

COMMENTS SUBMITTED TO NRC ON “NRC SEEKS PUBLIC INPUT ON
CONSIDERING ECONOMIC CONSEQUENCES; MEETING AUG. 29 IN ROCKVILLE,
MD”

by
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Our comments are in the form of statements or questions, below.

1) p. 1, para 2, line 5. “Tasking for RES”

Comment: What is RES?

2) p. 2; paragraph 2; first sentence. “NRC requirements relating to the adequate protection of public health and safety do not consider costs.”

Comment: The NRC requirements do not consider monetary costs? The type of costs should be specified.

3) p. 2; para 3; sentence before last sentence. “Offsite property costs include both the direct costs associated with property damage...and indirect costs (e.g., tourism, manufacturing, and agricultural disruption).”

Comment: For how many years in the future are these costs considered? Some radionuclides released from nuclear power plants – through accidents or otherwise – can last in the environment for hundreds of years.

4) p. 2; para 3; last sentence. “The NRC has periodically evaluated the consideration of offsite property damage within its regulatory framework.”

Comment: Property damage can be the result of a nuclear accident, routine radioactive releases, and/or a nuclear terrorist act. What is the magnitude of the property damage as a result of these events? Would it relate to an “average” of TMI, Chernobyl, and Fukushima? These are actual accidents whose data can be used for analysis.

5) p. 3; para 1; first sentence. “Significant offsite property damage and associated economic consequences would generally only occur if substantial amounts of radioactive material were released.”

Comment: How is “substantial” defined? Is it defined? Would it be beyond some level of radiation release threshold or magnitude?

6) p. 4; para 3; first sentence. “The current NRC approach to land contamination relies on preventing the release of radioactive material through the first two levels of defense-in-depth, namely protection and mitigation.”

Comment: Your standards have been set prior to Fukushima. Thus, they are likely much weaker than they ought to be. There are serious uncertainties, unexpected (black swan) events that can happen that would not have been considered in the NRC/typical approach. A dismal example of that is Fukushima. Therefore, events like Fukushima should be considered in setting future standards or new standards in prevention and mitigation.

7) p. 4; para 3; last sentence. “The task force also concludes that the NRC’s approach to the issue of land contamination is sound.”

Comment: That conclusion is incorrect, particularly if there is no electricity available. The nuclear power plants are not ready to handle an extended period of no electricity; that could happen from an accident, solar flare, or an Internet virus. They need electricity 24 hours a day to cool the spent nuclear fuel pool. As of now, they only have several days of back-up electricity. If they are without electricity for several weeks, their spent nuclear fuel pools will ignite and become instruments of potential catastrophes. Has that cost been considered by the task force/NRC?

8) p. 4; para 4; second sentence. “This land contamination has disrupted the lives of a large number of Japanese citizens and raised stakeholder concern about such economic consequences.”

Comment: What specific “economic consequences”? They need to be specified. Also, of relevance is the time frame of the various economic consequences. For example, is the time frame within five days, four weeks, one year, or ten years? We know that the economic damage from radioactive releases continues for years.

9) p. 4; para 5; Regulatory Analysis; second sentence. “If there is a change in licensee resources, the regulatory analysis will evaluate societal costs and benefits of the proposed action, and the staff considers offsite property damage is such cost-benefit analyses.”

Comment: The meaning of this sentence is not clear. What does it mean “a change in licensee resources?” Also, we think the end of the sentence has an error in it and suggest a change to the following: “...and the staff considers offsite property damage in such cost-benefit analyses.”

10) p. 4; footnote 8. “Recommendations for Enhancing Reactor Safety in the 21st Century: The Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident.p.21...”

Comment: Have these recommendations – on lessons learned from Fukushima – been implemented by new and existing U.S. nuclear power plants? Is the NRC doing any rulemaking to have the nuclear power plants implement those recommendations? What is the status of this work?

11) p. 5; para 1, “Environmental Analysis”; second sentence. “For materials, waste, and fuel cycle facility licensing, there are no comparable analyses for treating accidents and offsite consequence.”

Comment: Why are there no comparable analyses? These facilities are important to people’s health and comparable data could be carried out by using accidents from nuclear power plants.

12) p. 5; para 2; last line. “Among these parameters is the offsite impacts attribute, which is typically the product of the change in accident frequency and the property consequences resulting from an accident.”

Comment: Is there an example available of this? It is not clear. For example, how is the change in accident frequency measured over what time period?

13) p. 5; para 3; first sentence. “Prior to the most revision of the dollar per person-rem conversion factor, the offsite impacts attribute...”

Comment: What is the meaning of “dollar per person-rem?” It needs to be defined and its implications specified.

