BREAKTHROUGH INSTITUTE

May 28, 2024

Subject: Comment on "Kairos Power, LLC; Hermes 2; Draft Environmental Assessment and Draft Finding of No Significant Impact." [Docket ID: NRC-2023-0138].

The Breakthrough Institute (BTI) appreciates this opportunity to comment on the draft environmental assessment (EA) and draft Finding of No Significant Impact (FONSI) for the Kairos Hermes 2. BTI is an independent 501(c)(3) global research center that advocates for appropriate regulation and oversight of nuclear reactors to enable the new and continued use of safe and clean nuclear energy. BTI acts in the public interest and does not receive funding from industry.

We commend the NRC staff for their decision to begin its environmental review with an EA instead of a full environmental impact statement (EIS). Doing so is in line with the NRC's Efficiency Principle of Good Regulation. Advanced reactors are expected to pose fewer and smaller negative impacts on the environment than other sources of energy.[1] The long-term benefits (positive impacts) of these reactors outweigh any short-term negative impacts. As such, EAs offer a less resource-intensive, time-consuming, and costly alternative means to satisfy the National Environmental Policy Act (NEPA).

As you well know, the Fiscal Responsibility Act of 2023 (FRA) included amendments to NEPA. There is now a threshold for when to use an EA: when the action by a federal agency "*does not have a reasonably foreseeable significant effect on the quality of the human environment, or if the significance of such effect is unknown.*" The NRC staff conducted a full EIS for Hermes 1[2] and found 'small' impacts for every considered category - where 'small' is the lowest of three ratings: 'small,' 'moderate,' and 'large.' Hermes 2 is intended to be built on the same site as Hermes 1. As such, it is appropriate that the staff decided to begin its environmental review with an EA instead of an EIS.

This decision is retrospectively supported by the staff's determination that "the potential direct, indirect, and cumulative environmental impacts from Hermes 2 would not be significant," and that a draft FONSI is appropriate. We concur with this finding.

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[1] For example, advanced reacotrs may use of inherent safety features that reduce potential impacts from postulated accidents, reduce radiation exposure to plant personnel during operation, or create lower waste yields. See Nuclear Energy Innovation and Modernization Act, PL No 115-439, Sec 3(1); Policy Statement on the Regulation of Advanced Reactors, 73 FR 60612, 60615.

[2] Environmental Impact Statement for the Construction Permit for the Kairos Hermes Test Reactor, Final Report, August 2023, https://www.nrc.gov/docs/ML2321/ML23214A269.pdf.

No-Action Alternative

In addition to the EA threshold, NEPA, as amended, now mandates consideration of the negative impacts of the "no-action" alternative:

> *...a reasonable range of alternatives to the proposed agency action, including an analysis of any negative environmental impacts of not implementing the proposed agency action in the case of a no action alternative, that are technically and economically feasible, and meet the purpose and need of the proposal.*

Instead of only considering impacts such as if construction will or won't happen on a site, or if cooling water will or will not be withdrawn from a nearby water body, this NEPA amendment requires the NRC to grapple with broader impacts of not building nuclear reactors. Such implications could include prolonging fossil fuel use and the serious public health, safety, and climate consequences involved.

To its credit, the NRC does broaden the traditional scope of its analysis of the "no action" alternative:[3]

> *The applicant could still build Hermes but would not have the ability to test elements of the Hermes 2 design absent from the Hermes design, such as the intermediate cooling loop. While forgoing the opportunities provided by Hermes 2 might not necessarily preclude future development of reactors using the KP-FHR technologies, it could slow or impede safe and efficient development of the technology.* [Emphasis added].

However, that is where this train of thought stops. The NRC then proceeds to discuss how adverse impacts from building Hermes 2 (though small) would not have occurred if the reactor were not built. What is missing is the recognition that slowing and impeding the safe and efficient development of the technology could have far-reaching environmental consequences. Nuclear energy will play a vital role in the transition to a clean energy economy, which is essential in order to effectively combat climate change. Impeding the development of new technologies can seriously harm and delay decarbonization efforts. These impacts should be addressed as part of the "no action" alternative, not only because it is consistent with the intent and letter of NEPA, but because these considerations are vital to effective decision-making.

[3] Environmental Assessment and Finding of No Significant Impact for the Construction Permits for the Kairos Hermes 2 Test Reactors, Draft Report for Comment, April 2024, https://www.nrc.gov/docs/ML2410/ML24103A002.pdf.

Additionally, the draft EA states that Hermes 2 will produce electricity, though it will still be categorized as a non-power reactor because "not more than 50 percent of the annual cost of owning and operating the facility is devoted to the production of materials, products, or energy for sale or commercial distribution." The electricity that is generated will offset generation from other sources, such as coal and natural gas. Offsetting these alternate electricity sources provides benefits (positive impacts) in the form of reduced health and environmental harm along the full life cycle, including mining, construction, and pollution.

BTI greatly appreciates the opportunity to comment on this Draft EA and Draft FONSI. We commend the decision to begin with an EA, which reflects the minimal environmental impacts of advanced reactors and their significant long-term benefits. While the analysis of the "no action" alternative needs to go further, the analysis done is more thorough than past environmental reviews. BTI looks forward to continued collaboration to ensure the safe and efficient development of nuclear technology.

Sincerely,

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