewinners Meeting, December 1989, p. 14.

<sup>2</sup> “Uranium plants harm ozone layer: Kentucky, Ohio facilities top list of polluters,” Louisville Courier-Journal, May 29, 2001

Current greenhouse gas emissions from the production cycle cannot be ignored nor discounted by DES formulators. The anticipated increases of greenhouse gas as the result of depleting the high grade uranium resources further constitute a significant contribution to future air pollution. Emission credit programs designed to reduce industry greenhouse gas contributions from current nuclear fuel processing would be more appropriate and effective rather than deceptively focusing on the “smokeless” end user, namely, Seabrook Station.

**THE PROPOSAL ESTABLISHES AN UNEVEN AND UNFAIR COMPETITIVE  
PLAYING FIELD FOR RENEWABLE AND NON-POLLUTING GENERATORS  
BY IGNORING THE SIGNIFICANT ENVIROMENTAL POLLUTION,  
DAMAGE AND RISK ASSOCIATED WITH SEABROOK NUCLEAR  
GENERATING STATION**

The DES program does not acknowledge other nuclear power pollution, damages, risks and the resulting environmental externality costs. The proposal does not assess routine radiation emissions from plant operations, from the risk of catastrophic accident such as occurred at Three Mile Island and Chernobyl, and exposures from the disposal of mill tailings and of high and “low level” radioactive waste. Seabrook’s once-through cooling system takes in 1.5 billion gallons each day directly from the Atlantic Ocean along with unknown and immeasurable resources including fish, spawn which is then pasteurized and distributed on the ocean floor as sediment through the discharge tunnel along with the thermal pollution. All of these impacts are reported to have significant costs and potential health impacts on society and the environment but are largely unaccounted for under current regulation.

The environmental impacts of the operation of a nuclear power plant are much more difficult to quantify than those of a fossil fueled power plant. The difficulty stems from the 1) the difficulty of determining the frequency and magnitude of non-routine and routine radioactive releases; 2) the even greater difficulty of determining the probability and consequences of a major nuclear accident; 3) uncertainty of the health effects of low radiation doses; and 4) the lack of an accepted plan for long-term high-level waste storage and long term management, implementation of so called “low-level” radioactive waste legislation and management, and residual radioactivity from decommissioned nuclear plants.

There are environmental externality costs as well as potential public health consequences associated with the routine operation of the Seabrook nuclear power station. Routine operations at Seabrook include daily workings and maintenance of the nuclear power station resulting in the venting and discharge of “permissible” releases of radioactivity. The NRC has cautioned that radiation emissions from each nuclear power plant will vary from year to year and are not directly related to plant size. Various site-specific factor influence routine radioactive emissions, including fuel condition, primary system integrity, treatment systems for effluent and nuclear waste, and compliance by operators. Routine “permissible” radioactive releases can have public health

consequence as documented by the Massachusetts Department of Public Health “Southeastern Massachusetts Health Study 1978-1986” completed in October 1990. The study looked at 25 Massachusetts communities in the vicinity of the Pilgrim nuclear power station and concluded that the risk of leukemia was almost four times higher for individuals with the highest exposure (proximity and duration of residency) than for those individuals with the lowest exposure.<sup>3</sup> There are no known safe thresholds for radiation exposure. Radiation dose modeling, which is set to a standard exposure to a middle aged 165 pound male, is unfairly weighted against the more vulnerable of our population, namely, children and expectant mothers and their fetus,

It is therefore unfair to renewable generators, which do not have hazardous emissions, to have Seabrook Station placed in the same “non-emitting” category to receive credits while not being held responsible for associated hazards, damages, risks and costs of its radioactive by-products.

To suggest that Seabrook nuclear station should be credited with NOx allowances is not unlike going to your doctor with a smoker’s cough and being prescribed heroin. The proposal merely exchanges one set of unacceptable and unhealthy conditions for another.

