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# CLINCH RIVER NUCLEAR SITE ADVANCED NUCLEAR REACTOR TECHNOLOGY PARK PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT SCOPING REPORT

**Prepared by:**
TENNESSEE VALLEY AUTHORITY
Knoxville, Tennessee

June 2021

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## Abbreviations and Acronyms

| | |
|---|---|
| CEC | Categorical Exclusion Checklist |
| CRBRP | Clinch River Breeder Reactor Plant |
| CRN | Clinch River Nuclear |
| DOD | U.S. Department of Defense |
| DOE | U.S. Department of Energy |
| EIS | Environmental Impact Statement |
| EPA | U.S. Environmental Protection Agency |
| ESP | Early Site Permit |
| ESPA | Early Site Permit Application |
| EO | Executive Order |
| FEIS | Final Environmental Impact Statement |
| IRP | Integrated Resource Plan |
| kV | kilovolt |
| LWR | Light Water Reactor |
| MDCTs | Mechanical Draft Cooling Towers |
| MWe | megawatts electric |
| MWt | megawatts thermal |
| NEPA | National Environmental Policy Act |
| NOI | Notice of Intent |
| NRC | Nuclear Regulatory Commission |
| PPE | Plant Parameter Envelope |
| PEIS | Programmatic Environmental Impact Statement |
| PMC | Project Management Corporation |
| SMR | Small Modular Reactor |
| TDEC | Tennessee Department of Environment and Conservation |
| TL | Transmission Line |
| TN | Tennessee |
| TVA | Tennessee Valley Authority |
| TWRA | Tennessee Wildlife Resource Agency |

# 1.0 Introduction

The Tennessee Valley Authority (TVA) is beginning the preparation of a Programmatic Environmental Impact Statement (PEIS) pursuant to the National Environmental Policy Act (NEPA) to assess the potential environmental impacts associated with the construction, operation, and decommissioning of an advanced nuclear reactor technology park at the TVA Clinch River Nuclear (CRN) Site. TVA's project goal is to demonstrate new nuclear technology through the construction and operation of one or more advanced nuclear reactors at the CRN Site as shown in the CRN Project Site Layout in Figure 1. The CRN Site provides opportunity to evaluate and demonstrate the feasibility of deploying advanced nuclear reactors and to evaluate emerging nuclear technologies as part of technology innovation efforts aimed at developing future generation capacities.

This CRN Site Advanced Nuclear Reactor Technology Park Scoping Report (herein Scoping Report) describes the internal and public scoping for relevant issues relating to the CRN project and outreach conducted by TVA to notify the public. The Scoping Report also documents the input submitted to TVA by the public, organizations, and intergovernmental entities during the public scoping period.

## 1.1 Background

The CRN Site comprises 935 acres of TVA managed land in the city of Oak Ridge, Roane County, TN, which is adjacent to the U.S. Department of Energy's (DOE) approximately 33,000-acre Oak Ridge Reservation. In May 2016, TVA submitted an application to the NRC for an Early Site Permit (ESP) at the CRN Site for two or more new nuclear power units demonstrating small modular reactor (SMR) technology, with a total combined nuclear generating capacity not to exceed 800 megawatts electric (MWe). SMRs provide the benefits of nuclear power in situations where large nuclear power units (generally considered single units with approximate electrical output exceeding 1000 MWe), are not practical because of various constraints which may include transmission system limitations, limited physical space or water availability, proximity to population centers, constraints on the availability of capital for construction and operation, or other factors.

The ESP established early resolution of site safety and environmental issues, which provides predictability and stability in the NRC licensing process. In April 2019, the NRC prepared and released a Final Environmental Impact Statement (NRC ESP FEIS) to assess the environmental aspects of whether or not to issue an ESP to TVA. Following the NRC ESP FEIS determination in December 2019, the NRC issued an ESP to TVA. The ESP provides NRC approval of the suitability of the CRN Site for new nuclear power units, but does not authorize TVA to construct or operate a nuclear facility. The ESP is valid until December 2039. Prior to initiating construction or operation of advanced nuclear reactors at the CRN Site, TVA must apply for and receive additional licenses from the NRC.

In June 2019, TVA released the Final 2019 Integrated Resource Plan (IRP) and the associated IRP Final EIS. Among other things, the IRP identified the various generating resources that TVA intends to pursue to meet the energy needs of the Tennessee River Valley (the Valley) over it's the 20-year planning period. The 2019 IRP recommends that TVA continue to evaluate emerging nuclear technologies, including SMRs, as part of technology innovation efforts aimed at developing future electricity generation capabilities.

## 1.2 Purpose and Need

TVA's purpose and need for the CRN Site Advanced Nuclear Reactor Technology Park includes:

- Evaluate emerging nuclear technologies as part of technology innovation efforts aimed at developing future generation capacities. Evaluate and demonstrate the feasibility of deploying and operating advanced nuclear reactors to support TVA's mission of providing safe, increasingly clean, reliable, and low-cost energy to the Valley.

