Response: *It is not clear what calculation the commenter is referring to. The NRC sets limits on radiological effluents, requires monitoring of effluents and foodstuffs to ensure those limits are met, and has set dose limits to regulate the release of radioactive material from nuclear power facilities. The regulations are intentionally conservative and provide adequate protection for the public, including the most radiosensitive members of the population. All reactor licensees monitor their effluent and calculate offsite doses caused by radioactive liquid and gaseous effluents. These calculations are performed to demonstrate the licensee's compliance with its technical specifications and NRC regulations. The licensee's Offsite Dose Calculation Manual (ODCM) provides for collection and analysis of a variety of samples such as soil, water, plants, and animals. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: The degradation that will occur due to the constant bombardment of radiation could affect how the plant is dismantled and how the radiation exposures will be for workers and could easily add new accident scenarios. For instance, Plant Hatch has a cracked core shroud, and I know other plants do, too. But I don't know—that's question, I guess, have any of those been dismantled? How will that deficiency affect decommissioning? These factors, among others, must be incorporated in addressing the decommissioning of individual facilities. **(AT-A/27)**

Response: *The reactor fuel will be removed from the reactor core before any major decommissioning activities take place. A reactor with a cracked core shroud will not pose any additional difficulty in decommissioning. The industry has considerable experience in the removal of damaged components (e.g., the cleanup at Three Mile Island, Unit 2). Decommisioning can be accomplished efficiently and safely with minimal radiation exposure to the workforce. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: Okay, we searched the document to determine what the actual acceptable risk is to the public for the activities addressed in your process. And what we determined is that it's a pretty wide range, from three to 21 person rems. Okay, yeah. What is the absolute level of acceptable risk -- and I know it ranges in the experiences that the NRC has had at different decommissioned power plants. And so there were different doses identified at different plant locations and I know some of the variables that went into that. What is the absolute level of acceptable risk that NRC will allow for decommissioning activity in general? That's number one. **(AT-B/1)**

Response: *This Supplement does not establish acceptable risk levels; it lists reported doses for individuals and populations and provides estimates of potential impacts. NRC and EPA regulations contain permissible dose limits for individuals. Neither agency has established*

permissible population doses. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.

Comment: I don't think the long-term radiological impacts [from entombment] are being addressed and the scope of this document is inadequate as it relates to radiological impacts. I think in generic terms, that should be addressed. **(CH-C/6)**

Response: *Entombment was addressed in this Supplement at the request of the Commission. Although Entombment, as described in this Supplement, does not result in unrestricted release at License Termination, the environmental impacts from the activities for preparing for Entombment can be evaluated and that was within the scope of this Supplement. In October 2001, the Commission published, for public comment, an advance notice of proposed rulemaking (ANPR) on Entombment Options for Power Reactors (66 FR 32551). The NRC's regulatory limits for radiological protection are set to protect workers. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: The NRC is charged to protect the quality of the human environment and we ask that they all can uphold that charge. The current draft GEIS is not protective and needs major improvement. **(CL-08/33)**

Response: *The NRC's mission includes ensuring that decommissioning of all nuclear reactor facilities will be accomplished in a safe and timely manner. This comment cannot be evaluated because it did not provide specific information. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: The U.S. Environmental Protection Agency (EPA) and most state agencies that set radiation exposure standards employ measures, limits, or goals expressed in terms of risk. NRC Radiological Site Release Criteria appear to yield a higher risk to the public than those risk levels acceptable to EPA under CERCLA. If this is so, then the GEIS should contain the comparisons (risk to risk, nuclear to chemical, one in ten thousand to one in a million) in plain language. The presentation of risk in Appendix G is unnecessarily obtuse and murky. It appears not to contain a comparison to permissible or target risks from non-radiological pollutants, which in all fairness, it should. **(CL-13/2)**

Response: *Although licensees may be required to meet state and other Federal regulations during decommissioning, this Supplement evaluated environmental impacts from decommissioning activities using, where appropriate, NRC regulations and guidelines as part of the evaluation. The statement is made that the GEIS should contain the comparisons (risk to*

risk, nuclear to chemical, one in ten thousand to one in a million). NEPA requires Federal agencies to consider every significant aspect of the proposed action. NEPA requires that the agencies inform the public that it has considered environmental concerns in its decision-making process and it requires agencies to take a hand look at the environmental consequences of an action. It does not require comparisons between technologies , or comparisons of risks between the various technologies. Appendix G provides a summary of risks from radiation exposure. Section G.1.1.4.3, "Risk Coefficient Selection," discusses the use of the BEIR-V risk coefficient of 8 x 10^{-4} fatalities per 0.01 person-Sv (1 person-rem). The Supplement provides a range of occupational doses experienced in permanently shutdown reactors for a number of decommissioning activities. The staff concludes that the occupational and public health impact from radiological dose for all decommissioning activities is generic and the impact will be SMALL. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.

Comment: Water quality should continue to be tested for radioactive contaminants for at least 600 years which is the full radioactive hazardous life approximately for cesium-137, which is a contaminant of concern in fish and shellfish as it migrates to muscle in particular. **(CL-20/37)**

Response: *There are regulations in place concerning the release of any material from a nuclear power facility. The plants were licensed with the expectation that there would be routine releases to the air and water due to normal operations and that these releases would be detectable offsite. The releases are limited to ensure public health and safety. Liquid releases to the environment must be monitored and meet the requirements of 10 CFR Part 20, Appendix B, Table 2. Therefore, contaminants may be present and detectable offsite, however the release limits have been designed and proven to be protective of the health and safety of the public and the environment. No offsite decontamination efforts or additional monitoring procedures are warranted. The Supplement does not (1) establish policy, (2) establish or revise regulations, (3) impose requirements, (4) provide relief from requirements, or (5) provide guidance on the decommissioning process. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: NRC MUST MAKE LICENSEES, CONTRACTORS, SUBCONTRACTORS AND ANYONE WHO WORKS ON DECOMMISSIONING TAKE THE EFFECTS OF RADIOACTIVE "DAUGHTER" PRODUCTS INTO CONSIDERATION AS THEY MAY HAVE VERY DIFFERENT PHYSICAL, CHEMICAL AND RADIOACTIVE PROPERTIES THAN THE RADIOACTIVE "PARENT." THIS MUST BE PART OF DECOMMISSIONING STANDARDS. **(CL-20/52)**

Response: *The NRC radiation exposure standards are presented in 10 CFR Part 20 and take into account daughter products. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: Emissions are allowed to be averaged out to make them appear less, and there is no independent monitoring and utilities do and say whatever they please. **(CL-20/92)**

Response: *Emissions are reported as total for a given period, not as averages. The NRC sets limits on radiological effluents, requires monitoring of effluents and foodstuffs to ensure those limits are met, and has set dose limits to regulate the release of radioactive material from nuclear power facilities. The regulations are intentionally conservative and provide adequate protection for the public, including the most radiosensitive members of the population. All reactor licensees monitor their effluents and calculate offsite doses caused by radioactive liquid and gaseous effluents. These calculations are performed to demonstrate the licensee's compliance with its technical specifications and NRC regulations. The licensee's Offsite Dose Calculation Manual (ODCM) provides for collection and analysis of a variety of samples such as soil, water, plants, and animals. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: I know that I am not alone in asking you to protect our citizens from radioactivity on such a large scale and hope that you will live up to your responsibility by not lessening the requirements that utility companies face when decommissioning takes place. **(CL-39/6)**

Response: *The NRC's primary mission is to protect the public health and safety, and the environment from the effects of radiation from nuclear reactors, materials, and waste facilities. The NRC has and will continue to live up to the responsibility to protect the citizens of the United States from the harmful effects of radiation resulting from the use of licensed material. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: How could the NRC, with its limited surveillance staff, make certain that each licensee would search conscientiously for contamination on the interior as well as the exterior surfaces of pipes, drain lines and ductwork? **(CL-51/10)**

Response: *Included in the license termination plan is a site characterization, which is based on radiological surveys made throughout operation of plant and decommissioning process. The purpose of the site characterization is to ensure that the final radiation surveys are conducted to cover all areas where contamination existed, remains, or has the potential to exist or remain as well as to provide data for planning further decommissioning activities. The site*

characterization contains a description of (1) the radiological contamination on the site before any cleanup activities associated with decommissioning took place, (2) a historical description of site operations, spills, and accidents, (3) a map of remaining contamination levels and contamination locations, and (4) a description of the survey instruments and supporting quality assurance practices used in the site-characterization program. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.

Comment: How can the radioactive content of this structure be accurately estimated? **(CL-51/13)**

Response: *Discussion of method for estimating the radioactive content of structure is outside the scope of the Supplement. There are several methods by which the total activity could be estimated. These methods include taking core samples through the containment vessel and determining the variation of activity as a function of the location of the sample and position in the sample. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: Tritium can't be contained. **(CL-20/93)**

Response: *Tritium is water with an extra neutron in the nucleus. It can be contained in the same manner as water, for instance in bottles, tanks, etc. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

O.1.7 Decommissioning Accidents

Comment: Section 4.3.9 and Appendix I discuss the potential of, and consequences of, postulated radiological accidents. On page I-2 of Appendix I, the text states, "As a result of improvements in the technology used for decommissioning, several of the accidents listed in Table 1-2 may now be considered to be of a much lower probability or, at the least, to result in much-reduced consequences." It is recommended that the text be revised to identify typical technology improvements. For example, some of the plants currently undergoing decommissioning intend to use single failure proof cranes to preclude the potential for certain postulated spent fuel cask drop or heavy load drop accidents. **(CL-06/3)**

Response: *Appendix I was revised to include reference to specific technological improvements such as the upgrading to a single failure proof crane.*

Comment: Section 4.3.9.3, page 4-35, lines 19-21 – the category of hazardous (non-radiological) chemical related accidents is listed here, which is appropriate since such accidents are possible during decommissioning. The description only mentions potential for injury to the public. However, in Section 4.3.9.2, which describes the classification of accidents as small, moderate and large, effects on workers are also discussed. This should be clarified since it appears to be inconsistent. **(CL-09/24)**

Response: *Section 4.3.9 is a discussion of offsite impacts to members of the public. The commenter is referred to Section 4.3.10 for an assessment of impacts to workers, including chemical hazards.*

Comment: I think the document needs to address fires, chemical hazards, particulates, spills. I just think there are more issues that need to be addressed in the document. **(CH-D/8)**

Response: *Appendix I of the Supplement evaluates a large number of potential accidents for plants undergoing decommissioning including fires, chemical hazards and spills. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: Table I-5, page I-20 – add fire and hazardous materials to associated accidents for removal of contaminated pipe and tubing. **(CL-09/51)**

Comment: Table I-5, page I-21 – add fire and hazardous materials to associated accidents for metal component dismantlement, intact removal or partial segmentation of large components and the first three subcategories of removal of reactor pressure vessel and internals. **(CL-09/52)**

Comment: Table I-5, page I-22 – add fire to associated accidents for cut piping attachments. Add fire and hazardous materials to associated accidents for decontamination, segmentation and disposal of RCS and other larger bore piping. **(CL-09/53)**

Comment: Table I-5, page I-23 – add fire to associated accidents for deactivate systems, disposal of nonessential structures and systems; establish a permanent reactor coolant system vent path; establish a permanent containment vent path; remove dedicated safe-shutdown diesel and generator; and remove unused equipment during SAFSTOR. Add hazardous materials to deactivate systems; disposal of nonessential structures and systems; drain and flush plant systems; process, package, and ship liquid and solid radioactive wastes; remove dedicated safe-shutdown diesel and generator; dispose of non-radioactive hazardous waste; and limited decontamination of selected structures and systems. **(CL-09/54)**

