



NATURAL RESOURCES DEFENSE COUNCIL

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Via Electronic and First Class Mail

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RE: NRDC comments on the Energy Department's Notice of Intent to Prepare a Programmatic Environmental Impact Statement for the Global Nuclear Energy Partnership

Dear Mr. Frazier:

We welcome this opportunity to submit comments on the scope of the Department of Energy's proposed Global Nuclear Energy Partnership (GNEP) Programmatic Environmental Impact Statement (PEIS). In the event that DOE decides to press ahead with the GNEP Program as outlined in the January 4, 2007, Notice of Intent (NOI), DOE must initiate a broad, comprehensive and technically searching review of the environmental impacts of the *entire* proposed GNEP program. All the reasonably foreseeable components of that program, and their connected and cumulative environmental impacts, must be described for the benefit of Executive Branch decision-makers, other affected agencies, Congress, and the public. This analysis must include a full range of reasonable alternatives for achieving the government's purpose and need for action – including but by no means limited to a genuine “No Action” alternative – thereby ensuring that the agency embarks on a legally compliant path toward fulfilling its NEPA obligations.

It is well settled law that an agency may not cripple NEPA analysis of the reasonable programmatic alternatives available to policy-makers by arbitrarily reducing the options subjected to detailed analysis to a stark choice between implementing the agency's preferred program and “No Action.” Yet this is exactly what the current NOI proposes to do. We strongly urge the Department to adopt a different course.

Should DOE proceed with its proposal to establish the GNEP Program, the Department must begin the required PEIS with a broad, logical, and coherent statement of the national purposes to be served by the Proposed Action, going beyond the current tautological phrases that rest solely on an implied – but in reality nonexistent – DOE imperative to promote nuclear power by closing the nuclear fuel cycle.

Then DOE must develop a range of reasonable programmatic alternatives for achieving the underlying national objectives set forth in the statement of purpose and need. Since it is irrefutably the case that meeting the oft-stated national goals of “reducing reliance on carbon-

based fuels” and “strengthened nuclear nonproliferation” do not *necessarily require* the GNEP Program, or even increased national or global reliance on nuclear power, DOE must define and analyze broad reasonable programmatic alternatives for both *conventional* nuclear and *non-nuclear* electricity supply that would meet these and/or other plausible national and international goals, and compare the connected and cumulative environmental impacts of these alternatives to the impacts of implementing the GNEP Program in the manner proposed.

The thrust of the detailed comments that follow is that in light of the crippling deficiencies revealed by the Department’s January 4, 2007 Notice of Intent to Prepare a PEIS and the ensuing subsequent public scoping process, the Department of Energy (DOE) must pursue one of the following three courses of action to remain in compliance with the National Environmental Policy Act (NEPA), 42 U.S.C. § 4321, *et seq*:

- (1) In view of the evident confusion surrounding both the national purpose and need for GNEP, and many uncertainties regarding the scale, feasibility, phasing, cost, and duration of its many required program elements, DOE could (wisely in our view) elect to cease preliminary design and engineering work on all proposed facilities contained in the current GNEP program plan, withdraw the current *Notice of Intent*, and defer future re-scoping of a PEIS until such time as the Department is able to formulate a more coherent proposal, and reasonable alternatives thereto, for achieving a widely-recognized national “purpose and need for agency action;” or
- (2) DOE could formally abandon the broad new international and domestic programmatic aspects of the GNEP proposal that trigger a requirement for a PEIS—including proposals to construct domestic spent-fuel reprocessing and fast reactor facilities—withdraw its current *Notice of Intent* to Prepare a PEIS, and conduct an immediate assessment of NEPA requirements for continuing a limited program of transmutation fuels research under DOE’s current *Advanced Fuel Cycle Initiative*; or
- (3) DOE could drastically revise the proposed scope and contents of the proposed PEIS in line with the comments contained herein and submitted by other commenting parties¹, and in view of the very significant changes required, issue a “Revised Notice of Intent to Prepare a PEIS” with an additional 90 days for the filing of written public comments on the proposed revised scope of this document, while simultaneously releasing for public review the 11 “Detailed Site Reports” prepared by various commercial and public consortia awarded DOE grants to study their respective “candidate sites” for GNEP facilities;

