

December 2, 2021

Comments to the White House Environmental Justice Advisory Council (WHEJAC) from Council on Intelligent Energy & Conservation Policy (CIECP) and LEAF (Legal Environmental Advocacy Fund) of Hudson Valley re EPA-HQ-AO-2021-0683

Submitted via email to: whejac@epa.gov

Dear WHEJAC:

Our organizations, which are based in New York, wish to express our profound gratitude – and frankly sense of relief – for the outstanding work done to date by the White House Environmental Justice Advisory Council (WHEJAC or Council). We fully support the findings of the Council’s May 21, 2021 report (WHEJAC Report), especially the noted following examples of recommendations:

- *All Investments: Must do no harm to EJ Communities.*(WHEJAC Report, p 57)
- *100% of investments must do no harm to Environmental Justice communities. We want 100% Justice; it would be unreasonable to have any climate investment working against historically harmed communities. To that end we acknowledge the Justice40 to be the floor not the ceiling, 40% should not be seen as a cap but as a starting point.* (WHEJAC Report, p 57)
- *Maximize economic, environmental, and public health co-benefits.* (WHEJAC Report, p 57)

Our organizations also applaud the effort of the President Biden to elevate environmental justice as expressed in the Executive Order on Tackling the Climate Crisis at Home and Abroad (EO 14008). However we are dismayed by the failure of the values enunciated therein to be adopted by the Nuclear Regulatory Commission (NRC) and the Department of Energy (DOE).

A large part of the problem appears to be the fact that the NRC and DOE are agencies with origin roots in the production of atomic weapons (the original “Manhattan Project”) and which developed into their present forms during the height of the Cold War and in an era when expansion of power plant construction was the preeminent objective of energy policy.

But the frameworks and paradigms of the 20th-century are ill-suited to meet the needs and avert the dangers presented by the 21st.

There is urgent need for a change in mindset. The United States can no longer afford for the decision- and rule-making of agencies to ignore the impacts and risks presented by biodiversity eradication; climate change; deteriorated infrastructure; extreme weather conditions; natural disasters; social injustice; and national and global security, including cybersecurity.

Given the composition, history, and structural obstacles which challenge the NRC and DOE – including limitations which derive from their imposed design – we ask WHEJAC to strongly

advocate for the creation of mechanisms which could present a check upon unjust and potentially disastrous schemes.

The most immediate need is for multi-disciplinary experts independent of industry to be incorporated into Executive Branch oversight of the NRC and DOE. As things now stand, the NRC and DOE are principally funded and primarily dedicated to promote nuclear-related activities. This reality is little known and – to our knowledge – is nowhere being communicated by the Federal government to the American public.

This failure of candor, in and of itself, is counter to the values of transparency and democratic governance advocated by the Biden Administration.

We know that many cases of inequity, egregious injury, community despoliation and environmental crimes have been brought to WHEJAC's attention, and that many of your own members have stood at the vanguard of the national fight to protect the environment, civil rights, and public health. But we implore WHEJAC not to let the important issue of nuclear get buried under the morass in your effort to advocate for environmental justice to, at long last, be taken seriously by the Federal agencies.

At issue with nuclear is not just the horrific legacy of uranium mining and milling, sickened people, radioactively contaminated facility sites, despoiled waters, weapons of mass destruction proliferation, and the deadly inventory of high-level nuclear waste. At issue is the creation of the *future* disastrous legacy over which we are likely to have even less control.

This is where the imperative for broad integrated consideration of the aggregate aforementioned perils of our current century comes into play. We cannot evaluate technologies – much less energy technologies – as if they exist in a vacuum separate from interactions with ecosystems, extreme weather conditions, the challenge of crumbling infrastructure, the allostatic loads born by polluted communities, and the de facto disenfranchisement of low-income and minority communities. Nor can we properly evaluate security hazards without consideration of terrorism (domestic and international) and emerging threat capabilities posed by cyber, drones, and artificial intelligence.