Comment: In general, any activities that involve cutting or welding could lead to a fire. Precautions are implemented to minimize the possibility and respond quickly if a fire starts. Depending on the materials in the systems during operation or during earlier decommissioning activities, a hazardous materials accident is possible when removing systems, handling waste or using decontamination materials. Again, precautions are planned to minimize the possibility. **(CL-09/55)**

Response: *Table I-5 was revised and "fire" was added as a potential accident for a number of decommissioning activities.*

Comment: Page 1-8, Lines 10-13. EPA agrees that inadvertent releases resulting from an accident should be handled on a site-specific basis. We would like to see an explanation of how the analysis of impacts from an accident would be handled. **(CL-16/14)**

Response: *As stated in the Supplement, the discussion of environmental impacts from reactors that were permanently shut-down due to a major accident is outside the scope of this document and would require a site-specific analysis. In response to EPA's request, the staff recommends that EPA examine NUREG-0683, as supplemented. NUREG-0683 is a Programmatic EIS related to the decontamination and disposal of radioactive wastes resulting from the March 28, 1979 accident at Three Mile Island, Unit 2. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: Perhaps most disgusting is that under "Consequence of Potential Accidents" p. I-16 the impression given is that spent fuel pool accident risks are low, when in fact NRC's own cited document shows, hundreds upon hundreds would die and also many spent fuel pools were highly vulnerable to catastrophic accident due to earthquakes and a lot more besides - spent fuel pool accidents would have terrible consequences. **(CL-20/100)**

Response: *The level of risk is the result of the probability of occurrence and the consequences of the accident. The risk associated with spent fuel pools is low because the probability of an accident is low. Furthermore, the accident could be mitigated before a release occurs. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: Table I-3 incorrectly lists site flooding as the only accident analyzed for Peach Bottom Unit 1 in the documents referenced in Appendix 1 for Peach Bottom Unit 1. The additional accidents analyzed for Peach Bottom Unit 1 that should be added to Table I-3 are:

- Release of helium coolant under containment breach (open penetration to containment) for accidents involving radioactive materials (non-fuel-related) on page I-9.

-- Fire inside reactor vessel under fire for accidents involving radioactive materials (non-fuel-related) on page I-10. **(CL-31/15)**

Response: *The additional accidents identified above for Peach Bottom Unit 1 were added to Table I-3.*

Comment: Appendix 1, Summary of Accidents For PWR and BWR Plants Undergoing Decommissioning Operations, Table 1-3 lists accidents considered in various individual plant evaluations but lists no potential consequences and no probabilities. So what good is this list except to show the random and will-nilly cafeteria approach to individual plants picking out and designing bounding accident scenarios? At one plant the limiting scenario is fuel handling accident; at another it is a fire in the low-level waste storage building. Case in Point: No fire scenarios are listed for Maine Yankee under Table 1-3, yet recently a fire occurred in a low-level waste dewatering unit and burned at several hundred degrees for more than an hour. A local volunteer fire company approached the fire without respirators and without advice from radiation protection personnel. A GEIS should contain a comprehensive generic list of potential accidents (scenarios) together with probabilities and potential consequences. **(CL-13/3)**

Response: *Potential consequences are shown in Table I-4 of Appendix I. Probabilities for accidents other than those related to the spent fuel pool have not been calculated primarily because of the low risk associated with the accidents and the potential for mitigation of the accident consequences. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: Presenting licensee estimates of consequences without comment or qualification as in Table 1-4, Highest Offsite Doses Calculated for Postulated Accidents in Licensing Basis Documents, provides an incomplete picture of real potential consequences. For example, Maine Yankee asserts that loss of spent fuel pool heat sink will result in the same offsite dose as a liquid waste spill, that of .23 REM. Other than a reference to another study, NRC does not bother to explain what sort of dose spent fuel pool drain down might result in if remedial action is not taken. As dose consequences can be rather large, the actual figures should be included in he GEIS. **(CL-13/4)**

Response: *The event scenarios that lead to a spent fuel pool drain-down and subsequent large offsite radiological release are beyond design basis. While the consequences from such a postulated event can be large, the likelihood of the event is very small. The overall risk to the public is well within the quantitative health objectives of the NRC. To more accurately quantify the risk, several figures have been added to Appendix I of the Supplement and the discussion on spent fuel pool drain-down events has been appropriately modified.*

Comment: A serious accident or terrorist act could be catastrophic. Such an occurrence could result in large numbers of human fatalities, injuries and illnesses and vast areas of land uninhabitable for years. **(CL-46/4)**

Comment: Given the recent experience with wild fires at the Los Alamos and Hanford Nuclear Reservation and now the potential for flooding and massive soil erosion, the NRC should re-evaluate risk assessments and dose calculations for decommissioning reactors. **(CL-50/25)**

Response: *Once the reactor shuts down permanently, the risk to the public is greatly reduced; however, there are still accidents that may occur that could have consequences offsite. Licensees are required to examine their sites and plans for decommissioning to identify postulated accidents that could occur during decommissioning. An analysis of these accidents is required in their Final Safety Analysis Report, or equivalent document, which is part of the licensing basis for the plant. Possible accidents, such as the ones mentioned above, and many other possible scenarios, have been considered in this analysis. The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: Wherever human beings are involved, there are bound to be errors and accidents. The human element cannot be removed, as we found out at Three Mile Island and Chernobyl. **(CL-10/5)**

Response: *Radiological accidents during decommissioning are considered in Appendix I of this Supplement. The comment is not specific and did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: I challenge any licensee and any NRC staffer, to walk into the area where the spent fuel pool is after the water has drained from the spent fuel pool, and try and refill the spent fuel pool with a garden hose (that is what they thought they'd do at the Georgia Institute of Technology Reactor) and see how well they can "mitigate" the situation before "offsite dose consequences could occur" - they'd be dead before they could pick up the hose. To say that such an accident could be mitigated is the height of deception. **(CL-20/101)**

Response: *The NRC staff considers loss of water from the spent fuel pool to be a very low probability accident because of design features required at all spent fuel storage pools that minimize the possibility of losing all the spent fuel coolant. Obviously, what the NRC staff had in mind as mitigation of a loss of inventory accident at a spent fuel pool was not manual refilling with a garden hose. Technology exists and it is routinely employed to work effectively in very high radiation fields. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: THE NRC SHOULD READ ITS OWN DOCUMENTS AND THE FAMOUS "CRAC 2" REPORT DONE BY SANDIA LABS, THE NRC AND THEN CONGRESSIONAL OVERSIGHT BECAUSE TO PRESENT DATA TAKEN FROM LICENSING-BASIS DOCUMENTS WHICH HISTORICALLY HAVE DOWNPLAYED ANYTHING THAT COULD HAPPEN IS OUTRAGEOUS, AND IF THERE IS STILL FUEL IN THE REACTOR AND A LOSS OF WATER COOLANT HAPPENS, EVEN IF THE REACTOR HAS BEEN SHUTDOWN RECENTLY, THERE WILL BE A MELTDOWN. **(CL-20/102)**

Response: *The staff is aware of the information that is present in the documents it publishes. This comment is general in nature and does not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: Section 4.3.9.2, page 4-34 – it is not clear whether the physical injuries discussed in this section are only those due to radiological impacts or due to non-radiological aspects of an accident. The section is on radiological accidents so the former is implied, but the wording is not clear. **(CL-09/23)**

Response: *Section 4.3.9.2 was revised to refer specifically to radiological accidents. Information that could be misconstrued pertaining to nonradiological accidents has been removed from the section.*

O.1.8 Occupational (Nonradiological) Impacts

Comment: I'm going to have comments on the details of my facility, Fermi I, ranging from the status of our decommissioning since we are inactive, the final act of decommissioning...(comments on the details of my facility, Fermi I) what kind of fuel the plant used, the type of containment, some of our systems. We are cleaning up sodium residues. I'd like that stated in the report. It is one of the type of chemical activities and chemical hazards that are being done as part of decommissioning. **(CH-D/2)**

Response: *Section 4.3.10.1 was revised to include removal of sodium residues.*

Comment: There are some additional hazards that have to be addressed in the discussion of the hazards. I don't think these would affect the overall conclusions of the document. But I think there is more detail, and to some extent, some hazards that are not fully addressed in the document. And some of these are in the areas of occupational hazards. **(CH-D/7)**

Comment: Section 4.3.10.1, page 4-37 – the hazard of flames and fires should be addressed in the section on physical hazards. **(CL-09/25)**

Response: *Section 4.3.10 was extensively revised. The hazard of flames and fires are addressed in Section 4.3.10.3.*

Comment: Section 4.3.10.1, page 4-39 – the following items should be added to the list of activities that expose workers to chemical hazards:

"Removal of chemical containing systems, such as demineralizers, and acid and caustic containing tanks," "Removal of sodium and NaK residues." **(CL-09/26)**

Response: *Section 4.3.10.1 was extensively revised. The chemical hazards identified above are addressed in Section 4.3.10.3.*

Comment: Tables E-3 and E-5 The issue of occupational hazards applies to activities in addition to those indicated in Table E-3. Since Table E-5 is based on Table E-3, it also needs to be revised to reflect the following.

Such additional activities that can affect or involve occupational issues are as follows. A brief explanation of why follows each item.

Adjust site training (Industrial safety type training needs to be continued and revised based on job hazards to ensure workers are trained for activities or areas [e.g., confined spaces] involved in decommissioning)

Establish a reactor coolant system vent pathway (Depending on specific method, this could involve cutting, welding and working at heights)

Establish containment vent pathway (Depending on specific method, this could involve cutting, welding and working at heights)

Do preventive and corrective maintenance on SSCs (Maintenance activities at an operating plant or decommissioning plant can involve industrial hazards, some more so than others. There can be energized systems, pressurized fluids, rotating equipment, etc.)

Chemical decontamination (Occupational hazards include chemicals and pressurized fluids)

High pressure water sprays of surface (High pressure sprays are themselves a hazard due to energy involved. Precautions need to be taken to use them safely)

Cut out radioactive piping (Cutting typically involves torches or cutting wheels, creation of fumes or particles, and rigging)

Remove large and small tanks or other radioactive components from the facility (Careful rigging is needed to maintain control and prevent injury. If this activity also involves cutting the equipment free, the hazards of cutting are also involved)

LLW packaging and storage (Handling the LLW and packages needs to be performed ergonomically safe to prevent injuries)

Large component transportation (The transportation issues all involve lifting of materials to remove them or bring them onto the site. Care also is needed if vehicle is backing up during the evolution.)