- Support TVA's 2019 Integrated Resource Plan (IRP) by continuing to evaluate emerging nuclear technologies as part of technology innovation efforts aimed at developing future generation capacities. The 2019 IRP identified the various resources such as emerging nuclear technologies, which TVA intends to pursue to meet the energy needs of the Valley over the next 20-year planning period, in accordance with TVA's mission.

- Consider a new nuclear technology park at the CRN Site to support TVA's innovation mission as another way to serve the people of the Valley.

These advanced reactors at the associated Advanced Nuclear Reactor Technology Park could support innovation towards a low carbon future for the Valley, including demonstration of technologies such as microgrids, grid resiliency, waste heat energy storage for grid support, and the intentional production of valuable isotopes.

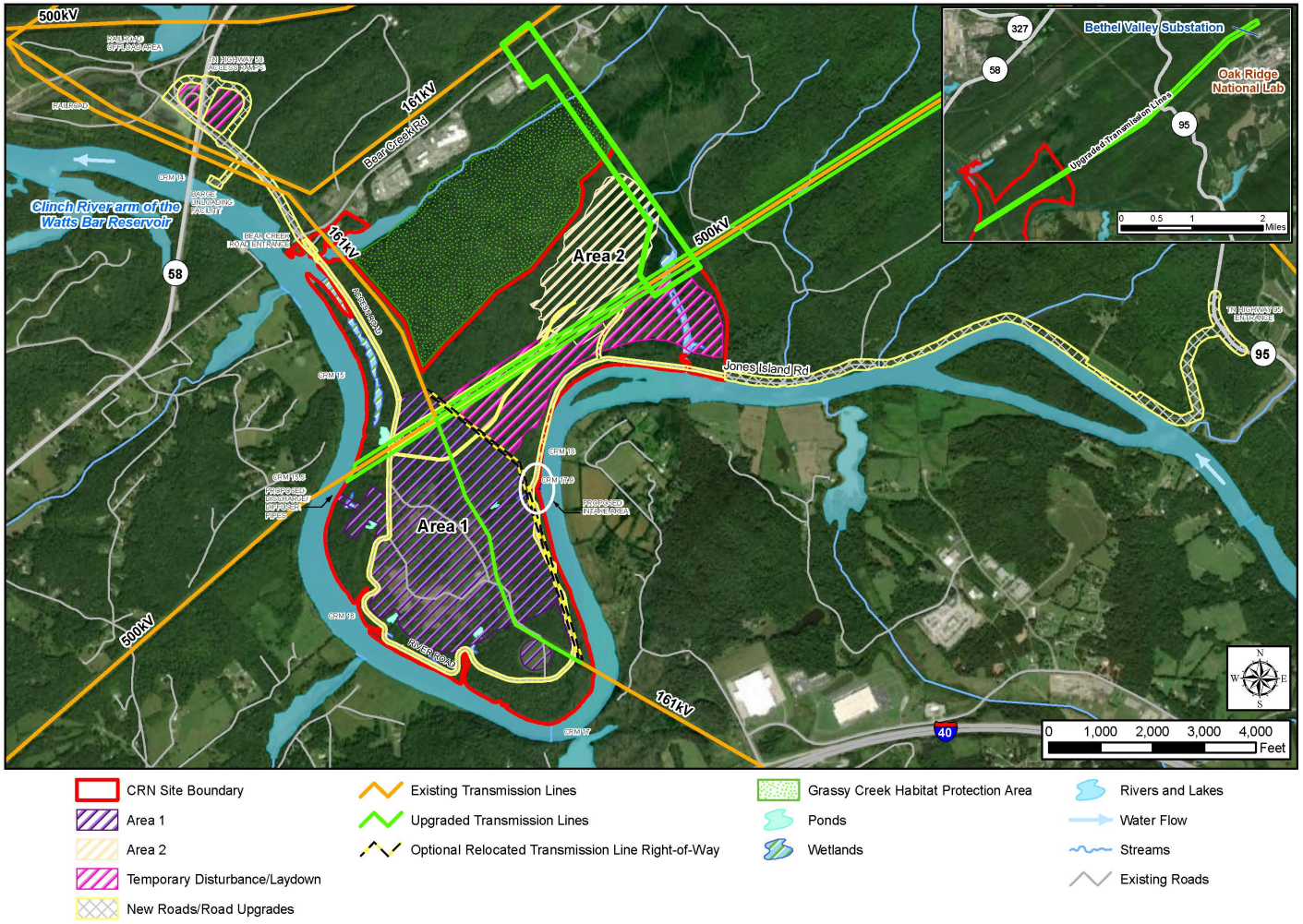



**Figure 1. Proposed CRN Project Site Layout**

## 1.3 Related Documents and Environmental Reviews

The following environmental reviews were prepared for actions related to the CRN Site:

- *Clinch River Breeder Reactor Plant (CRBRP) Environmental Report, prepared by Project Management Corporation (PMC), Volume I & II, 1982*. The CRN Site was selected as the location for construction of a liquid metal fast breeder reactor in 1972. Site preparation for the CRBRP began in 1982 and disturbed approximately 240 acres. CRBRP site preparation activities included leveling a ridge that originally reached 880 feet above mean sea level (msl) to 780 msl and excavation of an approximately 24 -acre area to a depth of as much as 100 feet, resulting in excavation of approximately three million cubic yards of earth and rock. Structures installed at the CRBRP site included a cement crane pad, quality control test laboratory, construction shops, concrete batch plants, and sediment ponds. An approximately 6,450 foot long 8-inch water line from the DOE's Bear Creek Filtration Plant was also installed at the CRBRP site. The CRBRP project was terminated in 1983.
- *Clinch River Breeder Reactor Plant DOE/TVA/PMC Site Redress Planning Task Force Report, DOE, TVA, and PMC, January 1984*. The CRBRP site redress plans included measures to stabilize the CRBRP site such as reseeding of grass, planting of trees, mulching cleared areas, installation of straw bales in shallow ditches, installation of small berms of riprap in larger ditches, installation of culverts to direct water from steep slopes, and modification of the holding ponds for long-term stability. Portable buildings and structures were removed from the CRBRP site with the exception of the crane pad and meteorological tower. The approximately 6,450 foot long 8-inch water line was terminated at a hydrant and left in place. The 80-foot by 80-foot crane pad was left in place. The excavated area was partially backfilled in a manner to sustain site drainage. Rock bolts within the excavated area were left in place. Level areas of the CRBRP site were graded and compacted.
- *Clinch River Nuclear Site Early Site Permit Application, Environmental Report, Part 3 May 2016 (ESPA ER)*. The ER was prepared and submitted as part of the TVA application for an ESP for the CRN Site in Oak Ridge, Roane County, Tennessee. TVA prepared this ER to analyze the environmental effects of construction, operation, and decommissioning of two or more SMRs at the CRN Site having a maximum electrical output not to exceed 800 MWe. The application used four potential advanced reactor technologies to develop a bounding analysis of the potential engineering, safety, and environmental impacts. The NRC used this ER to develop an EIS to meet the requirements of NEPA for the NRC to consider the environmental effects of the issuance of an ESP.
- *Final Environmental Impact Statement for an Early Site Permit at the Clinch River Nuclear Site, April 2019 (NRC ESP FEIS)*. NRC issued the NRC ESP FEIS in response to the TVA application for an ESP for new nuclear power units demonstrating SMR technology in Oak Ridge, Roane County, Tennessee. The NRC EIS evaluated the proposed action and the potential impacts on the environment associated with NRC's decision regarding whether or not to issue an ESP. After considering the environmental aspects of the proposed action before the NRC, NRC staff recommended approving the TVA ESPA.
- *Early Site Permit Issuance, December 2019*. The NRC issued Early Site Permit No. ESP-006 to TVA for the CRN Site.

Other minor actions at the CRN Site that qualified as Categorical Exclusions include the following Categorical Exclusion Checklists (CECs) completed by TVA:

- *Clinch River SMR Project Met Tower Road Culvert Installation – CEC 24366, May 2011*
- *Clinch River Site Meteorological Tower – CEC 23403, June 2011*
- *Clinch River Site Characterization – CEC 23595, November 2012*
- *Clinch River Small Modular Reactor (SMR) Site Meteorological Tower Removal – CEC 28783, August 2013*
- *Portable Bridge Installation at the Clinch River Nuclear CRN Site – CEC 40907, August 2019*

# 2.0 Alternatives

## 2.1 Alternatives Carried Forward for Analysis

The CRN PEIS will address a range of alternatives for construction, operation, and decommissioning of an advanced nuclear reactor technology park at the CRN Site. Action alternatives include construction of light water reactor (LWR) and/or non-LWR alternatives at the CRN Site. There are two areas within the 935-acre CRN Site that are best suited for development; these are designated as Area 1 and Area 2. TVA plans to evaluate four discrete alternatives (A-D) for these proposed actions within Area 1 and Area 2, including: the No Action Alternative (A); an advanced nuclear reactor technology park at Area 1 (B); at Area 2 (C); and at Area 1 and Area 2 (D). Two additional alternatives E and F were considered but eliminated.