14) p. 6; para 1. “To protect public health and safety, NRC regulations are focused on reducing the likelihood of a radiological release, which also provides protection to the environment. Within this framework, the staff has identified needed improvements..”

Comment: Once NRC has identified needed improvements, have any of these been implemented?

15) p. 6; para 2; second sentence. “The accident at Fukushima Dai-chi nuclear power plant has prompted various external organizations and stakeholders to question whether the existing NRC regulatory framework sufficiently considers economic consequences from radiological contamination.”

Comment: That is a very important consideration – particularly with regard to human health and safety. The economic consequences should consider not only onsite property damage, but damage to the surrounding areas, and to the costs of impaired health of residents living near the

nuclear power plant. Also, consideration should be given to the cost of water contamination and the cost of land contamination from radioactivity falling on the earth with rain.

16) p. 6; para 6; first sentence. “The primary disadvantage is that the current approach may not accomplish consistency across programs and is not responsive to stakeholder concerns that NRC should provide more consideration of economic consequences.”

Comment: In what sense may the current approach not accomplish consistency across programs and is not responsive to shareholder concerns? Would this also include liability costs that are not covered by insurance companies for injured citizens of a nuclear power plant accident?

17) p. 7; para 6; sentence 2: “The pace for these update activities would be moderated by coordination with other ongoing activities. (e.g. NTTF Recommendation 1).

Comment: What is NTTF? Please define.

18) Enclosure 1 “Tasking for RES”

Comment: What is RES?

19) Enclosure 2; page 1; second para; sixth line. “However, offsite property damage associated with the accident at the Fukushima Dai-ichi nuclear power plant in Japan in 2011 has initiated discussion on how the NRC considers offsite property damage following a significant release of radionuclides with subsequent contamination of the environment.”

Comment: NRC had not considered previously an accident with this magnitude of damage as seen in Fukushima. That type of unexpected event may well happen in the U.S. in the future. There are big uncertainties built into this nuclear power generation, and they need to be considered in the total cost. There is data available. It has happened twice in the past: Chernobyl and Fukushima. Has NRC analyzed the data from those two accidents to help estimate the offsite property damage?

20) Enclosure 2; p. 2; footnote 8, line 2. “The benefit of an incremental reduction of societal mortality risks should be compared with the associated costs on the basis of \$1,000 per person-rem averted.”

Comment: Over what length of time? Is there a time frame to this analysis? Usually a cost-benefit analysis has a time frame for calculations.

21) Enclosure 2; p. 2; footnote 8, line 5. “No further benefit-cost analysis should be made when it is judged that all of the design objectives have been met.”

Comment: What are the design objectives? Also, what is the evaluation period or time frame for analysis (i.e., how many years)? In addition, it is not clear what the benefits are in this cost-benefit analysis. Are the benefits to avert radiation exposure? What does \$1,000 per person rem averted mean? How is it used in this cost-benefit analysis?

22) Enclosure 2; p. 3; para 2, line 5; “As such, the \$1,000 per person-rem factor was determined to include both health and nonhealth-related offsite impacts.”

Comment: What was the rationale/calculation for this? This number seems to be a key variable to the cost-benefit analysis, but has not been defined, as far as we can tell.

23) Enclosure 2; p. 3; para 2, line 7; “However, the Steering Group recommended that the safety goals exclude the loss of societal resources (e.g., water bodies, arable land, endangered species, burial grounds, national monuments and parks) beyond their economic value, because of the difficulty in quantifying the loss of such resources.”

Comment: What time frame was used for calculating this cost? Water can remain contaminated with radionuclides – depending on the type of radionuclide - for a long time. Also, land can remain contaminated with radioactivity for a very long time – as is currently the case with Chernobyl. The group is pooling together resources that are quantifiable (like land and water body) with resources that are difficult to quantify (like monuments and burial grounds). We suggest that the resources difficult to quantify should be removed from this basket of resources to be used in cost-benefit analysis.

24) Enclosure 2; p. 3; para 3, line 8. “The goals and QHOs are described in terms of health risks; no goal or objective was established to address potential land contamination, offsite property damage, and interdiction in a direct manner.”

Comment: Why was there no goal established for potential land contamination and offsite property damage, given the lessons from the Chernobyl accident?

25) Enclosure 2; p. 3; para 4; second sentence. “In SECY-97-208, “Elevation of the Core Damage Frequency Objective . . . , the staff noted that no goal had been established with respect to potential land contamination and interdiction and, as evidenced by the Chernobyl accident, accidents involving core damage and containment failure could result in a society impact.”