LLW transportation

Equipment into site transportation

Backfill tracked into site

Non-radioactive waste transportation

Complete final radiation survey (The survey will involve working at heights if buildings remain, and possibly accessing hard to reach locations.) **(CL-09/33)**

Comment: Tables H-1 and H-2 – as addressed under comments on Tables E-3 and E-5, other activities involve occupational hazards. Occupational issues do not seem to belong as an environment issue category. Safety of workers is considered as a separate category when planning work. From a regulatory perspective, OSHA and state agencies typically promulgate regulation on worker safety, not the EPA or state environmental agencies. The environmental issues typically are impacts to the air, water, or land both on and off site, while other environmental issues that impact people are evaluated for the public. The type of review is also different for occupational issues than other environmental issues. As each work package is planned, the hazards of the job need to be addressed in the planning and appropriate methods, engineering controls and protective equipment planned and workers briefed for each activity. This is an immediate, short-term (for the duration of the activity) type of review, while most environmental issues have longer term implications. However, if occupational issues are to be included in this environmental review, the additional activities discussed earlier also need to be included. **(CL-09/48)**

Response: *Tables E-3, E-5, H-1 and H-2 were revised as appropriate in response to the above comments.*

Comment: (4.3.10.1) ENVIRONMENTAL IMPACTS of DECOMMISSIONING PERMANENTLY SHUTDOWN NUCLEAR POWER REACTORS; Occupational Issues - Conclusions:

Labor relations is an essential component, and potential impediment to prompt decommissioning activities. For example:

On August 12, 1982, William Pennsyl, a cleanup worker, was fired for insisting he be allowed to wear a respirator while undressing men who entered highly radioactive areas. Pennsyl filed a complaint with the U.S. Department of Labor. William Pennsyl settled out-of-court two days before an administrative law judge was scheduled to hear his case

On March 22,1983, JM 1-2 senior-safety engineer Richard Parks publicly charged GPU and Bechtel Corporation with deliberately circumventing safety procedures, and harassing him and other workers for reporting safety violations.

On July 31,1990, the NRC announced "that an allegation that a shift supervisor on duty at Three Mile Unit 2 control room, during defueling operations in 1987, had sometimes slept on shift or had been otherwise inattentive to his duties, was true ..."

Also, in February 1991 an operator "inadvertently flooded the vaporizer" and several days later an operator was discovered "apparently sleeping.

Based on the experience at Three Mile Island, the SMALL and MODERATE evaluations need to be upgraded to "LARGE." **(CL-02/54)**

Response: *Consideration of worker safety and health, training, and experience with nuclear facilities was included in looking at occupational health and safety issues in this Supplement. Instances of worker misconduct occur, and the licensee and NRC have been diligent in identifying such instances and will continue to do so in the future. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: I noticed that the Draft blabbers on about OSHA standards YET FAILS TO MENTION THAT OSHA DOES NOT COME ON SITE AND IS NOT ALLOWED TO ACCORDING TO OSHA, EVERYTHING IS UNDER NRC. So let's print the truth shall we? **(CL-20/24)**

Response: *OSHA has jurisdiction for non-radiological safety hazards. NRC inspectors have jurisdiction over radiological safety hazards. OSHA has access to licensed facilities, however, because of NRC inspector presence onsite during decommissioning activities, the NRC has entered into a Memorandum of Understanding with OSHA. NRC inspectors are required to be*

alert for conditions of non-radiological safety hazards. NRC inspectors are also required to follow up on identified non-radiological safety hazards to include reporting requirements to OSHA. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.

Comment: To what extent will chemical decontaminants be used? **(CL-51/11)**

Response: Chemical decontamination, the use of chemicals to decontaminate structures, systems, and components is conducted and will be conducted at all decommissioning sites to varying degrees. Chemical decontamination of the primary system has been conducted at a number of facilities including Maine Yankee and Big Rock Point. Chemical decontamination of the primary system is a determination that is made by the licensee. When available, data on chemical decontaminants were factored into the evaluation of environmental impacts from decommissioning activities presented in this Supplement. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.

O.1.9 Cost Impacts

Comment: Table 4-3 lists the decommissioning cost of Peach Bottom Unit 1 to be 54 million dollars (in January 2001 dollars). In our letter submitted on March 30, 2001, in accordance with 10 CFR 50.75 the decommissioning cost estimate for Peach Bottom Unit 1 reported in beginning of year 2001 dollars is 65.4 million dollars. Table 4-3 should be changed to reflect the latest cost estimate. **(CL-31/12)**

Comment: Table 4-4 lists the decommissioning cost of the high-temperature gas-cooled reactor in SAFSTOR (Peach Bottom Unit 1) to be 54 million dollars (in January 2001 dollars). In our letter submitted on March 30, 2001, in accordance with 10 CFR 50.75 the decommissioning cost estimate for Peach Bottom, Unit 1 reported in beginning of year 2001 dollars is 65.4 million dollars. Table 4-4 should be changed to reflect the latest cost estimate. **(CL-31/13)**

Response: *The revised decommissioning cost estimate for Peach Bottom Unit 1 was included in Tables 4-3 and 4-4.*

Comment: No, I think my main issue is just, you know, having the costs on the table and having the costs be understood, and I think there's got to be some explicit discussion of those sorts of economic issues, and it seems like they're not really out there. **(AT-C/6)**

Response: *This Supplement does not discuss cost-estimation techniques or the economic factors, which may or may not enter into those estimates. The regulations (10 CFR 50.82) require periodic submittals to the NRC on estimates associated with decommissioning. 10 CFR 50.75 requires biannual submittal of the status of the licensee's decommissioning trust fund. Guidance for the cost estimates is found in Draft Regulatory Guide, "Standard Format and Content of Decommissioning Cost Estimates for Nuclear Power Reactors" (temporarily identified as DG-1085) and Draft NUREG 1713, "Standard Review Plan for Decommissioning Cost Estimates for Nuclear Power Reactors." The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: For example, the specific formula for the decommissioning cost. Not that we don't have to have plant's decommissioning fund and have to look to the adequacy because the regulations do require that and we do that. But the formula doesn't apply to non-light water reactors. **(CH-D/6)**

Response: *The decommissioning funding requirements for plants involving other than light water reactor designs (Fermi I and Peach Bottom 1) currently undergoing decommissioning were evaluated on a site-specific basis. All of the United States commercial nuclear power plants currently operating use light water reactor designs and the formulas in 10 CFR 50.75 apply. It is anticipated that most future plants will be light water reactor designs, so the formulas will apply to these reactors also; if other than light water reactors are licensed to operate, then the decommissioning funding requirements will be established on a site-specific basis or the regulations revised to include other reactor designs. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: An Associated Press news article from December 5, 2001, "Japanese power company begins dismantling country's oldest nuclear reactor," highlighted the enormous financial and technical concerns that Japan is facing regarding decommissioning. "Japan Atomic Power Co., which took the Tokaimura plant off line in 1998, won't begin taking apart the reactor for another 10 years because extremely high levels of radiation remain inside, said spokesman Eichi Miyatani. It will completely dismantle the plant by 2017 and spend an estimated 92.7 billion yen (US$748 million), Miyatani said." These monetary figures exceed those that were mentioned as average decommissioning cost estimates at the NRC's public meeting in Atlanta. **(CL-08/11)**

Response: *Decommissioning and environmental requirements differ significantly in the United States from elsewhere in the world. Additionally, economic (societal, design, etc.) and other factors (labor, inflation, etc.) vary from country to country, and, thus make decommissioning*

costs incomparable. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.

Comment: On Pg. 3-19 the discussion of the SAFESTOR option assumes that there is a savings associated with less Solid RW disposal costs. However, they do not consider that the current NRC guidance for release of material includes a no detectable criteria. In order for the reduction of Solid RW to be achieved, significant quantities of plant materials would need to be released from the site. The current regulations do not support this assumption. **(CL-31/7)**

Response: *Discussion of cost estimates for the Supplement did consider current regulations for release of materials from a decommissioned plant. The assumption made in the GEIS for developing cost estimates did assume the no detectable criterion for release of solid waste. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: The cost of decommissioning nuclear facilities can vary according to the size of the facility and the degree of contamination. **(CL-48/21)**

Response: *The variables of size, location, operating history, and others are considered when evaluating the cost impacts. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: A lot of my work has been based on concern about the cost of these facilities relative to the amount of electricity or other benefits they provide on a life cycle basis, and that seems to be something that's a subtext of this statement. **(AT-C/4)**

Response: *The societal benefits, or the lack of benefits, from plant operations is outside the bounds of the Supplement. This comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: In addition to the economic gash in the GEIS portal, this fatally flawed document does not adequately address, acknowledge, account for, or compute a number of significant barriers related to radiological decommissioning; including: Cost Estimates for Radiological Decommissioning; **(CL-02/3)**

Response: *Decommissioning costs are discussed in Section 4.3.11. Two other documents that address decommissioning costs are or were available for public comment. One is a draft guide, "Standard Format and Content of Decommissioning Cost Estimates for Nuclear Power Reactors," temporarily identified as DG-1085. This guide is being developed to assist licensees*

in determining financial assurance and for preparing the various cost estimates required for different stages and methods of decommissioning nuclear power reactors. A related document, Draft NUREG-1713, "Standard Review Plan for Decommissioning Cost Estimates for Nuclear Power Reactors," is also available. The NRC staff plans to use Draft NUREG-1713 in their review of licensees' cost estimates for decommissioning that are submitted to the NRC. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.

Comment: [In addition to the economic gash in the GEIS portal, this fatally flawed document does not adequately address, acknowledge, account for, or compute a number of significant barriers related to radiological decommissioning; including:]Rate payer Equity. **(CL-02/7)**

Comment: We are tired of being unknowingly treated as an entity from whom the industry can escape the obligation of full disclosure, and "used" as the entity upon whom the industry dumps the real long-term costs, and as the entity who absorbs the costs. **(CL-44/16)**

Comment: Public Citizen is opposed to any policy that would shift the financial burden of decommissioning to ratepayers. The cost of properly decommissioning (including thorough decontamination) a reactor site can vary widely, depending on the size of the facility, the amount of time in which it was operational, and the degree of contamination. As the NRC itself stated in the Supplement, the lack of adequate decommissioning funds can potentially result in delays and/or unsafe and improper decommissioning. Further, with utility deregulation and the attendant shuffling of corporate ownership, much uncertainty has developed regarding the ability of the owning and operating utilities to pay for proper decommissioning of their facilities. Public Citizen insists that site-specific reviews are necessary so that the public has an opportunity to ensure that the utility will be able to pay for the entire, thorough decommissioning process. **(CL-47/17)**

Comment: Georgians for Clean Energy requests that all decommissioning costs be borne by the parent company of the licensee in perpetuity. The parent company should not be allowed to recoup the cost of decommissioning from the ratepayer or federal government through the taxpayer. Ratepayers and taxpayers in Georgia have already had to pay far beyond their share of promised cheap nuclear power that has brought one of the largest rate hikes in the history of Georgia. Furthermore, private landowners, whether residential or commercial, farms, federal, state, county, city, community properties or others should not be responsible for the costs of monitoring, containment or cleanup. **(AT-A/29)**

Comment: THE COSTS MUST NOT BE PASSED ON TO THE RATE PAYERS **(CL-20/47)**

Comment: I think going back 25-30 years, the notion was well, we're going to build these things, we're going to run them and then we're going to cover them up in concrete and post guards around them and they'll be safe. Well, now we have rubblization. Suddenly entombment was the floor, now it's become the ceiling, we won't see it because it's too expensive. Money moves too fast and, you know, how can we do it cheap, how can we do it quick. And of course, our concern is, you know, it may be quick and cheap for the licensee, but for people in the immediate area, people downstream, people on the Savannah River, on the Altamaha River, my concern is that they not be unduly saddled with costs that should be taken into account and that those local concerns be maintained in this process. **(AT-C/2)**

Comment: The most troubling aspect of this section is the assertion that, "The cost of decommissioning results in impacts on the price of electricity paid by rate payers." Due to deregulation, additional decommissioning recovery is either limited or "under-funding" is the sole responsibility of the "electric utility," e.g., Three Mile Island Unit-1. The "hostage rate payer" is being replaced by the shareholder who is not likely to advocate paying for the "under-collected" portion of the fund after the plant is permanently shut down. This section needs to be redrafted and include the following variables: Cost Estimates for Radiological Decommissioning (20); Planned Operating Life of Nuclear Generating Stations; Spent Fuel Isolation; Low-level Radioactive Waste Isolation; Rate Payer Equity; Plant Valuation; Joint Ownership; and Regulatory Ambiguity. **(CL-02/57)**

Response: *The missions of the NRC include the protection of public health and safety, and protection of the environment. NRC requirements established a framework to ensure that decommissioning of all nuclear reactor facilities will be accomplished in a safe and timely manner, and that funding will be available for this purpose. NRC regulations regarding the methods used to ensure that funds will be available to cover the decommissioning process are in 10 CFR 50.75. NRC does not prescribe how the funds are to be raised. The license holder for the facility funds decommissioning costs. Equitability of investment decisions is outside of the regulatory authority of the NRC and thus is not within the scope of this Supplement. The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: Power reactor licensees continue to rely heavily on nuclear decommissioning projections provided by the industry consultant, Thomas LaGuardia and TLG, Inc. Furthermore, TLG continues to base decommissioning estimates on flawed and specious "Yield" studies extrapolated from small, minimally contaminated, and prematurely shutdown nuclear reactors. No reasonable, sound or prudent financial officer operating outside of the nuclear industry would accept funding formulas and that rely on so many fluid caveats and assumptions.