### 2.1.1 Alternative A – No Action Alternative

Under the No Action Alternative, TVA would not apply for a NRC license, construct, operate, maintain, or potentially decommission advanced nuclear reactors at the CRN Site. The CRN Site would remain relatively unused and would continue to be managed in accordance with the Watts Bar Reservoir Land Management Plan. TVA would continue to meet the obligations of the NRC ESP. TVA would continue to adhere to the Clinch River Site Maintenance Plan including routine inspections and maintenance. TVA would also continue routine maintenance of the TLs and rights-of-way that traverse the CRN Site. In addition, the Tennessee Wildlife Resource Agency's (TWRA's) permit for use of TVA land for controlled hunting could be reinstated. Under the No Action Alternative, TVA would not have access to the energy-generating capacity of the advanced nuclear reactors and would not be able to meet the project purpose and need.

### 2.1.2 Alternative B – Nuclear Technology Park at Area 1

To meet the purpose and need, the project proposes an array of activities including the construction, operation, maintenance, and potential decommissioning of one or more advanced reactors at Area 1 on the CRN Site (Figure 1). Specific designs have not been selected. The plans include evaluating the environmental impacts for the potential uses of the CRN Site for up to approximately 60 years using a plant parameter envelope (PPE) approach. Options to be considered under this alternative include:

- Alternative B1 – Construction and operation of one or more LWRs at Area 1.
- Alternative B2 – Construction and operation of one or more LWRs and/or other advanced nuclear reactors at Area 1.

Under Alternative B, there would be no construction at Area 2.

### 2.1.3 Alternative C – Nuclear Technology Park at Area 2

To meet the purpose and need, the project proposes an array of activities including the construction, operation, maintenance, and potential decommissioning one or more non-LWR advanced nuclear reactor(s) at Area 2 on the CRN Site (Figure 1). Specific designs have not been selected. The plans include evaluating the environmental impacts for the potential uses of the CRN Site for up to approximately 60 years, deploying one or more advanced nuclear reactors using a PPE approach. The reactor(s) would be constructed and operated on Area 2 shown on Figure 1. Under Alternative B, there would be no construction at Area 1.

### 2.1.4 Alternative D – Nuclear Technology Park at Area 1 and Area 2

To meet the purpose and need, the project proposes an array of activities including the construction, operation, maintenance, and potential decommissioning of one or more LWR and/or non-LWR advanced nuclear reactor(s) at Area 1 and Area 2 on the CRN Site (Figure 1). Specific designs have not been selected. The plans include evaluating the environmental impacts for the potential uses of the CRN Site for up to approximately 60 years using a PPE approach.

## 2.2 Alternatives Considered but Eliminated from Further Discussion

TVA considered multiple options for construction, operation, and decommissioning of an advanced nuclear reactor technology park at the CRN Site. This section identifies alternatives that TVA considered but omitted from detailed analysis, because they did not meet the purpose and need of TVA's proposed action or were otherwise unreasonable.

### 2.2.1 Alternative E – Construction of SMRs at Alternative Sites

In the ESPA ER, TVA considered three alternative sites in detail for construction of SMRs; these included the Oak Ridge Reservation Site 2, Oak Ridge Reservation Site 8, and Redstone Arsenal Site 12. TVA's ESPA ER described (1) the TVA region of interest for identification of alternative plant sites, (2) the methods used by TVA to select the proposed site and alternative sites, and (3) generic issues that are consistent among the alternative sites. The ESPA ER also compares the environmental impacts at the CRN Site to those at the alternative sites. The ESPA ER and NRC ESP FEIS qualitatively determined that none of the alternative sites are obviously superior to the proposed CRN Site. The NRC ESP FEIS recommended that an ESP should be issued for the CRN Site in Oak Ridge, Roane County, Tennessee and NRC subsequently issued an ESP to TVA for the CRN Site.

### 2.2.2 Alternative F – Construction of Alternative Energy

Construction of other generation systems (i.e. solar, coal, etc.) would not meet the purpose and need of this project as stated in Section 1.2. TVA considered other technologies in the 2019 Final IRP which are being considered for other locations in the TVA system and are evaluated under separate analyses, as appropriate.

# 3.0 Environmental Review Process

The NEPA review process helps federal agencies make decisions based on an understanding of a proposed action's potential impacts. NEPA also requires that federal agencies provide opportunities for public involvement in the agency decision-making process. Finally, NEPA requires federal agencies conduct scoping to engage important stakeholders in the early identification of concerns, potential impacts, relevant effects of past actions and possible alternative actions.

TVA will consider input obtained from the public, stakeholders, resource and permitting agencies, and other interested parties during the public scoping period when developing the

Draft PEIS. Publication of the Draft PEIS will include a 45-day public review and comment period, during which TVA will conduct a public meeting. TVA will consider all comments and edits submitted on the Draft PEIS, make appropriate revisions in response, and publish a Final PEIS. After a period of at least 30 days, TVA will make a final decision on which action alternative will be captured in a Record of Decision (ROD) to be published in the Federal Register.