In light of DOE’s expressed intent to date, our extended comments are directed at Option #3, that is, continuing on the path of preparing a PEIS that will address the full scope of the GNEP Program. They include the following issues: (1) the failure of the agency to substantively address NRDC’s May 2006 Comments on DOE’s Advanced Notice of Intent to Prepare an EIS; (2) the circular reasoning behind the agency’s suggested purpose and need for the GNEP program; (3) the inadequacy of the suggested alternatives analysis; (4) the kinds of information and alternatives that the agency must analyze to approach a legally adequate PEIS; and (5) the careful scrutiny and procedural steps, including subsequent EIS’s, which must be observed to ensure

¹ In particular, we recommend close reading of the cogent comments of March 29, 2007, submitted by the Office of the Attorney General, State of Illinois, which independently reached many of the same conclusions as those contained in this letter.

compliance with NEPA in the event DOE constructs specific components of the GNEP Program *pursuant to* a valid PEIS and Record of Decision establishing the contours of the overall program.

I. The Failure of the Agency to Substantively Address NRDC's May 2006 Comments

First, we note that DOE has now adopted, for obvious legal reasons, the form of environmental impact analysis that NRDC recommended in its detailed comments to the Department in May 2006,² namely a broad Programmatic EIS worthy of the colossal scale, costs, and cumulative impacts of the government's proposed Global Nuclear Energy Partnership (GNEP) program. However, judging by the Notice of Intent to prepare a PEIS issued by the Department on January 4th of this year, DOE has regrettably seen fit to ignore almost all our earlier comments regarding the substance of this document. As we will detail in the sections that follow, the January 2007 NOI has merely placed a new label, that of PEIS, on a proposed scope for environmental review that:

- lacks a cogent statement of national purpose and need;
- contains no programmatic "reasonable alternatives" save the agency's preferred "Proposed Action" and "No Action;"
- artificially truncates and divides analysis of GNEP's international aspects from its domestic aspects;
- fails to specify all necessary program elements, their relationship to one another, the proposed timeline for program implementation, the relevant time period over which the program's cumulative and connected environmental impacts would be registered, and the time period to be included within the scope of the proposed analysis;
- fails to provide for the breadth and depth of information and analysis required to make meaningful environmental impact comparisons between programmatic alternatives; and
- mistakenly seeks, within the confines of a single NEPA document and decision process, simultaneously to analyze and compare both broad programmatic alternatives for attaining the goals of GNEP *and* specific sites for actually constructing major facilities *that are not yet part of an approved, environmentally acceptable alternative for fulfilling the purpose and need for GNEP program.*

Thus it appears the Department remains on a legal collision course with NRDC and a large majority of citizen's organizations that have participated to date in the public comment process.

II. The Purpose & Need for Agency Action Remains Ill-Defined and Overly Narrow.

The "Purpose and Need for Agency Action" remains incoherently defined in an overly narrow, indeed specious manner characterized by circular reasoning – that is, the current statement supplies a unique remedy in the very act of framing the issues under review. We are told that DOE's underlying purpose and need is to "encourage expansion of domestic and international

² "Initial NRDC Comments on Advanced Notice of Intent to Prepare an EIS for GNEP," via electronic and first class mail to Mr. Timothy Frazier, NEPA Document Manager, Office of Nuclear Energy Science and Technology, 14 pages, May 1, 2006.

nuclear energy production” while reducing “the risks associated with nuclear proliferation” and “the volume, thermal output, and radio toxicity of spent nuclear fuel.” 72 Fed. Reg. at 333. It should come as no surprise that the only programmatic alternative that fits through this conceptual pinhole, defined by simultaneously meeting all these objectives, is the Department’s specific proposed plan of action for the GNEP program. Courts have long found that tailoring the “Purpose and Need” statement in this fashion to fit precisely the template of an agency’s proposed action is inconsistent with the purpose and requirements of NEPA.

First, we note that the national and global expansion of nuclear power, via GNEP or any other route, cannot simply be *stipulated* as desirable in its own right, but must rather reflect or implement some larger national purpose(s) to which both GNEP and a fully representative range of “reasonable programmatic alternatives” relate. It is not DOE’s mission to tilt the U.S. or global marketplace decisively in favor of nuclear power or any other energy technology. Moreover, even within DOE’s narrowed frame of reference, we note that the proposed “expansion” of both domestic and international nuclear energy production may in principle be accomplished by a radical shift in strategy, as proposed under GNEP, *but may also be accomplished, with equal or greater plausibility*, by a *less* costly and *less* risky extension of current reactor and fuel technologies, or for example, via the use of relatively more efficient thorium fuels in existing thermal reactors of conventional design.