The wild fluctuation in the cost estimates for radiological decommissioning are attributable to the lack of actual decommissioning experience at large nuclear generating stations (over 1,000 MWe), or at plants that have operated for their full and planned lifespan. The largest commercial nuclear power plant to be fully decommissioned, Shippingport, is a 72 megawatt (MWe) light-water breeder reactor and is substantially smaller than the Susquehanna Steam Electric Station-1 & 2 (1,050 Net MWe for each unit).

Several other nuclear reactors are being prepared for decommissioning but provide little meaningful decommissioning experience that could be used reliably to predict decommissioning costs.

TLG's are specious and depend on: 1) The development of nonexistent technologies; 2) Anticipated projected cost of radioactive disposal; and, 3) The assumption that costs for decommissioning small and short lived reactors can be accurately extrapolated to apply to large commercial reactors operating for forty years.

The industry "leader", Exelon, has filed comments attesting to the imprecise and speculative nature of radiological decommissioning estimates. **(CL-02/17)**

Comment: TLG provided nuclear waste storage and nuclear decommissioning costs estimates for all Pennsylvania utilities regulated by the Public Utility Commission. However, TLG's testimony during the 1995 PP&L Base Rate Proceeding discredits their projections. Mr. LaGuardia based his cost estimates for low-level radioactive waste (LLW) disposal on the assumption that the Appalachian Compact would be available when the SSES closes. He concluded that the disposal of LLW is the most expensive component in the decommissioning formula. Furthermore, Mr. LaGuardia conceded that it may be necessary to recompute cost estimates for disposal because it now appears imminent that Barnwell will open for seven to ten years for all states except North Carolina. However, the Company has not yet taken the step of reconfiguring costs of LLW disposal now that Barnwell has been open since July 5, 1995. **(CL-02/28)**

Response: *Cost estimates are simply estimates. The adequacy or inadequacy of site specific cost estimates is outside the scope of this Supplement. Draft Regulatory Guide DG-1085, "Standard Format and Content of Decommissioning Cost Estimates for Nuclear Power Reactors" and Draft NUREG-1713, "Standard Review Plan for Decommissioning Cost Estimates for Nuclear Power Reactors" contain additional information on cost estimates for decommissioning. The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: Experience at large commercial nuclear power plants over 200 MWe has clearly demonstrated that TLG's assumption that nuclear units will operate for 40 years, contradicts existing nuclear reactor experience.

The Company reconfirmed the 40 year assumption in the 1997 Rate Case.

Mr. LaGuardia's and Mr. Jones's acknowledgments are confirmed by empirical data contained in the GEIS. **(CL-02/19)**

Comment: Obviously, there are chronic shortfalls between "targeted" funding levels and actual costs for nuclear decommissioning. The burden of proof rests squarely on the shoulders of power reactor licensees, their partners and the NRC to demonstrate that a 40 year operating life, which they predicate their financial planning upon, is realistic. Furthermore, the nuclear industry has exacerbated this problem by resolutely refusing to put aside adequate funds for non-radiological decontamination and decommissioning. **(CL-02/20)**

Response: *NRC recognizes that each reactor that has been decommissioned or that is now being decommissioned was permanently shut down prior to the end of its expected operating life. Operating life is based on the reactor design life, i.e., on the plant remaining structurally safe for a certain period of time. For financial planning purposes, operating life is a reasonable period of time. Utilities that have decommissioned their reactor plants prematurely have done so because of political, economic, or other unforeseeable factors. Since energy planning decision factors have diverse options, decommissioning funding requirements are linked to operation for the license term. The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: Cost projections by "electric utilities" must be revised to necessarily include funding scenarios that anticipate premature closure. **(CL-02/27)**

Response: *The impacts of the cost of decommissioning generally occur over the life of the facility as the decommissioning fund is being collected. Most power generators are diversified and are able to continue to add funds to their decommissioning trust funds as part of their continued business. In the event that a facility shuts down prematurely, the licensee is still required to fully fund the decommissioning. Further, licensees are required to demonstrate throughout the operational period that the finances are available by one of several methods outlined in 10 CFR 50.75. The licensees submit the status of decommissioning funding to the NRC on a biannual basis. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: The cost estimates for non-radiological decommissioning (an imprecise term) are not mandated by the NRC. "For PECO Energy Company and ComEd, the costs for 'Greenfield' are included in the cost estimates and in the funding streams established for decommissioning." However, Greenfield, i.e. the original environmental status of nuclear generating station prior to construction of the nuclear power plant, has never been achieved by an operating nuclear generating station. Moreover, this site status is unattainable if a station is placed in delayed-SAFSTOR, DECO, or ENTOMB. **(CL-02/36)**

Comment: Since 1999, Rancho Seco has embarked on an extended DECON process scheduled for completion in 2008 (including license termination). After license termination, SMUD will, depending on its business needs, embark on site restoration currently estimated at ~$45-80 million. This approximate estimate dollar figure was never a part of the decommissioning trust fund. (We assume your number in Table 4-3 includes all the costs of dismantlement, fuel storage and non-radiological site restoration.) **(CL-18/2)**

Response: *Decommissioning activities continue until the licensee requests termination of the license and demonstrates that radioactive materials have been removed to levels that permit termination of the NRC license. Once the NRC determines that the decommissioning is completed, the license is terminated. At that point, the NRC no longer has regulatory authority over the site, and the owner of the site is no longer subject to NRC authority. As a result, activities performed after license termination (to meet other requirements, e.g., additional state requirements, are not subject to NRC authority) and the resulting impacts are outside the scope of this Supplement. Site restoration or the return of the site to greenfield conditions is specifically stated to be out of scope of the Supplement (Section 1.3, Scope). Most power generators are diversified and are able to be flexible in case of a change in plans (such as a change in decommissioning method). The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: All references to Three Mile Island-2 as a "decommissioned reactor" are in error. The plant has not been decommissioned or decontaminated. TMI-2 was placed in Post-Defueling Monitored Storage in December, 1993. **(CL-02/66)**

Response: *Three Mile Island Unit 2 was not considered as one of the decommissioned reactors in the Supplement. Table 1-1 of the Supplement specifically lists activities at facilities that have been permanently shutdown by a major accident as out of scope. References to Three Mile Island will be revised for clarification.*

Comment: The GAO report also highlights several uncertainties relating to the costs of decommissioning: "Varying cleanup standards and proposed new decommissioning methods introduce additional uncertainty about the costs of decommissioning nuclear power plants in the

future. Plants decommissioned in compliance with NRC's requirements may, under certain conditions, also have to meet, at higher cost, more stringent EPA or state standards. New decommissioning methods being considered by NRC, which involve leaving more radioactive waste on-site, could reduce short-term decommissioning costs yet increase costs over the longer term. Moreover, they would raise significant technical and policy issues concerning the disposal of low-level radioactive waste at plant sites instead of in regulated disposal facilities. Adding to cost uncertainty, NRC allows plant owners to wait until 2 years before their license is terminated—relatively late in the decommissioning process—to perform overall radiological assessments to determine whether any residual radiation anywhere at the site will need further cleanup in order to meet NRC's site release standards. Accordingly, GAO is recommending that NRC reconcile its proposed decommissioning methods with existing waste disposal regulations and policies and require licensees to assess their plant sites for contamination earlier in the decommissioning process." **(CL-08/14)**

Response: *The commenter raises a number of issues that will be responded to in the approximately same order as they were asked. Cost estimates are precisely that: estimates. For the facilities that are currently decommissioning the monies available for the radiological decontamination and license termination appear to be sufficient. Once the reactor license is terminated no additional decontamination of the facility or site would be required so additional funds would not be needed (see Table 1-1 and Section 4.3.11.2). The NRC is using dose-based criteria for termination of the license. There was never the expectation that all radiological contamination resulting from operation of the power reactor would be removed from the site. Rather, the cleanup of the site would result in an acceptable dose (0.25 mSv/yr or 25 mrem/yr) to the average member of the critical group, or that group of individuals reasonably expected to receive the highest exposure to residual radioactivity within the assumptions of a particular future site use scenario. This type of site release criteria assumes some residual radioactivity onsite. This residual radioactive contamination is not waste, and therefore the site would not be considered an unregulated disposal facility. Additional requirements placed upon the licensee by State and local jurisdictions are clearly outside the scope of this Supplement. Licensees make measurements of contamination throughout the life of the plant. A systematic survey of contamination for the purposes of decommissioning most properly should be made during decommissioning. At the time of cessation of operations, the licensee knows where the majority of the contamination is located at their site. Towards the end of the decommissioning process a characterization study is performed to focus the remainder of cleanup activities and to assist in the design of the final site survey. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: If the costs of the decision to shutdown are included, then the cost of the immediate alternative, repair and continued operation, ought to be included as well as comparative environmental impact and comparative risk. **(CL-13/7)**

Response: *A licensee's decision to shut down its reactor is outside the scope of this Supplement, as is the cost to repair or refurbish a plant to keep it operating during its initial term or for license renewal. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: Section 4.3.11.2 Potential Impacts of Decommissioning Activities on Cost correctly points out that there are many variables in decommissioning that affect cost; among them are the size and type of reactor, the extent of contamination, property taxes and so on. However the GEIS does no more than list these variables without any attempt to assign the weight which any of them contribute. The GEIS correctly points out that only three commercial power reactors have successfully completed decommissioning, but does not say that they can hardly be considered typical of those plants under and entering decommissioning. Fort St. Vrain was a modest sized plant of oddball High Temperature Gas design and decommissioned on a fixed price, loss-leader price by a large manufacturing firm; Shoreham only ran the equivalent of one full power day, and Pathfinder was a 59MWe peanut of a plant. Thus it would be instructive to look at how costs are apportioned among today's more representative plants currently under decommissioning and from this base, knowing which are sensitive to scale and which are sensitive to choice, project final costs. These costs should be broken down and compared in the GEIS. **(CL-13/15)**

Response: *The NRC does not expect that the costs of Fort St. Vrain, Shoreham, and Pathfinder decommissioning represent the costs of typical reactors currently operating. However, the decommissioning costs for Trojan, comparable to a typical operating reactor, falls within the estimated cost range. Table 4-3 provides estimates of cost associated with the decommissioning of facilities that have permanently ceased operations. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: The Generic Environmental Impact Statement needs to specify inappropriate uses of decommissioning funds:

A. Using funds for temporary procedures, such as SAFSTOR, is inappropriate.
B. Using funds for the maintenance and monitoring of temporary procedures, such as SAFSTOR, is inappropriate.
C. Transferring funds from PSC/PUC control to licensee control is inappropriate.
D. Using funds for the temporary storage of spent fuel, such as ISFSI or PFS, is inappropriate.
E. Using funds for the settlement of bankruptcy claims is inappropriate.
F. Using funds as collateral is inappropriate.

