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Chief, Rules and Directives Branch
Division of Administrative Services
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Re: Comments concerning update of license renewal GEIS

Dear Sir or Madam:

This letter constitutes the comments of the Environmental Law and Policy Center ("ELPC") in connection with the Nuclear Regulatory Commission's ("NRC") intended update of the "Generic Environmental Impact Statement (GEIS) for License Renewal of Nuclear Plants," NUREG-1437, originally published in 1996.

1. Inappropriate exclusion of "economic" factors from the EIS process

At the outset, we note that the NRC has artificially constrained the scope of its environmental review in a manner violative of the purpose of NEPA. At Section 1.7.2 and 1.7.3, the GEIS cites 10 C.F.R. 51.53(c)(2) and 51.95(c), in which the Commission effectively prohibits itself and any license renewal applicants from considering in the NEPA process the "need for power, the economic costs and benefits of the proposed action and economic costs and benefits of alternatives to the proposed action." The prohibition applies specifically to plant-specific Supplemental EIS's and applicants' environmental reports, which eliminates these issues entirely from the environmental review process because the NRC does not consider them in the GEIS.

An EIS is not intended to provide environmental information in a vacuum, but to provide it in the context of an overall decisionmaking process. Its purpose is to *integrate* environmental considerations into the decisionmaking process, not to divorce them from other decisionmaking criteria and treat them as a thing apart. It is entirely out of keeping with this purpose for NRC to

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exclude from consideration the set of issues it terms "economic" and thus irrelevant to environmental review – but which in fact should be at the heart of the decision whether to continue to rely on nuclear power in any given location. Not only is consideration of cost of alternatives standard in every other sort of NEPA analysis, it is essential. How can the agency judge whether an alternative is "reasonable," and hence must be included, without information regarding economic need and economic cost for that alternative? And how can the agency use the EIS process to weigh alternatives against one another when it has excluded from consideration essential factors in that weighing process, like the need for power and how much it costs?

This stacked deck is clearly convenient for the nuclear industry, which would prefer for the agency and the public to disregard the fact that nuclear power has repeatedly demonstrated itself to be one of the most costly and uneconomic sources of power on the market today; while renewable technologies have been steadily dropping in price. But it is not what the drafters of NEPA intended. The CEQ regulations clearly reflect an intention that economic considerations be considered in the weighing process – neither trumping the environmental considerations nor being completely divorced from them. See 40 C.F.R. 1502.23 (explaining the role of cost benefit analysis in an EIS, and stating, "In any event, an environmental impact statement should at least indicate those considerations, including factors not related to environmental quality, which are likely to be relevant and important to a decision." Indeed, the GEIS itself, when dismissing certain mitigation measures as infeasible, cites cost of the measures weighted against potential environmental benefits (albeit using insufficient information) (see section 3.a., infra).

One of the issues identified by the NRC as "economic" – the need for power – is not even correctly characterized in that manner. In fact, the need for power is not merely an economic weighing factor in the decision, but should be at the heart of the "purpose and need" that drives the remainder of the EIS process. The Commission asserts in the "purpose and need" section of the GEIS, Section 1.3, that only states can ultimately determine whether power from a particular plant is needed. But if that is the case, NRC needs to work with state energy decisionmakers as co-lead agencies in the EIS process to determine the purpose and need for relicensing, either in the GEIS or on a case-by-case basis in Supplemental EISs. Abdicating an essential element of the EIS to non-federal decisionmakers, however, is not an option.

We therefore strongly encourage NRC to use the update of the GEIS as an opportunity to reconsider its ill-conceived regulations prohibiting the Commission and the regulated community from conducting the weighing process that NEPA intends.

2. Changed circumstances since 1996 requiring revised analysis

Since 1996, when the current version of the license renewal GEIS was finalized, numerous circumstances relevant to the GEIS analysis have shifted. We have listed below the major areas in which the document needs to be revised to reflect these shifts.

a. *Section 2.2.4.4, Transportation of Radioactive Materials.* The GEIS states that "[c]urrently, the only spent-fuel shipments from nuclear plants are to other plants." This statement will clearly no longer be accurate once Yucca Mountain opens as a

waste repository, an eventuality made substantially more likely by last year's decision by Congress to approve a DOE application for that site. To the extent that waste created during the license renewal period will be shipped to Yucca Mountain – not a certainty given severe constraints on the site's capacity (*see Section 2.d below*), but nonetheless a possibility – the environmental impacts of these shipments need to be considered in the EIS process. These impacts should be evaluated as a Category 2 issue, considered separately at each site, because the impacts of off-site transportation will vary from location to location, depending on population, ecological sensitivity, etc.