Comment: Does this mean that previous NRC policy was wrong? This statement in the NRC text means that even after Three Mile Island, NRC did not consider potential land contamination and even after the Chernobyl accident. There were two major nuclear power accidents, and NRC

didn't act. There is a highly contaminated area of land around Chernobyl that is still uninhabitable, even after all these years.

26) Enclosure 2; p. 4; para 1; first sentence. "However, the staff recommended that no additional safety goal to be developed for land contamination because of the uncertainties in predicting severe accident consequences and weaknesses in the analytical tools...."

Comment: The staff of NRC recognized the "uncertainties in predicting severe accident consequences..." Uncertainties is a key point/problem in nuclear energy production. Because of the uncertainties, the staff recommended not to pursue a revised safety statement. They should have carried out an analysis. One can evaluate things with uncertainties, particularly if the data was made available from Three Mile Island, and Chernobyl. Now, there will be even more data from Fukushima. Even though it is difficult to predict the occurrence of a nuclear accident, past history tells us these accidents will happen. That event is not uncertain.

27) Enclosure 2; p. 4; para 4; last sentence. "The reactor licensing regulations ...do not address property in a manner similar to these materials licensing requirements."

Comment: Why not? Why treat the two classes differently?

28) Enclosure 2; p. 6; para 1, line 5. "Nonetheless, the regulatory analysis process may be modified or eliminated at the discretion of an NRC office director or higher authority."

Comment: Does that mean that NRC can do what it wants without any analysis or justification? Isn't there a problem of accountability to the American people when this occurs?

29) Enclosure 2; p. 6; para 3. "Siting: An October 17, 1994, proposed rule and proposed denial of petition for 10CFR Parts 50 ...'Reactor Site Criteria Including Seismic and Earthquake Engineering Criteria for Nuclear Power Plants ..."

Comment: Does this include a periodic reassessment of seismic considerations since geographic features (underground and/or over-ground) can change over time?

30) Enclosure 2; p. 6; Footnote 23. "The purpose of a SAM/SAMDA is to ensure that plant design changes with the potential for improving severe accident performance ...are identified and evaluated."

Comment: What about the grave risks of when nuclear power plants don't have electricity – to circulate water in their main system, and – more importantly – to circulate water in their spent fuel pools located on their premises? Nuclear power plants in the U.S. have backup systems for electricity of only a few days. If they are without electricity for a longer length of time, the spent nuclear fuel pool will become dry and explosive, with very serious radiation risks to the people.

One such improvement could use solar energy to accommodate lack of electricity from the grid. That improvement needs to be put into the plant design, and into the cost-benefit analysis.

31) Enclosure 2; p. 7; first para; second sentence. “The Commission also described the specific benefits of limiting population density:”

Comment: How can NRC limit population density? How can one limit population growth in an area? If the nuclear power plant already exists and there is a population around it, does that mean that the people need to relocate? If so, how will that come about?

32) Enclosure 2; p. 7; second para; text under “The Commission also stated that: ...From analysis done in support of this proposed change in regulation, the likelihood of permanent relocation of people located more than about 20 miles (50 km) from the reactor as a result of land contamination from a severe accident very low.”

Comment: That was a wrong conclusion. The contamination of great areas of land around Chernobyl and the permanent exodus of people for that area is the accurate picture. Now, the same result is happening with Fukushima. Thus, the likelihood of such a severe event is not very low. This needs to be addressed.

Also, the Commission’s statement/conclusion about the 20 miles is incorrect. In Fukushima, NRC recommended that Americans move 50 miles away from the nuclear reactors. How did the Commission come up initially with a 20 mile threshold?

33) Enclosure 2; p. 7; last paragraph, line 4. “Since higher population density sites are not acceptable, per se, the Commission does not intend to consider license conditions or restrictions upon an operating reactor solely upon the basis that the population density around it may reach or exceed levels that were not expected at the time of site approval.”

Comment: So this means, that once a nuclear reactor comes up for re-licensing, the population density issue becomes irrelevant and this is a highly questionable practice for the health of the American people. This needs to be addressed.

34) Enclosure 2; p. 7; last paragraph, line 8. “Finally the Commission wishes to emphasize that population considerations as well as other siting requirements apply only for the initial siting for new plants and will not be used in evaluating applications for the renewal of existing nuclear power plants.

Comment: This implies that NRC will not approve a new nuclear plant if it is within 10 miles of an area such as Chicago which has a high population density. However, if a nuclear power plant (or materials facility) is initially approved and built in an area of very low population density, which over time becomes a high-density area (like Chicago), and the owner of the plant applies for a license renewal, the NRC will approve the renewal (even though it would not have approved the application if it was for a new nuclear plant). Then, the NRC has a double standard

(new applications versus renewals); and that results in putting Americans in grave health risks from a nuclear accident.