In addition to agency and public input, the PEIS will also address specific requirements associated with a number of federal laws such as National Historic Preservation Act, Endangered Species Act, Clean Water Act, and Clean Air Act, and would satisfy the requirements of pertinent executive actions, including Executive Order (EO) 11988 (Floodplains Management), EO 11990 (Protection of Wetlands), EO 12898 (Environmental Justice), EO 13112 as amended by 13751 (Invasive Species), EO 13990 Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, EO 14008 Tackling the Climate Crisis at Home and Abroad, and other applicable EOs.

At the time of publication of this report, TVA estimates that the Draft PEIS will be published in the late fall of 2021, the Final PEIS will be published in late spring of 2022, and the ROD could be signed by the summer of 2022.

## 3.1 Scoping Period Public Outreach

As noted, public scoping was initiated with the publication of the NOI to prepare a PEIS in the Federal Register on February 5, 2021 (Appendix A). Additionally, TVA posted a public notice about the scoping period and information regarding the PEIS on the TVA website (www.tva.com/nepa). A public scoping period was held between February 2 and March 19, 2021. To facilitate awareness of this opportunity, in addition to posting the NOI in the Federal Register and TVA website, TVA contacted local, state, and federal government agencies, local power companies, and direct serve customers and sent a media advisory to news outlets across the TVA service area. A public notice advertisement was also placed in the *Roane County News*, *Knoxville News Sentinel*, *News-Herald*, *Oak Ridger*, *Courier News* and on the TVA website (Appendix A).

TVA encouraged the public to comment on the scope of the PEIS, alternatives under consideration, and environmental issues that need to be addressed. TVA invited the public to submit formal comments via email (nepa@tva.gov), the TVA webpage (www.tva.com/nepa), or by mail. TVA's webpage also provided a link for submission of comments. In addition to the webpage, TVA provided a "virtual meeting room", accessible through the www.tva.com/nepa website, which provides for virtual public engagement. The virtual meeting room provided access to project information in the form of presentation displays and links to project documentation, maps, graphics, and TVA's CRN project webpage. The virtual meeting room also provided information on the scheduled virtual scoping meeting, links for submitting scoping comments, and a scoping meeting registration link.

As part of Scoping, TVA hosted a live virtual scoping webinar on March 1, 2021 to gather input from the public and stakeholders. The public was invited to attend this virtual meeting and submit formal comments. At the live virtual scoping webinar, TVA provided a presentation outlining the CRN Site history, the proposed project description, project schedule, and NEPA regulatory framework as well as site layouts and a drone video tour of the site. A total of 98 individuals, both members of the general public and representatives of a variety of organizations registered for the meeting. Among those registered, 69 were not affiliated with TVA and 58 attended the question and answer session following the presentation.

## 3.2 Summary of Scoping Feedback

TVA received a wide variety of comments and opinions regarding the construction, operation, and decommissioning of an advanced nuclear reactor technology park at the CRN Site and will consider this input in developing its Draft PEIS.

TVA received 45 comment submissions from members of the pubic, local government, and state and federal agencies. The submissions consisted of:

- One submission from a federal agency, U.S. Environmental Protection Agency
- Three submissions from state agencies, Tennessee Department of Environment and Conservation (TDEC) Division of Water Resources, TDEC Division of Air Pollution Control, and Tennessee Department of Transportation
- One submission from a local government, Roane County Environmental Review Board
- Fourteen submissions from organizations including the Sierra Club, Savannah River Site Watch, Tennessee Environmental Council, Bellefonte Efficiency & Sustainability Team of the Blue Ridge Environmental Defense League, Nuclear Information and Resource Service, Coalition for A Nuclear Free Great Lakes, and Erwin Citizens Awareness Network, Inc.
- Twenty-seven submissions from members of the public unaffiliated with organizations

All comments submitted are included in Appendix B.

The 45 comment submissions were reviewed to identify specific issues of concern by each commenter and were grouped in general categories for identification and review. In total, 128 separate comments were identified. In order of number of comments received, the issues raised by commenters included the following:

1. *Energy Alternatives* – Preferences regarding use of renewable energy alternatives such as wind and solar instead of nuclear energy power or other nuclear technologies (19 comments)

2. *Nuclear Safety* – Potential risks associated with nuclear accidents, waste storage, weapons, and potential for radiation exposure (16 comments)

3. *Nuclear Waste* – Concerns regarding the production, storage, and disposal of nuclear waste (16 comments)

4. *Use of the CRN Site/Alternative Locations* – Concerns regarding removal of forested areas within the CRN Site and consideration of existing brownfield sites in the area or decommissioned TVA facilities for the proposed advanced nuclear technology park rather than disturbance of the CRN site (11 comments)