Yet there is no agency apparatus within the Federal government which conducts such assessments. Instead we have the NRC and the DOE which, with respect to the nuclear enterprise, focus with unwavering dedication on the granting of licenses to the nuclear industry and enabling the maintenance or disposal of nuclear waste. There are many good and brilliant chemists, engineers, physicists, materials scientists, and other staffers within these agencies. The problem is the very limited disciplinary expertise brought to decision-making and the outmoded design and mission of the bureaucracies within which they operate. Tasking the NRC and DOE to better incorporate environmental justice is not a bad thing, but it will not have an appreciable impact until and unless these agencies are substantially overhauled and redirected.

Thus we argue the instant need for a mechanism which would allow truly independent and inter- and multi-disciplinary actors to exert agency before permanent decisions allowing the promulgation of at least new civilian nuclear activity to proceed, especially where outcomes could be irreversible.

Examples of such activity involve two proposed high-level nuclear waste dumps in the majority-minority states of New Mexico and Texas targeting low-income counties with majority persons of

color populations. Each proposed Consolidated Interim Storage Facility (CISF) is in the already heavily polluted Permian Basin.

Notably, going forward with the CISF scheme would create a new and staggeringly massive public subsidy of the nuclear industry. Stripped down to its foundation, the scheme is an uncapped tax. The scheme is being aggressively promoted by the nuclear industry as a way to get more public funding, transfer their liability to the DOE (i.e. the U.S. taxpayer) and enable continued production of nuclear waste in the absence of a deep geologic repository.

In public hearings and NRC dockets numerous public interest, public health, environmental, environmental justice, and Native American groups and individual citizens described the ethics of creating a large nuclear waste dump in a region already stressed by toxicity. (See, e.g., Alliance; Beyond Nuclear; Lodge; Mermelstein; Morgan; Taylor.)

Many public commenters have stressed the grossly unethical nature of turning areas of the southwest into nuclear “sacrifice zones.”

Our groups very much share these concerns, and want to emphasize the added immorality of constantly targeting Native American lands and communities of color as sites for the continual dumping of harmful and dangerous materials.

Permitting the nuclear industry to expose millions of Americans to excess levels of radioactivity along the many routes of transport is also morally infeasible. As experts, including those of the National Academies have noted, women, adolescents, children, girls, pregnant women, infants, and babies *in utero* are particularly vulnerable to the effects of toxins and radioactivity (Landrigan; Makhijani a; Makhijani b; Mothersill).

Americans living near highway and rail transport routes – very often families of lower-income and persons of color – would be most exposed to excess radioactivity as a matter of ordinary course during the many decades-long envisioned transport regime. The elevated risk of cancer, developmental disorders, immune system injury, and other radiation dose exposure-linked health effects is likely to be consequential at a population level. Low income populations are likewise especially vulnerable, as the members of those communities endure elevated levels of toxic exposures overall, suffer greater health impairment, and have less access to care than others in the general population.

Neither these concerns nor the opposition of the states of New Mexico and Texas appear so far to have prevailed upon the NRC. In its environmental impact analyses for both sites, NRC staff acknowledged the proximity of environmental justice populations and duly itemized the plethora of mining, chemical and oil and gas operations in the Permian Basin, as well as other existing and planned nuclear facilities (NRCa and NRCb). But the NRC shrugged off potential negative environmental, health, and environmental justice impacts using the astonishing logic that, given all the other extractive and industrial operations in the region, the added contribution of nuclear waste would be negligible. The NRC further dismissed potential severe risks with the circular reasoning that the NRC and state regulatory schemes would prevent their occurrence. (This particular syllogism deserves special appreciation for both its utter disregard of all past regulatory failures and its assumption that all future regulation will be marvelous.) The risk of impacts of climate change in New Mexico and Texas, like excessive heat, drought, water stress, and brush fires; concerns over subsidence, sinkholes, and earthquakes were also all summarily dismissed. Security threats are purportedly being analyzed in separate documents deemed too

sensitive to reveal to the public – begging the question: If security risks are of such concern as to need to be completely hidden from the public, how can these sites be pronounced safe?