Higher population sites around an established nuclear power plant will have more casualties in the event of a nuclear accident – in the short-term and long-term – than low population sites. Also, nuclear power plants that are coming up for renewal have a lot more spent nuclear fuel stored in them than new plants, and also, their structures are older, and were designed with materials such as concrete, which have aged, and have been found to crack over time. This should be addressed.

36) Enclosure 3; p. 1; para 4; first sentence. “For its part, NEPA requires an analysis of the reasonably foreseeable environmental impacts of major federal actions.”

Comment: Radioactive releases from nuclear facilities – accidental or routine – can last many years in the environment. In that case, what is the meaning of “...reasonably foreseeable” environmental impacts”?

38) Enclosure 3; p. 2; para 1, line 5. “...the utilization and production of special nuclear material will be in accord with the common defense and security and will provide adequate protection to the health and safety of the public.”

Comment: What does “common defense and security” have to do with nuclear power production?

39) Enclosure 3; p. 2; para 2; first sentence. “The term ‘adequate protection’ is not defined in the AEA; it is a subjective, yet mandatory standard.”

Comment: In that case, one wonders about its usefulness because it is up to interpretation of NRC or other government agencies, and that interpretation can change over time.

40) Enclosure 3; p. 3; para 2. “Establish by rule, regulation, or order, such standards and instructions to govern the possession and use of special nuclear material, source material, and byproduct material as the Commission may deem necessary or desirable to promote the common defense and security or to protect health or to minimize danger to life and property.

Comment: What is the relevance of this to the work of NRC? How does NRC’s work relate to “common defense and security?” Has any cost-benefit analysis been done on the special nuclear material toward “the common defense and security?” That should also be considered.

42) Enclosure 3; p. 4; para 2, line 7. “Thus ‘property’ would include land, buildings, equipment, vehicles, livestock and crops.”

Comment: Water resources should be considered as property, otherwise the items listed under “property” are incomplete. Water resources such as aquifers as sources of drinking water, lakes, and rivers should be considered as property. They can become contaminated with radionuclides after a nuclear power plant accident and result in harm to human health and safety.

43) Enclosure 3; p. 4; para 3; first sentence. “Given the broad language of the provisions of the AEA sections 103 ...the Commission has the legal authority to consider offsite property damage resulting from radiological events, and if it chooses, may regulate its licensees for the purpose of avoiding or mitigating such offsite property damage.”

Comment: So, the NRC may choose not to regulate its licensees? We believe that it shouldn’t be up to the NRC to choose whether or not to regulate, but that they should be mandated to regulate its licensees.

44) Enclosure 3; p. 7; para 1, line 4. “The NRC is well within its AEA authority...if the potential harm to the offsite property (e.g., land contamination; contaminated crops; loss of income because a workplace is contaminated; damage to property as a result of a mass evacuation) has a nexus to a potential radiological release.”

Comment: What about water contamination such as an aquifer that provides water to a group of people for drinking and/or for watering crops? Again, water is not included in property.

45) Enclosure 3; p. 10; para 1; first sentence. “..., and indirect effects, which are caused by the action, but occur at a later time ...”

Comment: Cancer occurs as a result of radiation exposure in the short-term and in the long-term. Radiological harm can come in two time frames: 1) The harm that comes from a one-time high level dose of radiation, like the atom bomb in Hiroshima, that can harm people in a few hours or days. Death is one of the dismal outcomes of that type of acute exposure; 2) The long-term or chronic effects of radiation, by which cancer (and other illnesses) can be caused by exposure to (lower level of) radiation over a number of years. Various studies have found cancer risks in people, and particularly children, who lived near nuclear power plants. A short list of such studies is provided in the Reference section at the end.

46) Enclosure 3; p. 11. “However, the broad discretion provided by the AEA likely makes such decisions a question of policy...”

Comment: Why not base nuclear power policy on a framework other than AEA? AEA was passed in the 1940s, and may have been relevant at that time; however, its relevance has changed over time and may well be much less presently.

47) Enclosure 4; p. 3; para 4. “As explained in SECY-10-0080,...applied a modeling structure that provides consistent estimates of terrorism economic risk across CBRN threats.”

Comment: How was this “consistency” evaluated? Hypothetical models – that probably include a number of equations/relationships and variables with hypothetical values – may be just that: hypothetical. What criteria were used to verify that the results of these models make sense? Typically, relationships between variables change over time. Do these models get re-estimated over time?

48) Enclosure 4; p. 4; para 2. “The regulatory basis for 10 CFR Part 37 is to protect against prompt fatalities.”

Comment: What about incidence/fatalities from cancer, due to radiation from nuclear events, that occur over a number of years? They are not considered?

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