5. *Water Quality and Flooding/Weather Risks* – Potential risks to water quality in the Clinch River arm of Watts Bar Reservoir from coolant water returned to the river, water elevations in relation to the facility's intake, groundwater contamination, and risks to floodplains due to flooding or extreme weather events (11 comments)

6. *Environmental and Community Impacts* – Concerns regarding potential impacts to the human and natural environment, including destruction of existing habitats on the CRN Site (9 comments)

7. *TVA Oversight* – Concerns regarding past and present management of TVA nuclear and fossil fuel facilities (9 comments)

8. *Project Cost* – Concerns regarding project cost (8 comments)

9. *Specific Project-Related Questions* – Questions regarding nuclear technology and vendors (6 comments)

10. *Project Support* – Support for the CRN project (5 comments)

11. *Support for the No Action Alternative* – Support for the No Action Alternative (4 comments)

12. *Scoping Period/Project Schedule* – Concerns regarding pace of project and request for extension of the scoping comment period by six months (4 comments)

13. *Nuclear Fuel Production* – Concerns regarding the environmental and health effects related to processing nuclear fuel that would be used by advanced reactors and the source for the materials used in processing (3 comments)

14. *Air Quality* – Air permitting considerations for the project advised by TDEC (2 comments)

15. *Transportation* – Coordination with TDOT regarding potential roadway improvements at State Road 58 and Bear Creek Road and consideration of existing bicycle lanes on State Road 58 bridge as a part of the impact analysis requested by Roane County *(2 comments)*

16. *Economic Feasibility* – EPA request to include evaluation of economic feasibly of LWR and non-LWR modular type reactors to encompass environmental costs (1 comment)

17. *Cumulative Effects* – Roane County request to consider Kairos Power project in the cumulative effects analysis (1 comment)

18. *Earthquakes* – Consideration of earthquake tremors (1 comment)

### 3.3 Issues to be Addressed

Based on TVA's internal scoping and input gathered from the public scoping process, the anticipated major issues to be addressed in this PEIS include:

- *Geology and Soils* – Regional geology and soils at the CRN Site will be identified and any limitations related to construction and operation will be evaluated. Impacts to prime farmland soils will be quantified. The seismic history of the region will be identified, and evaluation of plant design and plant shut down in the event of an earthquake will be presented.
- *Surface Water Resources* – TVA will describe the quality of surface water resources, including the Clinch River arm of the Watts Bar Reservoir, and will analyze the extent to which each development alternative would affect water quality directly or indirectly.
- *Groundwater Resources* – TVA will use data obtained from studies conducted by TVA to describe existing groundwater conditions in the vicinity and will analyze the extent to which each development alternative would affect groundwater quality.

- *Floodplains and Wetlands* – Wetlands and floodplains within the CRN Site will be identified and impacts will be quantified. The effects of each of the development alternatives on jurisdictional wetlands and floodplains will be evaluated.
- *Biological Resources* (vegetation, wildlife, and aquatic life) – Community types within the CRN Site will be described. Significant natural features, including rare species habitat, important wildlife habitat, or locally uncommon natural community types will be identified. TVA will evaluate the effect of each alternative on terrestrial and aquatic ecosystems.
- *Threatened and Endangered Species* – Federally or state-listed as threatened or endangered plants and animals known to exist in the vicinity of the CRN Site will be identified. The effects of each development alternative on endangered, threatened, and rare species in need of management will be evaluated.
- *Recreational and Managed Areas* – Natural areas, parks, and other managed areas within the vicinity of the alternatives will be identified and potential impacts associated with the proposed alternatives will be addressed.
- *Climatology and Meteorology* – An extensive discussion of the meteorology and climatology within the region of the CRN Site will be presented, including regional climatology, local meteorology, severe weather, and how each would affect routine and accidental airborne radioactive releases.
- *Air Quality and Climate Change* – Air quality considerations including attainment status, and regional air quality information will be presented. Impacts to air quality from activities associated with each of the alternatives will be evaluated. The impact of emissions from each of the alternatives on climate change will be addressed.
- *Transportation* – The existing roadway network in the vicinity of the CRN Site, including physical road characteristics (number of lanes, shoulders, and posted speed limit) and existing traffic characteristics will be identified. The effect of construction and operational traffic to the CRN Site will be evaluated, including the potential for improvements to site access from local highways.
- *Visual Resources* – The aesthetic setting of the CRN Site will be described and an analysis of changes to scenic attractiveness and scenic integrity associated with each of the alternatives will be completed.
- *Noise* – Noise emissions and impacts associated with the construction phase equipment use and plant operations will be assessed to determine the potential noise effects of each alternative on sensitive receptors.
- *Socioeconomics and Environmental Justice* – Demographic and community characteristics within the vicinity the CRN Site will be evaluated. Special attention will be given to identification of potential low-income and minority populations to evaluate the potential for disproportionate adverse impacts in accordance with EO 12898 and EO 13990. Economic effects associated with the construction and operational workforce associated with each alternative will also be evaluated. TVA will also evaluate existing local services including educational, emergency, water, and wastewater to determine adequate supply and effects associated with each alternative.
- *Land Use* – Land uses within the proposed project sites and within the vicinity (5-mile radius) will be identified. Permanent and temporary direct and indirect impacts to land use associated with each of the alternatives will be evaluated.
- *Cultural Resources* – TVA will characterize archaeological and historic resources within the Area of Potential Effect of the CRN Site. TVA also will discuss any known sites listed on or eligible for the National Register of Historic Places. The potential effects of each alternative on historic and archaeological resources will be evaluated. The cultural