Regarding the broad national purpose and need for GNEP, the President himself has identified “less reliance on fossil fuels” as an “important objective” of the proposed program, while also stating his belief that nuclear power with reprocessing will “take the pressure off of our own economy,” by easing global demand and prices for natural gas. Other senior officials have noted that GNEP “envisions a cradle-to-grave fuel leasing regime” and that “GNEP seeks to encourage the future leasing of fuel from fuel cycle states...to alleviate proliferation concerns” arising from the spread of nuclear fuel enrichment and reprocessing capabilities to additional states (see our comments of May 1, 2006 on the initial *Advanced Notice of Intent to Prepare an EIS* for GNEP for a fuller exposition of these enunciated official goals and objectives for GNEP).

“Alleviating proliferation concerns” is indeed a worthy objective, but achieving it does not necessarily *require* GNEP, or even global expansion of nuclear power without GNEP. For example, numerous experts believe that a policy of fresh fuel leasing and spent fuel “take-back,” targeted at a few states of proliferation concern, coupled to a program of vigorous promotion of non-nuclear sustainable energy alternatives in the vast majority of developing countries, would be less risky, less environmentally harmful, more cost-effective and a more timely approach than GNEP for accomplishing the nonproliferation objective.

Spending tens and eventually perhaps hundreds of billions of dollars merely to “encourage” expansion of domestic and international nuclear energy production is not a credible basis for either national policy or programmatic NEPA analysis, and it is obviously not the *actual* premise for the current GNEP program. Absent a more cogent definition from DOE, we must reluctantly characterize GNEP’s current *de facto* “purpose and need” as “assuring the future of the DOE-owned civil-nuclear research and development infrastructure by instituting spent fuel reprocessing and a closed nuclear fuel cycle in the United States at public expense.”

Presumably if implemented at great public expense, GNEP would obviously do more than merely “encourage” nuclear power production in the commercial sector, and would instead attempt to establish a complete quasi-commercial closed nuclear fuel cycle operating on both a national and

international basis. But it occurs to us that the opposite outcome is also plausible. By absorbing potentially huge amounts of future DOE funding, and by injecting the highly controversial elements of spent fuel reprocessing and plutonium recycle into the nascent “revival” of commercial nuclear power, GNEP could well accomplish the opposite objective of *discouraging* the expansion of nuclear power, while simultaneously reducing funding opportunities for development of *near-term* energy technologies that are urgently needed *now* – not twenty years from now – to combat global warming.

In sum, in order to proceed with this PEIS, DOE must first craft a statement of “Purpose and Need for Agency Action” that relates the GNEP proposal to broad national objectives that are within DOE’s purview, including for example, such goals as “reduced reliance on fossil fuels to curb global warming, “alleviating the nuclear proliferation concerns inherent in current international arrangements for the dissemination and control of nuclear energy,” and “ensuring the long-term isolation from the human and natural environment of harmful radionuclides produced in the nuclear fuel cycle.” We do not believe that GNEP will be effective in addressing any of these goals, but this prospect is present at least in theory. We do note, however, that other concrete policy and program alternatives exist that address practical solutions to each of the challenges presented by these objectives, and therefore merit detailed consideration in the PEIS.

III. DOE Has Failed to Propose A Reasonable Range of Alternatives for Analysis

The range of alternatives proposed for analysis in the Jan 4th NOI is not remotely reasonable, as it essentially consists of DOE’s proposed GNEP program, and a “No Action” alternative defined as continuation of the *status quo*. But even “No Action” is defined to include a substantial pre-existing GNEP research and development component called the “Advanced Fuel Cycle Initiative.” Since any decision not to proceed with GNEP could call into question the rationale for continuing the work to be pursued under the AFCEI, inclusion of this program in “No Action” is both unrealistic and unwise, and represents DOE’s attempt to game the system. At the very least, if continuing the AFCEI component of GNEP is to be regarded as part of “No Action,” then DOE must define *another* programmatic alternative that terminates AFCEI in favor of relying on other nuclear and non-nuclear energy technologies.