How the NRC and DOE would allow the dumping of the nation's existing high-level commercial nuclear waste – the largest inventory of commercial spent fuel in the world – upon two minority communities already heavily burdened by unduly heavy toxic loads and climate stress, presents a textbook case of environmental injustice. **But the larger point we emphasize here is that the NRC and DOE should not be making these decisions.**

In fact no agency has the ambit or expertise capable of addressing the complex, massive and scopic, and enduring spectrum of issues implicated in continued reliance upon nuclear power and the expansion of its full fuel cycle. Climate policy, climate hazards, corporate corruption, economics, ecosystem impacts, public health consequences; safety, social and racial injustice, homeland security, proliferation, and undue influence – all of these subject areas are directly and tightly linked to this technology.

Nuclear power *uniquely* is a technology with the capacity to wipe out a large geographic region of the nation on a very bad day. In this regard it should be noted that the Chernobyl nuclear disaster rendered an area of 1,000 square miles uninhabitable, with radioactivity at continued risk of release from climate-change-driven drought and wildfires (Ager; Picheta; Sandford; Stone; Varenikova). The nation of Japan was spared a similar result from its Fukushima-Daiichi disaster in 2011 by the “westerlies”, winds which blew 80% of the radiation released in the initial period of the accident out into the Pacific Ocean, as well as by mountains which blocked movement of radioactive plumes. But, as with Chernobyl, Mother Nature and the longevity of radionuclides mean the Fukushima event is continuing (Bressan; Buessler; Denyer; Dorfman; Greenpeace; Jiji; Marks; Steiner; Yamashita).

Nuclear power *uniquely* is a technology that requires the public to assume what could be trillions of dollars in financial risk. The unpublicized reality of the nuclear power industry is that, since its very inception, its profits have been privatized while its risks have been socialized (Cooper b; CRS; Hargreaves; Romm; Schumacher; Von Hippel). Nuclear not only is heavily subsidized through Federal R&D, tax breaks and direct corporate welfare, it is enabled to transfer the bulk of its accident risk onto the taxpayer via the Price-Anderson Act.

Price-Anderson was enacted in 1957 as just a temporary measure to entice the private sector to enter the nuclear industry, then in its infancy.

Dexter J. Peach, then Director of Energy and Minerals Division at the U.S. General Accounting Office, rather ironically synopsized the issue in written testimony to Congress in 1981:

The Price-Anderson Act not only covers DOE nuclear facilities but is probably unique in its application of what is commonly referred to as ‘umbrella coverage.’ In addition to covering prime contractors responsible for operating the facilities within the DOE nuclear energy complex, the act also covers subcontractors, vendors, suppliers, architect-engineers and transporters who perform work in connection with a particular prime contractor’s nuclear activity. Moreover, the act even covers past work that could cause an accident at some future date. Thus, the contractor who performed past work would be covered even though there is no existing contract. ... This coverage applies equally to both nuclear facilities licensed by the Nuclear Regulatory Commission (NRC) as well as those operated for the DOE by private contractors. (Peach, pp 1-2)

This broad liability protection given in 1957, Peach went on to aver, was still needed in the 1980s because neither the insurance industry nor the nuclear industry was willing to assume the risk. In Peach's words:

*For example, catastrophic nuclear accidents causing severe public consequences could still occur; sufficient private insurance to cover such consequences is still unavailable; and ... **it appears that private industry is still unwilling to assume the risks of such accidents without the kind of financial protection the act now provides.***

(Peach, p 3, emphasis added.)

But the "temporary" problem Price-Anderson was initially envisioned to resolve was never resolved. More than six decades later, neither the private insurance industry nor the nuclear industrial enterprise (comprised in no small part by multibillion dollar DOE contractors and specialty vendors), are inclined to assume full liability. As former NRC Commissioner Victor Gilinsky observed in 2020:

If you accept the NRC accident estimates, the risk the vendors would run without an exemption from liability would be very small, and likely a lot smaller than other corporate risks they routinely run. What is clear is that the nuclear firms—the largest of which possess an understanding of nuclear safety far beyond that of the public—do not believe the NRC safety conclusions that the risk of a catastrophic nuclear accident is infinitesimal. Nor do they accept that probable risk—probability of an accident times the consequences, were one to occur—as the right measure of risk to their companies. They don't want to risk their companies, period. (Gilinsky.)