G. All other uses of funds that do not directly result in the permanent cleanup of contaminated nuclear plant sites, is inappropriate. Since the funds were obtained as an extra fee from ratepayers for the purpose of safely decommissioning nuclear plants, all of the funds need to be used for that purpose. **(CL-14/5)**

Response: *The requirements for use of decommissioning funds are provided in 10 CFR 50.75. The Supplement does not (1) establish or revise regulations, (2) impose requirements, (3) provide relief from requirements or (4) provide guidance on the decommissioning process. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: Furthermore, the most expensive estimate should always be assumed for everything as a wise precaution. NRC lists the decommissioning costs in MILLIONS as estimated by the utilities - however, NRC WELL KNOWS THE COSTS ARE IN THE BILLIONS WHEN EVERYTHING FROM SPENT FUEL ON DOWN IS FACTORED IN, AND THAT MUST BE REFLECTED, PLUS THE NRC INSPECTOR GENERALS OFFICE SHOULD GO OVER ALL ESTIMATES MADE BY UTILITIES TO SEE HOW TRUSTWORTHY AND ACCURATE THEY ARE. **(CL-20/48)**

Response: *The NRC staff has reasonable assurance that the radiological decommissioning costs at facilities that have permanently ceased operation will be within the range of predicted amounts as described in 10 CFR 50.75. The NRC staff recognizes that there are additional costs associated with other activities including disposal of high-level waste and local requirements to refurbish a site to greenfield. Those costs are outside the scope of this Supplement, which is concerned with the radiological decontamination of the site. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: Paying the full costs for long-term monitoring and isolation of radioactive wastes. Decommissioning should not end up as a new set of public subsidies for nuclear power by allowing the long-term costs (economic, health, resource, etc.) to be denied, ignored or defined away by NRC with no recourse for the local community or state and federal taxpayers that will end up with the costs by default. **(CL-48/9)**

Response: *There are no requirements for further measurement of radiation levels or long-term monitoring for those sites that have been determined to be acceptable for license termination for unrestricted use. For sites that have been determined to be acceptable for license termination under restricted conditions, additional measurements of radiation are only required for sites that have residual radioactivity in excess of 1 mSv/yr (100 mrem/yr), but less than 5 mSv/yr (500 mrem/yr). These measurements are to be made by a responsible government*

entity or independent third party, including a governmental custodian of a site. Long-term monitoring and isolation following the termination of the license is specifically stated to be outside the scope of the Supplement (Table 1-1). The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.

Comment: NRC AND INDUSTRY FAILURE TO RELIABLY ESTIMATE THE REAL COST OF DECOMMISSIONING AND REASONABLY ASSURE THE AVAILABILITY OF ADEQUATE DECOMMISSIONING FUNDS DOES NOT JUSTIFY OR SUPPORT GENERIC TREATMENT OF ENVIRONMENTAL IMPACT STATEMENTS.

The NRC GEIS does not adequately address the historic inability by the NRC and industry to accurately assess the final and actual costs associated with decommissioning and the associated underestimation of the rate of accrual for funds set-aside by electrical utilities. The final cost for decommissioning remains highly speculative and therefore likely to continue to be significantly underestimated. As NRC has stated in the DGEIS Supplement the unavailability of adequate decommissioning funds potentially can result in delays and /or unsafe and improper decommissioning. Therefore, our organizations contend that site-specific reviews are necessary for public review and disclosure of the availability of adequate decommissioning funds assigned to an adopted decommissioning plan. **(CL-48/18)**

Response: *Insufficient decommissioning funds at time of reactor shutdown generally are not the result of inadequate cost estimates; rather, they are the result of a power generator deciding to prematurely shut down its reactor for economic reasons or other factors generally beyond its control. A premature shutdown may result in insufficient funds having been accumulated at the time of shutdown, thus preventing the licensee from beginning major decommissioning activities. In some instances, funding shortfalls have resulted in decommissioning decisions, such as choosing SAFSTOR instead of DECON as a method of decommissioning. Such decisions are made to ensure that funds can be obtained or can accrue to levels sufficient for proceeding with decommissioning. However, these delays have not resulted in unsafe and improper decommissioning. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: It therefore appears that 300 years of decommissioning experience without a single license termination plan approval does not suggest that NRC is prepared to treat the issue of cost to adequately decommission generically. **(CL-48/20)**

Response: *Three power reactor facilities have had their licenses terminated. In addition the license termination plan for Trojan was approved on February 12, 2001. While the process for decommissioning nuclear power facilities is now well established, the cost of decommissioning*

varies from one nuclear facility to the next. That variability is due to the major factors listed in the Supplement (Section 4.3.11.2). Cost estimates (made at the time of licensing, at 5 years before anticipated shutdown, with the Post-Shutdown Decommissioning Activities Report submittal, at 2 years following shutdown, and at 2 years preceding the anticipated termination of the license) are site-specific and provide a method of re-evaluating the decommissioning costs at various times and stages in each facility's life. The regulations to ensure the availability of decommissioning funds were originally established in 1988, and site-specific decommissioning cost estimates are required by 10 CFR 50.75 and 10 CFR 50.82. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.

Comment: The Yankee Rowe nuclear power station is a clear example of the inability to accurately assess the final cost of decommissioning. Originally decommissioning estimates ran under $100 million dollars while the current expenditures are estimated to be just under $500 million for the small 170 megawatt pressurized water reactor. The Shoreham nuclear power station can not be relied upon as an accurate gauge for decommissioning costs as it never reached full power operation. **(CL-48/24)**

Comment: The cost is one thing. It was awful, very high cost [Yankee Rowe], up in the millions. I don't remember how much. **(AT-D/1)**

Response: *Cost estimates are highly variable and estimates are precisely that: estimates. As experience increases with decommissioning, improved criteria will be developed to more accurately predict decommissioning costs. The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: Regarding economics, the NRC needs to pay attention to decommissioning costs proposed by Georgia nuclear utilities during rate cases and other proceedings so there is not a situation created where much needed monitoring and maintenance is ignored simply because there was no regulatory attention to the real cost of decommissioning. **(AT-A/31)**

Response: *The NRC regulations (10 CFR 50.75) require licensees to establish a decommissioning trust fund for each power reactor. The amount of money required in the fund at the time of permanent cessation of operations is based on formula given in 10 CFR 50.75(c). The funds are specific for the radiological decommissioning of the facility. The staff recognizes that State rate case proceedings may provide a more detailed site specific estimate of decommissioning costs; however based on our experience to date the amount of money required by 10 CFR 50.75(c) is adequate to assure radiological decommissioning of the facility. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: And the other is, isn't this fund built through rates, so what happens if it goes off line or even if the company is no longer billing. There seems to be a couple of vulnerabilities. **(AT-G/7)**

Response: *If a facility shuts down prematurely before the decommissioning trust is fully funded, or if it unexpectedly finds itself having to shift to a more costly decommissioning option, the facility license holder is still obligated to fund the entire cost of decommissioning. Most power generators are diversified and are able to continue to add funds to their decommissioning trust fund. To date, none of the license holders of prematurely shutdown power reactor facilities have defaulted on their decommissioning funding obligation. Bankruptcy does not necessarily mean that a power reactor licensee will liquidate. To date, the NRC's experience with bankrupt power reactor licensees has been that they file under Chapter 11 of the Bankruptcy Code for reorganization, not liquidation (for example, Public Service Company of New Hampshire, El Paso Electric Company, and Cajun Electric Cooperative). In these cases, bankrupt licensees have continued to provide adequate funds for safe operation and decommissioning, even as bondholders and stockholders suffered losses that were often severe. Because electric utilities typically provide an essential service in an exclusive franchise area, the NRC staff believes that, even in the unlikely case of a power reactor licensee liquidating, its service territory and obligations, including those for decommissioning, would revert to another entity without direct NRC intervention.*

Additionally, an NRC-licensed facility undergoing decommissioning or a site that is not under license but is undergoing decommissioning under NRC's regulations may also warrant remediation under the Comprehensive Environmental Response, Compensation, and Liability Act (referred to as "CERCLA" or "Superfund"). These statutory provisions might become particularly relevant at sites for which funding is inadequate for cleanup. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.

Comment: When, and if, spent fuel storage is increased at the above mentioned facilities, the additional upward "adjustments" will have a significant impact on decommissioning funding. This cost, which was omitted from TLG's estimate, "None of the estimates we have prepared include the cost of disposal of spent nuclear fuel" is the main contributing factor to the escalation of decommissioning costs at Yankee Rowe. **(CL-02/22)**

Response: *As discussed in Table 1-1 of the Supplement, issues related to spent fuel maintenance and storage (including costs) are outside the scope of this Supplement. Appendix D provides additional information on spent fuel. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: Inflation must also be added to costs. **(CL-20/49)**

Response: *The cost estimates provided in the Supplement reflect constant dollar costs (e.g., January 2001). However, the funding assurance for decommissioning trust fund accumulation does reflect inflation. The comment did not provide new information relevant to this Supplement and will not be evaluated further. This comment did not result in a change to the Supplement.*

Comment: Three Mile Island Alert (TMIA) and the EFMR Monitoring Group (EFMR) do not dispute the contention of "electric utilities" (I) and the Nuclear Regulatory Commission (NRC) that radiological decommissioning and radioactive waste isolation expenses are subject to change and likely to increase. **(CL-02/1)**

Response: *This comment is a statement of agreement and did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

O.1.10 Socioeconomics

Comment: Georgians for Clean Energy is also concerned about economic impacts to the local communities associated with decommissioning. Currently, according to the NRC relicensing documents on Hatch, Appling County, where the plant is located, receives an unhealthy 68 percent of its tax revenue from Southern Nuclear. Provisions for environmental staff and maintenance staff be established in perpetuity and all costs then be borne by the parent company of the licensee. The local community should not have to shoulder these costs. In the case of Appling County, after they lose their tax base, they would not even be able to remotely afford any type of monitoring. Again, it is apparent that communities are left dealing with tremendous problems and little or no resources to address them properly. **(AT-A/30)**

Response: *NRC does not require monitoring or maintenance at facilities once the license is terminated for unrestricted release. NRC acknowledges that communities typically experience a large decrease in tax revenue once a plant permanently ceases operation. However, this issue is clearly outside the scope of this Supplement. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: J. 1 2. and Table J-3. All relevant information is provided on pages 45-46. **(CL-02/68)**