Put plainly, NRDC strenuously objects to the proposed framework for analysis of alternatives, and if it remains as outlined in the NOI, we are confident it will not survive judicial scrutiny. The current framework for analysis artificially attempts to divide – unlawfully in our view – the international from the domestic aspects of the GNEP Program, and proposes to include “only a general qualitative analysis of the potential impacts on the United States or the global commons” from GNEP’s international programmatic activities. 72 Fed. Reg. at 335.

Given that global growth of nuclear energy production while reducing proliferation and environmental risk constitutes the primary objective and indeed the very rationale for launching a “*Global Nuclear Energy Partnership*,” (emphasis added) DOE cannot suddenly turn around and say, as it does in the current NOI, that it is “not proposing any specific action with regard to the reliable [nuclear] fuel services program,” since this program, followed by a longer term program to disperse small plutonium-fueled fast reactors around the world, comprise the very essence of the proposed “vision” of a “global nuclear partnership.”

However, if by such disavowals DOE intends to suggest that any “specific actions” regarding the international aspects of this program are being undertaken by the Department of State or some

other agency of the United States, rather than DOE, then the international activities of these other agencies with respect to GNEP must be included in the programmatic analysis of environmental impacts and reasonable alternatives thereto. The current and reasonably foreseeable GNEP roles and missions of other U.S. government agencies – such as the Nuclear Regulatory Commission, the Department of State, the Department of Commerce, and the Export-Import Bank – *must be included within the scope of the PEIS analysis.*

Indeed, since the GNEP program calls for the foreign leasing of U.S. origin nuclear fuel, and its return to the continental United States (and other so-called “fuel-cycle states”) for storage, reprocessing, and waste disposal, GNEP could foreseeably result in a *huge increase* in the amount of nuclear waste that must be stored, processed, and ultimately disposed of here in the United States.

Therefore, reasonably foreseeable scales for these multilateral GNEP operations must be discussed in the PEIS, and their global and domestic environmental impacts – including full life cycle impacts from storage, processing, packaging and disposal of nuclear wastes – must be projected, analyzed and compared with alternative means of providing (a) “reliable nuclear fuel services” *without* GNEP reprocessing, plutonium fuel recycling, and actinide transmutation, and (b) non-nuclear low-carbon electricity services equivalent to the energy provided by the envisioned GNEP “reliable fuel services” and spent-fuel take-back program.

Then, within the range of programmatic alternatives for implementing the current GNEP proposal, DOE must examine, in addition to its Proposed Action, a range of reasonable alternatives, including:

- a. a true “No Action” alternative that involves terminating GNEP and its constituent Advanced Fuel Cycle Initiative (AFCI) programs;
- b. a “Phased Approach Option” that would complete transmutation fuels development and testing critical to future GNEP feasibility and decision-making *before* undertaking any construction of reprocessing and/or fast reactor facilities;
- c. a “Reliable Nuclear Fuel Services” alternative that achieves the purpose and need for agency action by fostering multilateral cooperation in the supply and disposal of *conventional* nuclear fuels, *without* the added financial burdens, technical complexity, and hazards of reprocessing and fast reactor deployments;
- d. once-through thorium fuel cycle alternatives that may have non-proliferation advantages over the GNEP vision of a closed fuel cycle while also enjoying a spent-fuel repository advantage (relative to the current LWR once-through cycle) of a reduced spent fuel volume, reduced spent fuel thermal loadings, and reduced long-lived actinide inventories. Specifically, while extracting and refining the thorium resource comes with associated environmental costs, the once-through thorium cycles do not require a new generation of liquid metal fast reactors or new spent fuel reprocessing plants, or new mixed-oxide fuel fabrication plants, or the panoply of other facilities required for managing various categories of fission and transuranic products separated from spent fuel, all of which make the GNEP vision appear uneconomical, unreliable, unsafe, unsafeguardable and ultimately unworkable. Alternative thorium fuel assembly designs could potentially be

tested and licensed for use in U.S. PWRs and Russian VVERs well before the proposed GNEP fuel-cycle facilities can be built and operated.