resources analysis and recommendations will be reviewed through formal consultation with the Tennessee State Historic Preservation Officer and interested tribes, the results of which will also be provided. TVA will consider cultural and historic resources, up to and including the Manhattan Project National Historic Park.

- *Local Government Revenues* – The current sources and level of local government revenues will be identified. The effects associated with construction and ultimate development of each alternative will be evaluated.
- *Solid and Hazardous Waste* – Current practices regarding hazardous materials/waste management near the CRN Site will be identified. In addition, TVA will identify any impacts from waste generation during construction and operation. Operational measures (waste management practices) will be incorporated into the assessment of impacts.
- *Nonradiological Public Health and Safety* – TVA will evaluate nonradiological public health and safety regulations and identify safety programs adopted by TVA to minimize incidents.
- *Radiological Effects* – The potential for radiological dose exposure to the public from normal operational releases via probable pathways to individuals, populations, and biota near the CRN Site will be assessed.
- *Uranium Fuel Use Effects* – TVA will evaluate the potential for environmental effects from radioactive waste, spent fuel storage, and transportation of radioactive materials resulting from operations of the nuclear facilities at the CRN Site.
- *Nuclear Plant Safety and Security* – TVA will evaluate the environmental impacts of postulated accidents involving radioactive materials at the CRN Site and plant security including intentional destructive acts.
- *Decommissioning* – TVA will describe the process for decontamination and decommissioning, which will occur at the end of the CRN Site's operating life, to ensure nuclear units are safely removed from service and the site is made safe for restricted use.

The potential direct and indirect impacts of each resource will be assessed in the PEIS. Mitigation measures designed to minimize impacts, will be identified as appropriate. In addition, the PEIS will include an analysis of the cumulative impacts associated with each alternative. A cumulative impact analysis considers the potential impact to the environment that may result from the incremental impact of the project when added to other past, present, and reasonably foreseeable future actions (40 C.F.R. § 1508.7). These past, present, and reasonably foreseeable future actions will include, but are not limited to, the other potential development actions that are connected to the development of an advanced nuclear technology park at the CRN Site. The methodology for performing such analysis is set forth in the Council on Environmental Quality's *Considering Cumulative Effects under NEPA*.

# Appendix A

# Federal Register Notice and Newspaper Notices

to assemble a report on current screening and vetting procedures, information sharing practices, and recommendations to improve these activities, to include an evaluation of the usefulness of the DS–5535. The Department is aware of these requirements, and is committed to evaluating and improving the utility of the DS–5535 accordingly.

**Methodology**

Department of State consular officers at visa-adjudicating posts worldwide will ask the additional questions to resolve an applicant's identity or to vet for terrorism, national security-related, or other visa ineligibilities when the consular officer determines that the circumstances of a visa applicant, a review of a visa application, or responses in a visa interview indicate a need for greater scrutiny. The additional questions may be sent electronically to the applicant or be presented orally or in writing at the time of the interview.

**Julie M. Stufft,**

*Acting Deputy Assistant Secretary, Bureau of Consular Affairs, Department of State.*

[FR Doc. 2021–02413 Filed 2–4–21; 8:45 am]

**BILLING CODE 4710–06–P**

## DEPARTMENT OF STATE

**[Public Notice: 11347]**

### Proposal To Extend and Amend Cultural Property Agreement Between the United States and Egypt

**AGENCY:** Department of State.

**ACTION:** Public notice.

**SUMMARY:** Proposal to extend and amend the *Memorandum of Understanding Concerning the Imposition of Import Restrictions on Categories of Archaeological Material of the Arab Republic of Egypt.*

**FOR FURTHER INFORMATION CONTACT:** Catherine Foster, Cultural Heritage Center, Bureau of Educational and Cultural Affairs: 202–632–6301; *culprop@state.gov;* include ''Egypt'' in the subject line.

**SUPPLEMENTARY INFORMATION:** Pursuant to the authority vested in the Assistant Secretary of State for Educational and Cultural Affairs, and pursuant to 19 U.S.C. 2602(f)(1), an extension and amendment of the *Memorandum of Understanding Concerning the Imposition of Import Restrictions on Categories of Archaeological Material of the Arab Republic of Egypt* is hereby proposed.