Likewise, the cost of final disposition and safeguarding of nuclear waste has been imposed upon the American public via the Nuclear Waste Policy Act of 1982, as amended in 1987. Hence the rush of the nuclear industry to get CISFs up and operating. The full cost of nuclear waste has never been assessed and it is studiously ignored in Federal environmental impact reports.

Because of its tight connection with nuclear weapons and atomic proliferation, nuclear power represents an existential threat to humanity. One might argue that this risk is worth taking if, at least in the near term, nuclear power would actually avert or mitigate the existential threat of climate change.

But, nuclear is a false solution. Nuclear power is not clean. Nuclear power is not sustainable. Nuclear power is not carbon free. Nuclear power is a highly-polluting form of power, producing prodigious amounts of long-lived radioactive waste, heat, and greenhouse gases throughout its entire full fuel cycle.

To begin to understand the fallacy of promoting nuclear in the name of the climate, one must first recognize a key feature of why greenhouse gas emissions (GHGs) are a pollutant. While other kinds of pollution (like chemical spills) stay more or less within a geographic region, GHGs pollute not because of where they sit, but because they rise into the atmosphere and alter atmospheric conditions. From a planetary climate change perspective, it is entirely irrelevant where a GHG emitter is located.

Therefore climate change analysis of every form of energy generation – and even every energy efficiency technology – must take into consideration all emissions generated throughout the

entire fuel cycle. If one stage of a particular cycle produces minimal carbon, but every other stage produces prodigious amounts, that industry is a big climate change polluter.

Nuclear power involves extensive greenhouse gas production. Nuclear power is actually a chain of highly energy-intensive industrial processes which – combined – consume large amounts of fossil fuel. These include:

- Uranium mining
- Milling
- Enrichment
- Fuel fabrication
- Transport
- Construction and maintenance of all of the industrial structures, especially nuclear reactors
- Daily emissions radioactive CO₂ and methane
- Environmental remediation of closed nuclear facilities
- Disposal and burial of voluminous amounts of so-called “low-level” nuclear waste (all the structures and components and materials which are contaminated, but not themselves spent fuel)
- On-site containment of high-level nuclear waste
- Disposition of high-level nuclear waste and contaminated equipment, including the construction and maintenance of all waste depositories for millennia.

With regard to the mining component of the fuel cycle, it is noteworthy that the fissile form of uranium – U-235 – is found in less than 1% of natural ore. It takes a ton of mined uranium ore to yield just 1 to 4 pounds of the yellowcake that then needs to be converted and then enriched. In 2020 in the U.S., about 48.6 million pounds of uranium were loaded into commercial nuclear reactors (EIA). Uranium ore is a finite resource which is energy intensive to excavate and process.

The creation of new carbon during normal plant operation has been effectively ignored in regulation. This point must be emphasized: While burning of fossil fuels releases sequestered carbon, **nuclear fission creates new carbon – carbon that never existed in nature.** Nuclear plant carbon generation is described in a 2010 Electric Power Research Institute (EPRI) technical report titled “Estimation of Carbon-14 (C-14) in Nuclear Power Plant Gaseous Effluents”, (EPRI). In Boiling Water Reactors (BWRs), radioactive carbon is released from the core in volatile form such as CO-14, CO₂-14. In Pressurized Water Reactors (PWRs), EPRI states: “Carbon-14 is produced in the reactor coolant during power operation, and its production rate increases during the fuel cycle due to increasing neutron flux and ingress of nitrogen. ... Analyses of pressurized PWR reactor coolant samples shows that the ¹⁴C species are essentially 100% organic, and ~50% of the coolant activity is a volatile species (most likely methane).” (EPRI, Chapter 4, p 1) Most of the C-14, according to EPRI, is released to the atmosphere via plant venting.

Notably C-14 has a half-life of 5,700±30 years. And, of course, it is a *radioactive* form of carbon meaning its emissions are quite pertinent to ecosystem and human health, as carbon is readily incorporated into plants, wildlife, and human tissue, where its beta decay can destructively target cells. “Carbon-14 is easily transferred during biological processes and soil-plant interactions involving carbon compounds. The metabolism and kinetics of ¹⁴C in the human body follow those of ordinary carbon. Inhaled ¹⁴CO₂ rapidly equilibrates with the air in the lungs and enters many components of body tissue. The biological half-life of ¹⁴C is approximately 40

days.” (IAEA, p 3) The level of atmospheric and liquid releases of carbon-14 over the decades from reactors is unknown due to lack of monitoring, but, as noted by expert groups, the contribution to the collective dose of time may be substantial (McCartney a; McCartney b; NAS).