The January 4 *Notice of Intent* contains statements that are inherently contradictory and that crimp any realistic analysis of alternatives available to the federal government. For example, the NOI "Background" section (II) contains numerous statements relating the policy rationale for GNEP to America's "significant energy challenges, including increasing energy supplies in ways that protect and improve the environment." 72 Fed. Reg at 333. We are told that the President's "Advanced Energy Initiative" has identified "three ways to meet the challenge of generating more electricity," one of which is "advanced emission-free nuclear power." While this general identification of "advanced nuclear power" as an electricity option does not specifically or even necessarily require GNEP, the NOI seeks to conflate the two by noting that "recycling spent fuel rather than disposing of it potentially would extend the stock of nuclear fuel available to meet growing electricity demand and reduce waste from the generation of nuclear power." The NOI goes on to suggest that "GNEP as envisioned would promote the expanded use of carbon-free nuclear energy to meet growing electricity demand throughout the world."³

After reading these and similar statements in the NOI, imagine our surprise when the "Background" section inexplicably concludes: "The commercial marketplace will ultimately determine how to meet future increased demand for electricity...*DOE is not proposing in this PEIS that DOE would construct and operate any facilities for the primary purpose of generating electricity.*" That last sentence is a silly semantic dodge, as the stated intent of the entire GNEP program is to spend tens of billions of government dollars to tilt the playing field in favor of reliable cost-effective electric power generation with acceptable proliferation and environmental risk.

What other plausible justification can there be for launching such an ambitious and costly taxpayer-funded effort to deploy new civil nuclear technology? The fact that these facilities may be developed and/or operated for DOE by private contractors to the Department cannot disguise the fact that the costs of GNEP electricity will be borne largely or entirely by federal taxpayers, and that this will result in highly-subsidized public power generation unable to compete in the commercial marketplace for decades, if ever.

One purpose of the skewed analysis proposed in the January 4 NOI appears to be bolstering GNEP as a plausible long range energy supply alternative while also truncating the scope of the PEIS *to avoid head-to-head comparisons between GNEP and a representative range of feasible, practical, and timely electricity supply alternatives*, including less technologically demanding and less costly nuclear fuel cycle options, and a host of non-nuclear alternatives.

By indulging in such verbal chicanery, DOE apparently is seeking to avoid an acknowledgement of GNEP's role as a candidate electricity generating technology, and hence the *legally mandated comparison with a reasonable range of plausible, available, safer, cheaper, and environmentally sustainable technologies for supplying equivalent energy services to the public.*

³ Of course, only the process of fissioning nuclear fuels in a reactor is free of carbon emissions. The process of mining, concentrating, and enriching nuclear fuels, processing, packaging, and transporting nuclear wastes, and building and decommissioning reactors made of carbon intensive steel and concrete all involve substantial emissions from the burning of fossil fuels.

IV. Areas of Analysis that DOE Must Explore.

NEPA is clear in its well-established mandates. NEPA characterizes environmental impacts broadly to include not only ecological effects, such as physical, chemical, radiological and biological effects, but also aesthetic, historic, cultural, economic, and social effects. 40 CFR § 1508.8. NEPA requires an agency to consider both the direct effects caused by an action and any indirect effects which are reasonably foreseeable. Effects include direct effects caused by the action and occurring at the same time and place and indirect effects caused by the action, but later in time or farther removed in distance, but still reasonably foreseeable. 40 CFR § 1508.8

NEPA directs that DOE take a “hard look” at the environmental impacts of its proposed program and compare them to alternative means of fulfilling the same purpose and need for agency action that may avoid or mitigate environmental harms or risks posed by the Proposed Program. “What constitutes a ‘hard look’ cannot be outlined with rule-like precision, but it at least encompasses a thorough investigation into the environmental impacts of an agency’s action and a candid acknowledgement of the risks that those impacts entail.” *Nat’l Audubon Soc. V. Dept of the Navy*, 422 F.3d 174, 185 (4th Cir. 2005).