Response: *The staff does not understand the comment which was provided in bullet format. The reference to "pages 45-46" is unknown. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: Table J-4 should incorporate data provided in F. Nuclear Plant Valuation pages 26-27 and pages 44-45. **(CL-02/69)**

Response: *Data on impacts to local public services associated with plant closure for Three Mile Island Unit 2 (TMI-2) was included for information. Because TMI-2 closure was the result of a major accident the staff had difficulty separating out which impacts were due to plant impacts and which impacts were due to the accident and the public's perception of impacts associated with the accident. The staff concluded that the impacts on public services from TMI-2 closure were SMALL. Although, the staff recognizes that impacts on the community due to the accident were significant. Since Supplement 1 deals with plant closures not as a result of a major accident, inclusion of the commentor's information would be inappropriate. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: The draft Supplement discusses the economic impacts of decommissioning, including the fact that the Barnwell Low-Level Radioactive Waste Management Disposal Facility in South Carolina, the last remaining facility to dispose almost all classifications of LLW, is scheduled to stop accepting LLW from all NRC licensees except those in the Atlantic Compact, by 2009. Id. at 4-43. Yet, decommissioning of most nuclear power reactors is not expected to occur until after 2009. The existence of the EnviroCare disposal facility in Utah, which can accept Class A wastes for disposal, mitigates the economic impact of losing Barnwell, but nuclear power plant operators still are expected to incur significant waste disposal costs. The Supplement discusses how these costs are passed on to electricity customers. The Supplement also analyzes the socioeconomic impacts of decommissioning with respect to the communities surrounding power reactors. These impacts include direct and indirect job losses, losses in tax revenues and reductions in local governments' ability to pay for public services. Id. at 4-47 - 4-53. Yet, the draft Supplement does not discuss the economic and socioeconomic impacts on the metals industries related to the release of radioactively contaminated scrap metal into the economy. **(CL-03/5)**

Comment: MIRC urges NRC to look at all of the economic consequences (i.e., lost sales, employment reductions, and losses in sales by suppliers of equipment, materials, and services to metals industries) to be incurred by the metals industries and allied sectors, as well as the losses in tax revenues to be incurred by governmental entities. **(CL-03/7)**

Response: *The Supplement assumes that licensed burial sites would be available for the disposal of all categories of low-level waste at the time burial capacity is needed. The reader correctly identifies potential problems in the future disposal of low-level waste but the staff is confident that sufficient burial capacity will be available when needed.*

Currently, licensees at power reactors undergoing decommissioning are prohibited from releasing any solid material that has any detectable contamination. A discussion on the impacts of the release of contaminated scrap metal on the scrap metal industry is highly speculative. Furthermore, the release of contaminated scrap metal is prohibited under current regulations and clearly outside the scope of this Supplement. The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.

Comment: Page. J-2, Table J-1, Impact of Plant Closure and Decommissioning at Nuclear Power Plants Currently Being Decommissioned. Maine Yankee's Post Termination Work Force should be 360 rather than 246 resulting in a Maximum Work Force Change of 121 rather than 235. **(CL-04/14)**

Response: *Table J-1 was changed to include the revised work force numbers.*

Comment: Georgians for Clean Energy is also concerned about economic impacts to the local communities. **(CL-08/15)**

Response: *Socioeconomic impacts on communities near decommissioning facilities are discussed in Section 4.3.12 of the Supplement. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: As we have stated in earlier comments, adequate attention to issues surrounding economic justice and the long-term negative economic implications of decommissioning plans in the community have not been thoroughly studied. Reactor sites are often contaminated and made undesirable and unsafe for future economic development. **(AT-A/40)**

Response: *The NRC acknowledges that communities typically experience a large decrease in tax revenue once a plant permanently ceases operation. However, this issue is clearly outside the scope of this Supplement. The staff believes that Section 4.3.12 adequately addresses the socioeconomic implications of decommissioning. The staff has determined that the impact is SMALL and that no site-specific analysis is necessary. With respect to future economic*

development of the site, the established site release criteria will ensure that any future use of the site is adequate to ensure public health and safety and protection of the environment. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.

Comment: This "revised" document also failed to adequately address and factor the socioeconomic impact of "Greenfield" on the revenue base of local municipalities. **(CL-02/34)**

Response: *The NRC is responsible for ensuring the radiological decontamination of the facility. The socioeconomic impact of "Greenfield " is outside the scope of this Supplement. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: There are changing community conditions at these reactors....Last night the Mecklenburg County Board of Commissioners approved a 4,000-plus home development by Crescent, which is, of course, Duke, around the Catawba reactor. So there are changing conditions at these nuclear power plants that deserve your attention and will not fit into any generic environmental impact statement. **(AT-B/14)**

Comment: (4.3.1.4) ENVIRONMENTAL IMPACTS of DECOMMISSIONING PERMANENTLY SHUTDOWN NUCLEAR POWER REACTORS; Socioeconomics - Conclusions:

> The staff concludes that shutdown and decommissioning of nuclear facilities produces socioeconomic impacts that are generic. The impacts occur either through the direct effects of changing employment levels on the local demands for housing and infrastructure or through the effects of the decline of the local tax base on the ability of local government entities to provide public services.
>
> There can be no generic measure of the socioeconomic impact of any community without an in-depth study of a number of driving variables. Nuclear plants are subject to various regulations and tax codes based on location, plant history, levels of corporate investment, composition of work force, state and municipal legislation, economic diversity, and municipal relationships.
>
> Any further cuts in tax revenues, community giving or employment levels, i.e. "SMALL 10%" or "MODERATE 10-20%", create undue economic hardships. **(CL-02/58)**

Response: *The Supplement examined the issue of socioeconomic impacts generically at facilities undergoing decommissioning activities and concluded that the impacts were generic*

and SMALL for all plants. The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.

Comment: In 1986, the TMI-2 defueling work force peaked at 2,000. Today less than a dozen AmerGen employees police Unit 2. **(CL-02/55)**

Response: *Table 1-1 of this Supplement specifically lists an evaluation of impacts at facilities that have been permanently shutdown by a major accident as outside the scope of this Supplement. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: Before TMI reaches decommissioning, the community has already lost 250 jobs, and over $220,000 in tax revenues. Pennsylvania is not similar to Connecticut (22) whereby the difference in pre- and post-deregulation revenues are made up by the state. These jobs and revenues are lost forever. Most local and state taxing authorities classify "Greenfield" as non-commercial, tax-paying status. Moreover, TMI and Peach Bottom are located in rural areas that are sensitive to seasonal fluctuations. Farm revenues in the 1980s were sharply down due to drought, avian flu epidemics, and an informal boycott by consumers who did not want to purchase TMI-tainted produce, dairy products, or beef and poultry. **(CL-02/59)**

Response: *Differences between pre-and post-regulation tax revenues are discussed extensively in Section 4.3.12.2. The impacts generally are proportionate with the percentage of total revenue in local jurisdictions (with rural jurisdictions generally more dependent on the lost revenues). The section notes that the impact on the community also depends on manner in which the state and locality treat the plant for tax purposes and whether the state shares the burden with local government. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: The draft supplement attempts to reflect the impact of plant closure on jobs, community tax revenues, and population. The impact of reactor shutdown must be considered apart from decommissioning. The decision to shutdown, to lay-off workers, to devalue the plant for tax purposes and so on, is not automatically a decision to decommission the plant. It may be a shutdown for a long-term repair or upgrade period. Or it may be intended to mothball the facility with the decision to decommission or not delayed a decade or more. In any case, if work force reduction at shutdown is a part of decommissioning, then work force replenishment because of fuel storage or enforcement of administrative site release conditions should also be considered. **(CL-13/5)**

Response: *The impacts of work-force reduction and increase related to closure and decommissioning were handled on a net basis—the difference between the decommissioning work force and the (usually much larger) operational work force. The possibility of a long delay between shutdown and active decommissioning is specifically discussed in Section 4.3.12.3. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: Table J-1 Impact of Plant Closure and Decommissioning at Nuclear Power Plants Currently Being Decommissioned includes three plants that have already passed from decommissioning to license termination. Maximum work force and post termination work force figures are scant, incorrect, misleading, and more or less, useless for the purpose of gaining usable information. Maine Yankee currently has more than 400 workers on site; not 295 as listed. Without a reference date, maximum work force numbers mean what? During outages? During major repairs and retrofits? Of twenty-two plants listed, work force figures are given for only seven. **(CL-13/8)**

Response: *A footnote was added to Table J-1 to note the three plants whose licenses have been terminated. Regarding work force, the staff relies on information provided by the licensee. The staff recognizes that staffing levels fluctuate over time. The numbers were provided to give the reader some understanding of the magnitude of the changes. Table J-1 was revised.*

Comment: Table J-2 Impact of Plant Closure and Decommissioning on Population Change shows no causal relationship between closure, decommissioning and population change. Of twenty-one plant locations listed, all save two show population increases in the host county following plant closure. Did Rainer County, Oregon increase its population by 16.5 percent as an impact of the Trojan Nuclear Plant shutdown? It is even harder to credit that the impact of the closure of 65 MWe Humbolt Bay is an increase in the population of California of 25.8 percent. This may be the stupidest table ever presented in an NRC document. **(CL-13/9)**

Response: *The title of Table J-2 was revised to "County and State Population Changes During Plant Closure and Decommissioning." The population changes provided in the table are simply those that occurred at about the same time as plant closure. These were almost all increases and many were fairly substantial but did not result from decommissioning. The population increases occurred despite the effects of plant closure. However, the population increases did mitigate the effects of plant closure. The intent of the table was to show that any negative effects of plant closure on county population were not so large as to actually result in a net population decrease. Rainier County, Oregon, and Humboldt County, California, both grew for reasons independent of plant closure.*

Comment: Table J-3 Impact of Plant Closure and Decommissioning on Local Tax Revenues does not show any impacts of decommissioning activities on tax revenues there fore the table is incorrectly titled. There could be some small near term impact of decommissioning on tax revenues, for example, taxes levied on capital equipment purchased by local vendors working on decommissioning and taxes on spent fuel storage facilities. **(CL-13/10)**

Response: *The title of Table J-3 was revised.*

Comment: No effort is made to determine if marketability of local homes is increased by nuclear plant close. Marketability would determine price and ultimately impact tax-base. **(CL-13/11)**

Response: *It was not possible to isolate the effects of nuclear plant closure on marketability. There likely were three effects, which appear to be inextricably linked: (1) loss of labor force as a result of closure (reduced marketability), (2) perception of an improved environment for some people (increased marketability), and (3) other unrelated economic and demographic changes in the community (either direction). The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: At sites considered for re-powering, no consideration is given to the tax worth of the re-powered site. Haddam Neck, for example, has applied for early partial site release so that the construction of a gas-fired plant may begin even before decommissioning is completed. Fort St. Vrain hosts a gas-fired plant. If impact of closure is to be considered in a GEIS on decommissioning, so then should reuse be considered. **(CL-13/12)**

Response: *Repowering is a separate decision from decommissioning and should be analyzed separately. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: In Maine, utility ratepayers are entitled to share in moneys recovered from the sale of plant components and commodities, such as pipe and cable, as well as real estate and unspent decommissioning funds. While not taxes, per se, these are funds or credits added to the general public revenue. **(CL-13/13)**

Response: *Section 4.3.12.3 was modified to reflect this additional income stream.*

Comment: Regarding the loss of local tax revenues due to "decommissioning." The utility must be required to notify the local government as far in advance as possible that they will lose taxes. **(CL-20/50)**