What to our knowledge is utterly unanalyzed by any governmental entity, is the additional gas effluent composition created by the increasing use of high burnup nuclear fuel. High burnup fuel began to be used at U.S. reactors about a decade ago and is hotter and far more radioactive than traditional fuel. Current industry plans are to increase levels of burnup, which could elevate levels of C-14 generation.

Aside from contributing to carbon emissions, nuclear power exacerbates climate conditions through its impact on water. Water resources are a serious and growing concern. And nuclear power plants impose a heavy burden on river, lake and marine systems. Even *aside* from their radioactive discharges into rivers, lakes, oceans and groundwater, and aside from the direct fish and other aquatic life killed due to impingement on the screens of reactor cooling intake systems, is the impact of heat plumes. Thermal pollution represents an especially negative impact in a warming world. A typical nuclear reactor dumps billions of BTUs of heat into source waters. (See Witherspoon for infrared photo of the thermal plume emitted by the Indian Point nuclear power plant into the Hudson River.) Choices should also be made with serious consideration of the changing weather patterns and strains on the environment climate scientists say nature will increasingly present. Prime among these is water stress. And nuclear is unquestionably the largest user of water among all the available forms of power (Avery; D’Orico; Gunter; Koplou; Krier; Sovacool b; UCS).

If the objective of the policy is to protect people and the environment while mitigating the effects of climate change, the full degree to which reactors may exacerbate climate change or be rendered more dangerous by its conditions must be taken into consideration (Brown; Chen a; Chen b; D’Agostino; Dorfman a; Jenkins). A proper analysis necessarily includes the totality of the GHGs and harmful radioactivity reactors and waste cumulatively have and will contribute to the atmosphere from their full fuel cycle. A proper analysis necessarily includes the totality of nuclear power’s deleterious effects on water and aquatic life. A proper analysis must account for the cost and risk of radioactive waste, with due consideration of the serious ethical issues that arise from continuing to produce a product which will remain dangerous and lethal for longer than human civilization has existed. And a proper, honest analysis must reasonably consider the interactive and synergistic effects toxic emissions pose to ecosystems and human beings increasingly vulnerable due to other pollutants and the climate.

No U.S. Federal body conducts these types of analyses. Nor has any Federal or Congressional entity ever looked at the full financial cost imposed by nuclear power upon the American public.

Particularly astonishing at this point in time, is the failure to account for the staggering opportunity cost of nuclear. Nuclear is a costly bridge to dead end. Every public dollar wasted on nuclear, is a dollar that is not spent on far cleaner, safer, and more ethically just ways to meet energy demand (Bradford; First-Arai; Cooper a; Cooper b; Diesendorf; Jacobson a; Jacobson b; Judson; Lovins a; Lovins b; Mez; Porritt; Ramana a; Ramana b; Rueter; Schneider; Sovocool a; Smith; Vetter).

Finally, but perhaps most critically, the ability of a fully informed public to exercise control over their government is the cornerstone of democracy. All else, including attainment of environmental justice and social equity, rests on this. Nuclear is inherently inimical to a properly functioning democracy. By its very nature, nuclear power requires large companies to run it. By

its very nature, nuclear and the regulatory regime which promotes it are inordinately complex and barely understood by government officials outside its insulated inner circle, much less the average citizen. By its very nature, nuclear involves a great degree of secrecy – which means much may be hidden from the public under the cloaks of “safeguards” and “proprietary” information. And then there is the incredible level of undue influence this industry has been allowed to exert over our body politic.

Nuclear is antithetical to the just, healthy and ecologically thriving future all who live in America deserve.

Uranium mines, nuclear reactors, and radioactive waste dumps do not get sited in affluent, politically powerful communities. We all know why.

With sincere thanks for your efforts,

The Council on Intelligent Energy & Conservation Policy (CIECP) and
LEAF (Legal Environmental Advocacy Fund) of Hudson Valley

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