In taking the “hard look” required by law, DOE must therefore address all the reasons why large numbers of independent experts and commenting parties, including NRDC, believe that the GNEP vision is uneconomic, unreliable, unsafeguardable, unsafe and ultimately unworkable. In discussing and comparing the proposed GNEP vision and a range of reasonable alternatives, including the current once-through LEU and alternative thorium fuel cycles, DOE must address each of these issues: economics, reliability, safeguardability, safety and whether the alternative is likely to be workable in a real world context.

a) Economics. DOE must set forth in detail what is currently known about the economics of liquid metal fast reactors and plutonium-based mixed-oxide fuel fabrication plants. There is ample historical data, *e.g.* the cost of the French Superphenix reactor, to demonstrate that commercial –scale liquid metal fast reactors will cost substantially more than conventional LWRs. Similarly there is ample worldwide data on the cost of reprocessing and MOX fuel fabrication plants to compare the cost of various closed and open fuel cycle alternatives. At a minimum, DOE must present the economic cost comparisons of the alternatives, similar to the cost-benefit analysis in the Programmatic Environmental Impact Statement for the Liquid Metal Fast Breeder Reactor Program. This document, prepared by DOE’s predecessor agency in the mid 1970’s, was the analysis prepared the last time the Federal Government tried to promote the wide-spread use of liquid metal fast reactors—then for the avowed purpose of using plutonium breeding, rather than actinide transmutation, as the economic rationale for closing the fuel cycle.

b) Reliability. DOE needs to set forth in detail what is known about the reliability of fast reactors built previously around the world, and explain why these fast reactor development efforts were failures (or assert otherwise) in the United States, the United Kingdom, France, Germany, Italy, Japan, Soviet Union/Russia, India, and in two navies—the U.S. Navy and the Soviet Navy. This discussion should address each of the roughly 34 fast reactors that were operated, the German SNR-300 (“Kalkar”) and the Italian PEC reactors that were cancelled during advanced stages of construction.

c) **“Safeguardability” and Vulnerability.** Some nuclear fuel cycles are more “proliferation resistant” than others. DOE proposes to engage international partners, including at least one (*i.e.*, Japan), or more non-weapon states to develop various bulk-handling facilities – *e.g.* reprocessing plants, MOX-type fuel fabrication plants and facilities for storage of separated plutonium-transuranic fuel mixtures – to implement the GNEP “vision” of a limited number of “nuclear fuel-cycle states” supplying cradle-to-grave nuclear fuel services to a larger number of nuclear consuming nations. Thus non-weapon states other than Japan may join the GNEP, or once stimulated by GNEP may engage in similar R&D and deployment activities.

Large commercial bulk-handling facilities for nuclear materials, and some of the R&D facilities, could not meet the International Atomic Energy Agency’s (IAEA) timeliness detection goal (the “timely warning” of theft or diversion criterion) if were they built and operated today. DOE must analyze both the state-sponsored and non-state threats of fissile material diversion from the proposed GNEP R&D and commercial facilities, and compare them with alternative fuel cycle options.

Specifically, one matter deserving of a “hard look” analysis under the GNEP scheme is the IAEA’s Significant Quantity (SQ) value for plutonium, currently set at 8 kilograms. This value is technically erroneous and too large by a factor of about 2.7 to 8, given that a one-kiloton pure fission device can be made with about 1-3 kilograms of plutonium, depending on the technical sophistication of the weapon’s designers and builders. DOE must discuss the implications of continuing to operate with erroneous SQ values if the GNEP vision is pursued or implemented.

The safeguards discussion also must address which mixtures of plutonium fission products and actinides that may be present in alternative fuel cycles under consideration are direct-use weapon materials, and which are not self-protecting. This discussion should provide best estimates and uncertainties regarding the amounts of such materials and their explosive potentials.

Leaving some transuranics and fission products mixed with plutonium does not solve the State-threat proliferation problem, since non-weapon states engaging in reprocessing and transmutation activities will have hot cells, reprocessing plants, large stocks of plutonium and cadres of experts trained in actinide chemistry and plutonium metallurgy. Thus DOE should compare the “state-sponsored” proliferation threat for all the proposed and all reasonable alternative fuel cycles. Separately, we believe, DOE must compare the non-State, including terrorist, proliferation threat for the proposed and all reasonable alternative fuel cycles.

d) **Health and Safety Risks.** Given the extremely poor reliability and safety record of fast reactors in the United States and worldwide, the DOE must compare the risk to nuclear workers and the public in a world where every second or third reactor is a fast reactor to a world where the reactor mix is predominantly thermal reactors as it is today. What have been the main historical failure modes for fast reactors, and how does the proposed new class of “fast burner reactors” eliminate or minimize these past failure modes. What failure modes will remain an inherent risk of the design going forward, and what are the consequences of a range of reasonably foreseeable accidents, ranging from those of relatively high probability and low consequence – *e.g.* sodium leaks, spills, and minor fires – to those of low probability and high consequence, such as a partial core

melt and breach of containment leading to a major release of radionuclides into the environment.