Response: *Although the NRC staff agrees with the comment that the licensee should notify the local government as far in advance of the permanent cessation of operation as possible, a requirement to do so is not within the scope of current NRC regulations. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: The nuclear industry - the entire industry - (from nuclear plant owners to uranium enrichment plants to users of radiation for medical experiments posing as "therapy" etc) should have a tax levied on it by NRC to be paid into a special account to go towards compensating the communities. An additional tax can be levied on them yearly in the form of a small, flat fee which would help pay for the NRC and the EPA to do quarterly inspections at facilities, in perpetuity. **(CL-20/51)**

Response: *Consideration of a special "tax" to compensate local communities is outside the scope of this Supplement. NRC's core mission is public health and safety and protection of the environment with respect to the use of by-product and special nuclear material. Based on the requirements in 10 CFR Part 171, "Annual Fees for Reactor Licenses and Fuel and Material Licenses," licensees are charged fees to defray the cost of NRC's activities including inspections. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: If decommissioning is to be risk-informed and the impacts of shut down are to be considered, then the cost and environmental and risk impacts of continued operation should also be compared. Maine Yankee shutdown rather than face the costs of steam generator replacement and correction of a host of safety defects, including system-wide cable separation issues, inadequate high energy line break protection, inadequate containment volume, marginal emergency diesel generator capacity, 95 percent of fire seals defective, undersized atmospheric steam dump valves, and on and on. Haddam Neck had similar problems. Just prior to the closure of Yankee Rowe, NRC staff was arguing internally about the sanity of permitting the plant to run one more fuel cycle with a badly embrittled reactor vessel. **(CL-13/6)**

Response: *The licensee's decision to permanently cease operations is outside the scope of this Supplement. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

O.1.11 Environmental Justice

Comment: Facilities included in the NRC's review of information during preparation of the draft supplement should be able to use the NRC's conclusions on socioeconomic impacts instead of performing an additional assessment along with a license-amendment request. In Section 4.3.13, the results of the evaluation stated (page 4-56, lines 30-32) that "in the

21 decommissioning case studies observed, it is concluded that facility decommissioning should have a SMALL socioeconomic impact on low-income and minority populations." At the same time, given that populations differ near each reactor site, the staff concluded that environmental justice was a site-specific issue. The NRC should revise the GEIS Supplement to clarify that licensee of a plant that was one of the case studies can refer to the staff's assessment that this was a SMALL impact instead of having to perform a site-specific evaluation and submit a license amendment request. **(CL-01/6)**

Response: *Section 4.3.13 was revised. It cannot be concluded from the general indicators in Table J-5 that any of the specific plants would not have an environmental justice issue; rather, that it would be unlikely. Therefore, a site-specific analysis of environmental justice is necessary.*

Comment: Table J-5 fails to acknowledge that the "white" population is not monolithic. In the case of Three Mile Island a "special white population", i.e. the Amish does not utilize electricity, telecommunications, or mechanical transportation, and lives in close proximity to the plant. **(CL-02/70)**

Response: *Executive Order 12898 on Environmental Justice explicitly identifies three populations: minority, low income, and Native American. The low-income Amish would meet the criteria for consideration under the Presidential Executive Order. The Amish do not otherwise qualify as a special population group. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: 4.3.13 Environmental Justice (4.3.13.4), page 4-57, last para., last sentence. This conclusion indicates that licensees will need to provide appropriate information related to environmental justice as part of the environmental portion of the PSDAR, but it does not specify what kind of information is needed or what evaluation criterion should apply. **(CL-04/8)**

Comment: Section 4.3.13, p 4-57, last paragraph - This conclusion indicates that licensees will need to provide appropriate information related to environmental justice as part of the environmental portion of the PSDAR, but it does not specify what kind of information is needed or what evaluation criterion should apply. **(CL-05/17)**

Response: *Section 4.3.13, Environmental Justice, has been revised. The text now states that at the time of the PSDAR submittal, the staff will consider the impacts of environmental justice. The supplement does not specify the kind of information received. The staff will address information needs in an update to Regulatory Guide 1.184, Decommissioning of Nuclear Power Reactors, July 2000, and Regulatory Guide 1.185, Standard Format and Content for Post-Shutdown Decommissioning Activities Report, July 2000.*

Comment: (4.3.1 3.4) ENVIRONMENTAL IMPACTS of DECOMMISSIONING PERMANENTLY SHUTDOWN NUCLEAR POWER REACTORS Environmental Justice - Conclusion: The NRC made the appropriate demarcation and concluded,"...the issue of environmental justice requires a site-specific analysis." **(CL-02/60)**

Response: *The comment agrees with a conclusion from the Supplement but did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

O.1.12 Cultural Resources

Comment: 4.3.14 Cultural, Historical and Archeological Resources (4.3.14.4), pg. 4-61, last paragraph in section 4.3.14.4, last sentence. This conclusion indicates that the NRC will meet its responsibilities on a site-specific basis during any decommissioning process, but it does not specify how the NRC will meet its responsibilities or what information it will need from licensees. **(CL-04/9)**

Response: *The staff's responsibilities are further described in Section 1.5. The staff is committed to conduct appropriate consultations as needed. This Supplement is not a guidance document or a review document. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: Page 4-58, Section 4.3.14. EPA appreciates that, on the whole, decommissioning is not likely to affect previously undisturbed archeological resources potentially located near the facilities, but is concerned about the potential loss of these facilities as a body of engineering work. The Supplement mentions that a few facilities may be eligible for listing on the National Register of Historic Places individually and that those facilities would then be the subject of mitigation based upon consultation with the SHPO. Eventually, however, a substantial number of facilities may be decommissioned. While the facilities themselves may not be fifty years old nor require physical in situ preservation, the processes and engineering they employed may merit inclusion in the Historic American Engineering Record (HAER). The HAER is designed to provide uniform documentation standards so future scholars can look back at our achievements and study them for a multitude of purposes. Rather than make this determination on a case-by-case basis, the NRC may want to consider working with the Advisory Council on Historic Preservation and the National Conference of State Historic Preservation Officers to achieve a programmatic agreement or other programmatic treatment for these facilities. **(CL-16/69)**

Response: *Section 4.3.14.2 was modified to include a reference to the Historic American Engineering Record. The NRC staff is considering working with the National Conference of State Historic preservation Officers on the appropriate actions to be taken for the preservation of significant historic or engineering achievement that might be applicable to a specific facility undergoing decommissioning.*

Comment: (4.3.1 4.2) ENVIRONMENTAL IMPACTS of DECOMMISSIONING PERMANENTLY SHUTDOWN NUCLEAR POWER REACTORS Cultural Resources; Conclusions: The NRC properly concluded,"...the magnitude, (i.e., SMALL, MODERATE, LARGE) of potential impacts will be determined through a site-specific analysis." **(CL-02/61)**

Response: *The comment agrees with a conclusion from the Supplement for activities beyond the operational area. It did not, however, provide new information relative to the Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: One issue that needs to be factored into the equation is what happens when the object of decommissioning has been declared a historical marker, i.e. Three Mile Island-2? **(CL-02/62)**

Response: *Section 4.3.14.2 has been revised to address this comment.*

O.1.13 Aesthetics

Comment: Public opposition to a facility is not an objective criterion for determining the impact of decommissioning on aesthetics. In Section 4.3.15.2, the magnitude of potential impacts on aesthetics is described as proportional to how vigorously the plant is opposed by the host community. Opposition to a facility if frequently expressed by a few vocal individuals or groups who do not necessarily reside in the area, but who are philosophically opposed to the peaceful use of nuclear power. These individuals will continue to speak in opposition against a facility as a matter of principle, even when the facility begins decommissioning and site restoration. Since aesthetic issues are a function of each individual's perception, opposition to the facility should not be used as a criterion for assessing environmental impact. A more objective and justifiable approach would be to apply the other criteria described in this section (the facility's impact on the skyline, noise, land disturbance, traffic) or to consider recreational use, if any, in determining the magnitude of decommissioning impacts. **(CL-01/7)**

Comment: Decommissioning and decontamination tasks affect people's perception, especially when these visibly intrusive and audibly offensive activities are in close proximity to their homes and recreational areas. Peach Bottom and Three Mile Island are located next to prime water

skiing and boating areas on the Susquehanna River. Dozens of summer cabins are located less than 100 yards from TMI on Sholley. Fishing takes place on a daily basis, and Boy Scout badges are available by completing outdoor activities on Three Mile Island. **(CL-02/46)**

Response: *The staff has generically determined that the aesthetic impacts of decommissioning activities are SMALL (Section 4.3.15.4 of the Supplement). The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: The GEIS could have looked more closely at TMI-2, and considered the following "visual scenarios":

On August 5, 1992, GPU "declared an event of potential public interest when the Unit-2 west cooling tower caught fire." The fire lasted for ten minutes. This was the third fire at TMI-2 during the cleanup. The Department of Environmental Resources subsequently instructed GPU to dismantle the wooden paneling and waffling at the base of the cooling towers. The cooling towers now serve as a nesting ground for "fugitive" swallows. **(CL-02/64)**

Response: *The aesthetic issues that were considered in the Supplement on Decommissioning of Nuclear Facilities are of a longer term than would be considered for a small fire of short duration, such as that referred to in the comment. Any visual intrusion (such as dismantlement of buildings or structures) would be temporary and would serve to reduce the aesthetic impact of the site. The use of building structures by nesting birds would not be considered a criterion for determining aesthetic impacts. In addition, Table 1-1 indicates that activities at facilities that have been permanently shut down by a major accident are outside the scope of this Supplement. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

O.1.14 Noise

Comment: Section 4.3.16.2 Potential Impacts of Noise from Decommissioning Activities seems to deal with noise as significant only at hearing-loss levels, however the admission is made that noise can be annoying. It can also degrade the general environment, and the aesthetic environment, lead to sleep loss, diminished creativity, and lost sales of goods and property. Where decommissioning schedules require night work, large pneumatic hammers can be heard miles distant from the site. The GEIS should also consider noise from explosive demolition. **(CL-13/16)**

Response: *Section 4.3.16 was revised. This Section discusses levels of noise that are used by government agencies to describe levels of environmental noise. In general, the noise created by decommissioning activities will be similar to noise associated with construction and*

industrial activities. This noise may be heard offsite, but because of the duration of decommissioning activities, it is unlikely that the noise associated with most decommissioning activities, will be of sufficient strength to be environmentally detectable or to destabilize the environment. Some decommissioning activities may involve demolition methods (e.g., pneumatic drills or explosives) that produce significantly higher noise levels. Use of these methods is limited to relatively short periods or isolated events during decommissioning. The environmental effects of these activities may be minimized by properly scheduling the activities, for example, by restricting the use of pneumatic drills and restricting explosives to day shift or by restricting explosive demolition during nesting season.