**DES STAFF ARGUMENTS THAT ADDITIONAL NUCLEAR POWER DAMAGES, HAZARDS AND RISKS ARE ADEQUATELY ADDRESSED OUTSIDE OF THE TRADING SYSTEM ARE UNFOUNDED**

The DES staff argues that the additional environmental externality costs and associated risks can be argued and are adequately addressed outside of the NOx allowance trading system. The DES staff suggests that the Nuclear Regulatory Commission (NRC) licensing and licensing extension process is the proper forum for addressing these damages, risks and costs.

NIRS argues that the NRC cannot necessarily be relied upon to adequately address these issues in the current licensing and regulatory process. For example, the NRC license renewal program does not provide for adequate public intervention in the NRC’s license extension process. The process has become so streamlined that federal regulators have designated whole categories of environmental and public health impacts of such “small significance” that no further mitigation is deemed warranted nor will be considered by the agency in any site specific licensing extension proceeding. Such issues include consideration of the additional 20 years generation of radioactive nuclear waste and on-site storage of high-level radioactive waste at Seabrook in the absence of a scientifically accepted nuclear waste management process and geologically approved site. Another example of “small significance” barred by current regulation from public contest before a licensing proceeding includes the health impact from cumulative radiation exposures to the public as the result of routine radioactive releases for the additional twenty year

---

<sup>3</sup> “Southeastern Massachusetts Health Study,” Morris and Knorr, Commonwealth of Massachusetts, Executive Office of Human Services, Department of Environmental Services, October 1990.

extension.<sup>4</sup> These issues directly relate to hazardous emissions from nuclear power stations and public and environmental health.

NIRS further points out that observed inadequacies in the NRC regulatory oversight process document that the agency cannot necessarily be relied upon to provide adequate oversight of issues effecting the public health and safety. The most recent example, the NRC Office of the Inspector General (OIG) released an investigative report into the agency's oversight and handling of the public safety issues at the Davis-Besse nuclear generating station near Toledo, Ohio. The Inspector General investigative report findings include:

“The NRC appears to have informally established an unreasonably high burden of requiring absolute proof of a safety problem, versus lack of reasonable assurance of maintaining public health and safety, before it will act to shut down a power plant.”<sup>5</sup>

“During its review of the potentially hazardous condition at Davis-Besse, the NRC staff considered the financial impact to the licensee of an unscheduled plant shutdown... The fact that FENOC (FirstEnergy Nuclear Operating Company) sought and [NRC] staff allowed Davis-Besse to operate past December 31, 2001 without performing these inspections was driven in large part by a desire to lessen the financial impact on FENOC that would result from an early shutdown.”<sup>6</sup>

Contrary to the DES staff assertions, the OIG recent findings underscore a growing lack of public confidence and uncertainty in the NRC's regulatory judgment on matters of public health and safety and environmental quality.

### **CONCLUSION**

NIRS requests that access to the NOX set-aside funds be exclusive to renewable energy generators (i.e. hydroelectric facilities, photovoltaic arrays, wind turbines, etc.) and energy-efficiency and conservation programs.

Paul Gunter, Director  
Reactor Watchdog Project  
Nuclear Information and Resource Service  
1424 16<sup>th</sup> Street NW Suite 404

---

<sup>4</sup> Generic Environmental Impact Statement for License Renewal of Nuclear Plants, U.S. Nuclear Regulatory Commission, NUREG-1437, Volume 1, Final Report, Conclusions, Table 9.1 Summary of findings on NEPA issues for license renewal of nuclear power plants, Category 1 and 2 Issues, August 1999. <http://www.nrc.gov/NRC/NUREGS/SR1437/V1/sr1437v1.html>

<sup>5</sup> “NRC's Regulation of Davis-Besse Regarding Damage To the Reactor Vessel Head,” Office of the Inspector General, U.S. Nuclear Regulatory Commission, Case No. 02-03S, December 30, 2002, p. 23.

<sup>6</sup> Ibid, p.23

Washington, DC 20036  
Tel. 202 328 0002  
[www.nirs.org](http://www.nirs.org)  
pgunter@nirs.org