e) Overall “Workability” Assessment. In a deregulated utility environment, either the U.S. taxpayer would have to heavily subsidize the fast reactors with production tax credits, or the federal government would have to order nuclear generating companies to build them (and then pay those companies the differences in costs). Similarly, for safety and security reasons, the Federal government would likely have to federalize the entire back-end of the closed fuel cycle including reprocessing plants. This uneconomic, unreliable, unsafeguardable and unsafe fuel cycle would have to flourish and be sustained for over 100-plus years. As part of any meaningful hard look at this “vision,” the DOE must explain specifically how the GNEP vision will come to pass given the economic performance and unreliability of fast reactors and reprocessing to date.

f) Political Risks. Finally, what happens if the political aspects of the GNEP “vision” fail to gain international acceptance, but its plutonium fuel-cycle technology continues to develop and spread? It is not only “reasonably foreseeable” in NEPA terms, but even likely that the overarching GNEP “vision,” dividing the world into a small number of civil nuclear “haves” servicing a much larger number of dependent nuclear “have-nots,” will fail politically. The existing nuclear nonproliferation treaty regime, already stressed to the breaking point by the unstable political division of the world into “Nuclear-Weapon-” and “Non-Weapon-States,” is not likely to endorse replication of this invidious arrangement in the civil nuclear sector. NRDC believes that if the currently proposed GNEP program is adopted, funded and pursued around the globe, the most likely outcome will be the spread of sensitive nuclear fuel cycle technologies and the training of cadres of experts in actinide chemistry and plutonium metallurgy in non-weapon states. The PEIS must discuss the proliferation risks associated with such a reasonably foreseeable end result, especially in light of the historical precedent of the U.S. government’s naively misguided “Atoms for Peace” program of the 1950’s and 1960’s, which provided fissile materials technology and training to a number of states that subsequently developed, or secretly proceeded down the critical path to developing nuclear weapons.

Finally, while the Department undoubtedly realizes its NEPA analysis responsibilities with respect to all forms of nuclear waste that could be generated by the GNEP program over a reasonably foreseeable time period, say 50-100 years, we reiterate here that DOE must analyze all the environmental impacts to air, land and water and the risks entailed by its proposed long-term program for reprocessing of spent fuel, including the impacts and risks associated with long-term storage and disposal of large quantities of radioactive materials at reprocessing facilities, and the subsequent processing, packaging and storage of separated high-activity fission products on the surface for many decades pending permanent disposal.

We note that the January 4, 2007 NOI mentions that the GNEP-PEIS “will assess appropriate storage alternatives for the recycling facilities,” including “storage of spent fuel prior to recycling as well as storage of waste generated from recycling facilities.”⁴ We believe it is inappropriate and misleading to term these facilities “recycling” and opposed to “reprocessing” facilities – their name for the last 50 years – because there is as yet no showing that the reprocessed material

⁴ 72 Fed. Reg. at 335.

would actually be recycled. Indeed, the vast majority of plutonium extracted from spent fuel to date worldwide has not been "recycled," but rather stockpiled or used in military programs.

We also note that nuclear waste storage capabilities were not explicitly included as a required category for description and analysis in DOE's original Funding Opportunity Announcement or the Detailed Site Reports due to be submitted soon by the various commercial and public consortia awarded study grants as candidate sites for GNEP facilities. Thus there is a serious discrepancy between the site-specific data solicitation process, which omits nuclear waste storage as an essential criterion, and the announced scope of the PEIS, which includes it. Indeed we think it unwise that the Department has pursued a GNEP site qualification/screening process that appears to be taking place in parallel with, rather than within, the NEPA process.

The Department must also specifically consider the environmental impacts and risks posed by a scenario in which it embarks on large-scale reprocessing (e.g. 2,500 MTHM/year) and the subsequently envisioned fast reactor transmutation fuel cycle never materializes, leading to a vast accumulation and prolonged storage of reprocessed contaminated uranium and transuranic materials in surface storage. And the Department must consider Hardened On-Site Storage (HOSS) of spent fuel as an alternative to reprocessing, with and without the assumed option for future long-term isolation at DOE's planned Yucca Mountain Repository or alternative sites for deep geologic disposal.