b. *Section 5.3.1, Regulatory Interface Between License Renewal and Accident Impacts.* In the section concerning accident potential associated with extended operation of nuclear facilities, the GEIS states that effects of age-related degradation will be addressed "by identifying, in an integrated plant assessment process, those structures and components which are susceptible to age-related degradation and whose functions are necessary to ensure that the facility's licensing basis is maintained." Events in recent years demonstrate that this method – mandated by amendments to 10 C.F.R. 54.21 promulgated around the time the GEIS was completed – is not effective to protect against the dangerous ravages of aging on nuclear facilities. Indian Point's broken steam generator tube (2000), Summer's leaking hot leg pipe (2000), Oconee's broken control rod drive mechanism nozzles (2001), Quad Cities' broken jet pump (2002), and Davis-Besse's broken reactor vessel head are good examples of how aging is already taking a toll on nuclear facilities even during their originally-licensed term of operation. We recommend that that GEIS re-examine the potential accident impacts of relicensing in light of evidence of the failure of this policy, and evaluate the benefits of reinstating the age-related degradation unique to license renewal (ARDUTLR) standards to reduce these impacts.

c. *Section 8.3, Environmental Impacts of Alternative Energy sources.* The GEIS does not reach any conclusions regarding alternatives to license renewal but instead provides data regarding alternative energy sources that is to be used to analyze those alternatives in each supplemental EISs. The data in the GEIS (most of which is from the early 1990s), however, presents a very outdated view of the viability and environmental impacts of renewable energy sources such as wind, solar, and biomass, and the potential of energy efficiency efforts to reduce the need for power generation. Today, renewable energy sources and energy efficiency present a lower-cost, safer, and environmentally cleaner approach to meeting the nation's energy needs than renewing licenses for aging nuclear power plants. Technological improvements and market developments have greatly increased the efficiency and capacity of renewable energy, while at the same time reducing its cost and environmental impact. Reacting to these changes, twelve states have enacted Renewable Portfolio Standard ("RPS") legislation, requiring that a proportion of all power generated in the state be from renewable sources. The NRC should update the GEIS to reflect the current reality that wind, solar, biomass, and energy efficiency are reasonable alternatives to the renewal of license for aging nuclear power plants. Following is some of the new data regarding these energy sources:

i. *Section 8.3.1, Wind.* The GEIS states that wind power is not appropriate for baseload power, that no utilities are planning to construct large wind power plants, and that wind power would use large amounts of land, be noisy, and negatively impact birds. These statements are not accurate and should be updated in the revised GEIS. Technological advancements have led to wind turbines with a capacity factor of up to 40%, a figure that increases significantly when turbines are combined with storage facilities.[1] In addition, wind turbines have an availability factor of 98%, higher than most other power sources.[2] These improvements have reduced the cost of wind power to less than 5 cents per kilowatt hour, which is competitive with most other energy sources.[3] They have also led to a substantial increase in the amount of wind power installed – in 2001 and 2002 a total of 2,106 megawatts of wind energy was installed nationwide, raising the total wind energy in the U.S. to 4,685 megawatts.[4] Federal studies estimate that wind energy could supply around 20% of the electricity used in the United States, which is the same proportion that is currently provided by nuclear energy. Such reliance on wind power would not come at the high environmental cost suggested by the GEIS. Unlike with nuclear power plants, nearly 95% of the land devoted to a wind power site remains available for other uses such as agriculture. In fact, many farmers see wind power as a cash crop that can supplement their agriculture income. In addition, concerns about the impact of wind turbines on birds arise almost completely from the fact that one of the earliest wind farms, Altamont Pass, was unfortunately located in an area with high year-around raptor use. Outside of Altamont Pass, there is an average of only 1 to 2 bird kills per wind turbine per year.[5]

ii. *Section 8.3.2 and 8.3.3, Photovoltaic Cells and Solar Thermal Power.* As with wind power, the GEIS suggests that solar photovoltaic ("PV") and thermal power is not appropriate for baseload power, is costly, and would have significant land impacts. In fact, however, solar PV and thermal power are increasingly viable alternatives. Solar PV technology has advanced to the point where PVs are a good source of power, especially in remote areas and to help meet peak power demand. Meanwhile, solar thermal systems are an economically efficient way for household water heating. Numerous cities, individuals, and even the White House currently use PV and/or solar thermal systems to help meet their power needs. Finally, the GEIS substantially overstates the land impacts of relying on solar PV and thermal power. Most solar power units are located on rooftops of buildings, meaning that no new land disturbance is caused by those units.