O.1.15 Transportation/Transportation Dose Impacts

Comment: Now, again, the document here outlines the fact that most—the major impact from radiation would be from low-level radioactive waste transport of the reactor itself, the vessel, to a low-level radioactive waste site. People living all along the waste site, primarily people living in town around that reactor, and all along the transport route along the way to—if it's South Carolina or Nevada or whatever ultimate destination this reactor vessel would have, amounts to many thousands of people, if not hundreds or thousands or millions of people. This level of human carnage cannot and should not be considered as quote, too small to be detectable. **(AT-F/7)**

Response: *Although many people may be potentially exposed to radiation during transport of radioactive materials, transportation regulations limit the dose rate from shipments including the shipment of the reactor vessel and internals, such that the dose to a given individual is very small and would represent a negligible risk to human health. The NRC is committed to preventing detrimental health impacts to the public. NRC has regulations covering the packaging and transport of radioactive material. These regulations are found at 10 CFR Part 71. NRC regulations related to exposure to the public are found at 10 CFR Part 20. In addition, the U.S. Department of Transportation and the U.S. Environmental Protection Agency have regulations to protect the public from health effects associated with radiation. U.S. Department of Transportation regulations related to transportation of radioactive material are found at 49 CFR Part 173, and the Environmental Protection Agency regulations related to radiation are found at 40 CFR Parts 190 through 194. Licensees are required to comply with these regulations during decommissioning. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: VIII. TRANSPORTATION Please refer to (4.3.1 7.4) ENVIRONMENTAL IMPACTS of DECOMMISSIONING PERMANENTLY SHUTDOWN NUCLEAR POWER REACTORS; Transportation - Conclusions: Please refer to the Enclosure which features articles highlighting problems with transporting spent fuel from TMI to Idaho. **(CL-02/71)**

Comment: (4.3.17.4) ENVIRONMENTAL IMPACTS of DECOMMISSIONING PERMANENTLY SHUTDOWN NUCLEAR POWER REACTORS; Transportation - Conclusions: Please refer to the Enclosure which features articles highlighting problems with transporting damaged fuel from TMI to Idaho. **(CL-02/65)**

Response: *The comments refer to transporting the TMI-2 core debris resulting form the 1979 accident to the Idaho National Environmental and Engineering Laboratory in Idaho. Section 1.3, "Scope of This Supplement," specifically excludes decommissioning activities following shutdown of a facility after a major accident because they would require site-specific review. The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: This section does not seem to give sufficient attention to licensees that are removing all above grade structures from the site and transporting all of the above grade concrete offsite. The volume of concrete for PWR DECON is much too low for this situation by a factor of three or four. Provided below is Maine Yankee's License Termination Plan Revision 2. This waste volume is greater than that assumed in the GEIS. However, even with the increased LLW Volume associated with the removal of all above grade concrete, Maine Yankee's estimates of public dose is still less than that assumed in the draft supplement or the 1988 GEIS because of the extensive use of rail transportation. **(CL-04/10)**

Comment: Section 4.3.17, pg. 4-68 - This section does not seem to give sufficient attention to licensees that are removing all above grade structures from the site and transporting all of the above grade concrete offsite. The volume of concrete for PWR DECON is much too low for this situation by a factor of three or four based recent experience. **(CL-05/19)**

Response: *Additional shipments of uncontaminated waste from a site in response to State or local requirements to remove all above ground structures would not affect the dose estimates to the public because the material is not contaminated. The additional shipments could result in an increase in nonradioactive fatalities due to an increase in trucking or rail accidents. However, the accident rate is so small that even a three or four fold increase in the nonradioactive accident rate would still result in a small impact. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: Appendix K Transportation Impacts, pg. K-2, Table K-1 Low-Level Waste Shipment Data for Decommissioning Nuclear Power Facilities {LLW Volume for Maine Yankee is indicated as 5920 cubic meters. The Maine Yankee LTP Rev. 2 states: 31,924 cubic meters for transport and 26,920 for disposal after processing}. **(CL-04/15)**

Response: *Appendix K was changed to include the revised number for LLW volume.*

Comment: Section 4.3.4, pg. 4-14, last paragraph - This statement indicates that in most cases the number of shipments of other materials (nonradioactive materials) will be small compared to those for LLW. This is not necessarily the case for a plant that is removing all above grade facilities. However, this fact should not affect the conclusion that the air quality related environmental impacts for these activities will be small. **(CL-05/13)**

Response: *Section 4.3.4 was revised and the comparison of the amount of contaminated to noncontaminated material was eliminated.*

Comment: Page 4-68, Section 4.3.17.1. This section should address regulations governing the transportation of hazardous and mixed wastes as well as of low-level waste. **(CL-16/70)**

Response: *Section 4.3.17.1 was revised to include a reference to the regulations regarding the transportation of hazardous, mixed waste and radioactive material.*

Comment: Table 4-6 Radiological Impacts of Transporting LLW to Offsite Disposal Facilities is something of a puzzle. Waste volumes and radiological impacts in the table are much greater for the SAFSTOR decommissioning option (45,000 cubic meters/78 person-rem) than for the DECON option (10,000 cubic meters/48 person-rem). Same plant, if you let the radiation dissipate with time, you wind up with more waste. With all due respect, this makes no readily apparent sense. **(CL-13/17)**

Response: *Data on the volume of waste to be shipped and the number of shipments was obtained from licensees undertaking decommissionings. Waste volumes vary considerably from facility to facility and depend on many factors including State and local requirements for the disposal of solid waste. Rather than present the data by decommissioning option the staff revised the text in Section 4.3.17 and Table 4-6 providing potential impacts associated with the shipment of waste from a hypothetical facility. The number of shipments represents a reasonable number of shipments from a facility undergoing decommissioning and is based on existing data and projections provided by licensees. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: The Draft shows the awful DOT and NRC regulations for transport and radiation levels allowed page 3-14, these should be changed to be massively lower, this can be done by better shielding and more shielding and the transport of fewer assemblies per cask or fewer rods per cask, and shielding that is thick enough that anti-tank weapons would not penetrate

through to the fuel. Disguising the shipments is not an option due to the size of the casks, therefore far stricter security i.e., military escorts and the sealing off of roads ahead of transports would be a must. **(CL-20/85)**

Comment: The NRC needs to pass rules on these issues, and put out orders for more and better transport casks and vehicles. All shipments of LLW should also fall under these better packaging and shielding standards. If the NRC does not address all these issues as part of decommissioning, future generations (that means YOUR children and grandchildren) are going to die due to NRC's lack of actions today. **(CL-20/86)**

Comment: If you're going to cut apart a plant and pack it and ship it, everybody along the route is exposed to the danger and whatever is left is an exposure to the people who still live there. **(AT-D/6)**

Response: *The NRC is committed to preventing detrimental health impacts to the public. NRC has regulations covering the packaging and transport of radioactive material. These regulations are found at 10 CFR Part 71. NRC regulations related to exposure to the public are found at 10 CFR Part 20. In addition, the U.S. Department of Transportation and the U.S. Environmental Protection Agency have regulations to protect the public from health effects associated with radiation. U.S. Department of Transportation regulations related to transportation of radioactive material are found at 49 CFR Part 173, and the Environmental Protection Agency regulations related to radiation are found at 40 CFR Parts 190 through 194. Licensees are required to comply with these regulations during decommissioning. The regulations are sufficiently protective to assure the safety of the public. The Supplement does not (1) establish or revise regulations, (2) impose requirements, (3) provide relief from requirements, or (4) provide guidance on the decommissioning process. As noted in Chapter 1, the transport of spent fuel is outside the scope of this document. The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: Georgians for Clean Energy does not promote the idea of shipping nuclear waste all over the country. **(CL-08/21)**

Response: *The comment is general in nature and did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: In addition, many reports of lost shipments of nuclear waste and materials, including fuel rods, in various parts of the country come to light, another hazard of transporting radioactive materials. **(CL-10/4)**

Response: *The only missing fuel rods known to NRC are those at the Millstone Nuclear Plant. Although the location of the two missing fuel rods has not been determined, the staff has concluded that the fuel rods were not lost during transportation. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

O.1.16 Conclusions

Comment: It is hard to believe that decommissioning activities will have a small impact on water quality or air quality. Construction and demolition sites across Georgia, most of which do not have nuclear contaminants fortunately, contribute to the degradation of our rivers and air. How can an enormous project such as decommissioning an entire nuclear plant, which will involve the handling of nuclear contaminated materials, have a small impact? **(AT-A/34)**

Comment: We are still concerned that the NRC mistakenly poses that decommissioning activities will have a small impact on water quality or air quality. Construction and demolition sites across Georgia, most of which do not have nuclear contaminants, contribute to the degradation of our rivers and air. Georgians for Clean Energy would like to know how the NRC determined that an enormous project such as decommissioning an entire nuclear plant, which will involve the handling of nuclear contaminated materials, would have a SMALL impact or air and water quality. We have already requested a copy of the analysis that was done to make this determination, and since we have not received that analysis yet we continue to urge that the NRC make this available to the general public and us. **(CL-08/18)**

Response: *Decontamination and dismantlement of structures, systems, and components are conducted under highly controlled conditions. Impacts of construction and deconstruction activities are mitigated by best management practices. A discussion of the analysis for all the environmental issues addressed in the Supplement can be found in Chapter 4 (see 4.3.3, "Water Quality," 4.3.4, "Air Quality," and 4.3.8, "Radiological"). The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: We request a copy of the analysis that was done to make this determination. **(AT-A/35)**

Response: *The staff's analysis can be found in the Supplement. A discussion of the analysis for all the environmental issues addressed in the Supplement can be found in Chapter 4 (see 4.3.3, "Water Quality," 4.3.4, "Air Quality," and 4.3.8, "Radiological"). No separate analysis is available. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: Finally, considering the importance of the Great Lakes to the world and to this region, we think that the impact should be addressed specifically. It is not appropriate to lump them under a generic impact analysis. **(CH-A/10)**

Comment: Considering the importance of the Great Lakes, which represent 20% of the world's freshwater supply, the NRC should prepare a site-specific impact analysis for the 18 nuclear facilities located on the United States side of the Great Lakes. **(CL-11/2)**

Response: *The variability between a commercial nuclear plant located on the Great Lakes versus one located on the ocean, a man-made impoundment, or a river was carefully considered in evaluating the environmental impacts from decommissioning activities. The NRC established an envelope of environmental impacts resulting from decommissioning activities, identified those activities that can be bounded by a generic evaluation, and identified those that require a site-specific analysis. The NRC concentrated the environmental analysis on those activities with the greatest likelihood of having an environmental impact. Even for those impacts that have been determined to be generic, a licensee is required to do a site-specific analysis before undertaking any decommissioning activity to determine whether the impacts fall within the generic envelope. If they are outside the bounds of the generic envelope, the licensee must seek approval from the NRC (see Section 1.5) The comments did not provide new information relevant to this Supplement and will not be evaluated further. The comments did not result in a change to the Supplement.*

Comment: The NRC staff correctly concluded,"...the magnitude, (i.e., SMALL, MODERATE, LARGE) of potential impacts will be determined through a site-specific study ..." This flexible barometer should be applied to all of the above mentioned Conclusions. **(CL-02/52)**

Response: *The comment agrees with the staff's conclusions in the GEIS. The comment did not provide new information relevant to this Supplement and will not be evaluated further. The comment did not result in a change to the Supplement.*

Comment: I am strongly opposed to the attempts to designate many issues as generic instead of site-specific and thus to remove these issues form public review and comment. **(CL-26/1)**

Comment: I also strongly oppose and object to the proposed supplement to the "Generic" E.I.S., and the deliberate and inappropriate exclusion of "site-specific" issues, which should be an imperative part of any analysis, for any form of an E.I.S. Supplement. **(CL-44/2)**

Comment: We are deeply concerned about the NRC's proposal to treat almost all decommissioning issues in a generic EIS rather than in an individual EIS for each plant. As we have seen in many of the licensing proceedings, nuclear plants have a wide variety of dissimilarities, even with other plants owned by the same utility and constructed by the same