V. In Seeking to Evaluate Competing Candidate Sites for Specific Proposed GNEP Facilities, Before Having First Identified and Considered All Reasonable *Programmatic Alternatives* to accomplish DOE's Purpose And Need For Action, the Current NOI Points Toward a Process that Would Violate NEPA..

DOE's attempt to compress the NEPA analysis of both broad programmatic and site-specific alternatives within the confines of a single document and decision process is a bridge too far, and must be abandoned. Including detailed site-selection for specific multi-billion facilities desired by GNEP's industrial and government promoters, within the same NEPA process and Record of Decision that is supposed to objectively determine the final contours, components, and timeline of the overall GNEP program, fatally compromises the integrity of the NEPA analysis supporting the broad programmatic decision.

Detailed site selection for specific facilities at this stage obviously presumes and indeed requires a *particular set* of outcomes that will serve to influence, prejudice and predetermine the results of the broad programmatic analysis, which may or *may not* correspond to the content and timescale of the program as currently designed. NEPA analyses supporting specific facility siting decisions must await the determination of an overall *GNEP Program*, which must be supported by a valid PEIS and Record of Decision. Moreover, while information about the affected environments at proposed sites, and the aggregate environmental impacts of currently proposed GNEP facilities, is clearly useful in broadly assessing the environmental impacts of various reasonable programmatic alternatives, there is not enough information known at this stage about the individual GNEP facilities to conduct a valid comparative siting analysis for each type of facility.

DOE is attempting to put the politically pork-laden cart full of GNEP facilities before the horse of broad programmatic analysis of objectively reasonable program alternatives, with the transparent intent of using the former to influence the conclusions of the latter.

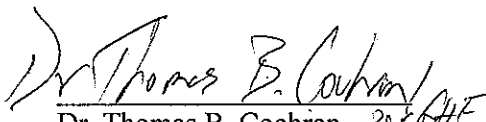
This approach is unacceptable from the NEPA legal perspective, and violates common sense notions of objectivity, fairness, and due process. We and others are highly likely to resist it, and to seek judicial redress in the event DOE does not revert to an orderly and appropriate "tiering" of NEPA programmatic and subsequent site-specific documents. Appropriate tiering and sequencing of NEPA decision making will allow, as the law intends, full and fair consideration of broad program alternatives to proceed without having to cope with hidden influences bent on justifying particular locations for future multi-billion dollar GNEP facilities whose utility and cost-effectiveness have yet to be established.


It is of course within the discretion of the Department as to how it goes about remedying the many serious deficiencies we have noted in these comments, but given the extent of these deficiencies and the century long timetable of the GNEP program, we feel there is no pressing urgency to launching the program in 2008 year rather than 2009 or 2010, and no substantive penalty for not doing so, as DOE is continuing to conduct relevant fuel-cycle research independently of the decisions to be supported by the proposed PEIS.

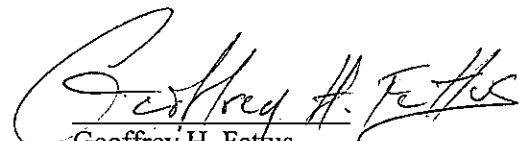
We therefore strongly recommend that the current *Notice of Intent* be withdrawn, substantially revised in line with these and similar public comments received, and then reissued for an additional 90 days of written public comments. This will ensure that all parties have done their utmost to avoid misunderstandings that could result in costly and time-consuming litigation. Such a step would also afford the Department additional time to consult with the Congress, other agencies, and the public regarding the broad national objectives it is seeking to meet with the GNEP Program, and to examine possible alternative means of achieving them that have not been seriously considered to date.

Just prior to the original date that these comments were due, the Department announced that the public comment period has been extended. NRDC may submit additional and/or revised comments based on new information that may be disclosed between now and the new comment deadline of June 4, 2006. However, in the interests of comity and a timely clarification of views between DOE and its stakeholders, we are providing these comments now for your review. If you have any questions, please do not hesitate to contact us at (202) 289-6868. Thank you for considering our views on these important matters.

Sincerely,


Dr. Thomas B. Cochran
Director, Nuclear Program


Christopher E. Paine
Senior Analyst


Geoffrey H. Fetfus
Senior Project Attorney