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[1] American Wind Energy Association, The Most Frequently Asked Questions About Wind Energy (2002), p. 5.
[2] *Id.*
[3] *Id.*
[4] American Wind Energy Association, Wind Power Outlook 2003 (2003).
[5] National Wind Coordinating Committee, Avian/Wind Turbine Interaction: A Short Summary of Research Results and Remaining Questions (Dec. 2002).

iii. *Section 8.3.14, Conservation.* The GEIS properly notes that energy conservation efforts could help reduce the demand for energy in the U.S., thereby removing the need for some additional power plants. More recent data than that included in the GEIS, however, shows that the potential of energy conservation to reduce energy demand is even greater than that cited in the GEIS. For example, the American Council for an Energy-Efficient Economy estimates that a comprehensive energy efficiency program could reduce energy demand by 18 % in 2010 and 33% in 2020. Similarly, an expansion of state and utility electricity conservation programs could reduce electricity demand by 17% in 2020. In addition, the potential environmental impacts of energy conservation efforts identified in the GEIS (indoor air quality and impacts from manufacture of conservation equipment) are extremely minor in comparison to the impacts avoided by reducing the need for additional energy production.

d. *Section 6.4, Generation and Storage of Radioactive Waste During the Term of the Renewed License.* Under the Waste Confidence Rule, 10 C.F.R. 51.23, the NRC has determined that: (a) spent fuel can be stored in on-site storage facilities "safely and without significant environmental impacts" for at least 30 years beyond the operation of a nuclear power plant, (b) that at least one permanent repository will be opened within the first quarter of the 21st century, and (c) that sufficient repository capacity will be available within 30 years of the licensed life of any reactor to permanently store all of the spent fuel from such reactor. The GEIS then concludes that the additional spent fuel created during any license renewal period can be stored on-site "safely and without environmental impacts." The NRC should reconsider the Waste Confidence Rule and revise the GEIS analysis of this issue for three reasons. First, the heightened threat of terrorist attacks on U.S. soil since September 11, 2001 (*see Section 2.e below*) calls into question the Waste Confidence Rule's conclusion that spent fuel can be safely stored in on-site spent fuel pools for 30 or more years after a plant's license expires. Second, there are not sufficient grounds for the NRC to be confident that sufficient repository capacity will be available to store all spent fuel within 30 years of the license life of each reactor. Even assuming that the Yucca Mountain repository receives final approval, it would not begin receiving spent fuel until at least 2010, nearly 30 years after consideration of the repository first began. Yucca Mountain would not have the capacity to store all existing spent fuel, much less additional fuel created during any license renewal periods. Therefore, an additional one or two repositories would be needed, yet no additional repositories are currently even under consideration. Given the lengthy and still not concluded struggle over the Yucca Mountain site, the NRC should not assume that additional repositories will be approved in a timely fashion. Third, the GEIS acknowledges that the on-site storage pools are reaching their capacity at many facilities, requiring those facilities to either expand their storage pools or ship the spent fuel to other facilities. License renewals at a plant facing a full storage pool would only exacerbate the problem, thereby raising questions about the safety and environmental impact of storing spent fuel generated during any license renewal period. This issue relies

heavily on the storage pool capacity at each facility and, therefore, should be considered in supplemental EISs for each license renewal application.

e. *Security concerns.* The GEIS contains no discussion of the risk of terrorist assault on a nuclear facility operating under a renewed license. Clearly, the relevant facts have changed substantially regarding this issue since 1996. The events of September 11 indicate a high probability of additional attacks on American soil. Former NRC chairman Richard Meserve admitted shortly after September 11 that "[n]o existing nuclear facilities were specifically designed to withstand the deliberate high-velocity direct impact of a large commercial airliner, such as a Boeing 757 or 767, as "[p]rior to September 11, such a scenario was not considered to be a credible threat." Testimony of the Honorable Richard A. Meserve before the House Committee on Energy and Commerce, April 11, 2002. Intelligence sources further believe that nuclear facilities have been contemplated by terrorists as a potential target. It is essential that NRC re-evaluate this issue in the updated GEIS.

3. Inadequate analysis requiring review

In addition to the analyses discussed above, at least one section of the GEIS contains significant factual gaps and inaccuracies, and needs to be reviewed and revised accordingly:

Section 4.2, Once-Through Cooling Systems; Section 4.3, Cooling Towers. In the sections concerning impacts of cooling systems on receiving or nearby waterbodies, the GEIS repeatedly describes environmental consequences as "of small significance," and the changes that would be required to mitigate them as "costly," concluding that NRC does not consider the changes warranted. No further information is provided as to either the cost of these changes or the degree of mitigation they would likely accomplish. More information needs to be provided regarding the measures cited – operating additional wastewater treatment systems, reducing the plant's generation rate, and changing to a closed-cycle cooling system – as well as any additional water quality mitigation measures that may be evaluated in the updated GEIS.

Thank you for the opportunity to comment on the GEIS update.

Very truly yours,

Ann Alexander

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