A copy of the Memorandum of Understanding, the Designated List of categories of material restricted from import into the United States, and related information can be found at the Cultural Heritage Center website: *http://culturalheritage.state.gov.*

**Allison R. Davis,**

*Executive Director CPAC, Bureau of Educational and Cultural Affairs, Department of State.*

[FR Doc. 2021–02369 Filed 2–4–21; 8:45 am]

**BILLING CODE 4710–05–P**

## DEPARTMENT OF STATE

**[Public Notice: 11346]**

### Notice of Receipt of Request From the Government of the Republic of Albania Under Article 9 of the 1970 UNESCO Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property

**AGENCY:** Department of State.

**ACTION:** Notice.

**SUMMARY:** Notice of receipt of request from Albania for cultural property protection.

**FOR FURTHER INFORMATION CONTACT:** Chelsea Freeland, Cultural Heritage Center, Bureau of Educational and Cultural Affairs: 202–632–6301; *culprop@state.gov;* include ''Albania'' in the subject line.

**SUPPLEMENTARY INFORMATION:** The Government of the Republic of Albania made a request to the Government of the United States on November 9, 2020, under Article 9 of the 1970 UNESCO *Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property.* Albania's request seeks U.S. import restrictions on archaeological and ethnological material representing Albania's cultural patrimony. Pursuant to the authority vested in the Assistant Secretary of State for Educational and Cultural Affairs, and pursuant to 19 U.S.C. 2602(f)(1), notification of the request is hereby published. A public summary of Albania's request and information about U.S. implementation of the 1970 UNESCO Convention will be available at the Cultural Heritage Center website: *http://culturalheritage.state.gov.*

**Allison R. Davis,**

*Executive Director CPAC, Bureau of Educational and Cultural Affairs, Department of State.*

[FR Doc. 2021–02368 Filed 2–4–21; 8:45 am]

**BILLING CODE 4710–05–P**

## TENNESSEE VALLEY AUTHORITY

### Programmatic Environmental Impact Statement—Clinch River Nuclear Site Advanced Nuclear Reactor Technology Park

**AGENCY:** Tennessee Valley Authority.

**ACTION:** Notice of intent.

**SUMMARY:** The Tennessee Valley Authority (TVA) intends to prepare a Programmatic Environmental Impact Statement (PEIS) to address the potential environmental effects associated with the construction, operation, and decommissioning of an advanced nuclear reactor technology park at the Clinch River Nuclear (CRN) Site in Oak Ridge, Roane County, Tennessee. The park would contain one or more advanced nuclear reactors with a cumulative electrical output not to exceed 800 megawatts electric (MWe). TVA plans to evaluate a variety of alternatives including a no-action alternative. Public comments are invited to identify other potential alternatives, information, and analysis relevant to the proposed action.

**DATES:** The public scoping period begins with the publication of this Notice in the **Federal Register** and comments on the scope of the PEIS must be received or postmarked by March 19, 2021. To accommodate social distancing guidelines and public health recommendations related to the COVID–19 pandemic, TVA will host a virtual open house on March 1, 2021 from 6:00–8:00 p.m. EST. Visit *https://www.tva.com/nepa* to obtain more information.

**ADDRESSES:** Comments may be submitted in writing to J. Taylor Cates, NEPA Specialist, 1101 Market Street, BR 2C–C, Chattanooga, TN 37402. Comments may also be submitted online at: *https://www.tva.com/nepa* or by email to *nepa@tva.gov.* Due to COVID–19 teleworking restrictions, electronic submission of comments is encouraged to ensure timely review and consideration.

**FOR FURTHER INFORMATION CONTACT:** Other related questions should be sent to Tennessee Valley Authority, J. Taylor Cates, NEPA Specialist, 1101 Market Street, BR 2C–C, Chattanooga, TN, 37402, 423–751–2732, or *jtcates@tva.gov.*

**SUPPLEMENTARY INFORMATION:** This notice is provided in accordance with the Council on Environmental Quality's (CEQ) regulations for implementing the National Environmental Policy Act (NEPA) at 40 CFR parts 1500–1508 and Section 106 of the National Historic

Preservation Act (NHPA), and its implementing regulations (36 CFR part 800). The PEIS will be prepared consistent with the 2020 CEQ regulations for implementing NEPA at 40 CFR parts 1500–1508 (85 FR 43304–43376, Jul. 16, 2020).

**TVA Power System**

TVA is a corporate agency and instrumentality of the United States created by and existing pursuant to the TVA Act of 1933 (16 U.S.C. part 831), to, among other things, foster the social and economic welfare of the people of the Tennessee Valley region and promote the proper use and conservation of the Valley's natural resources. TVA generates and distributes electricity for business customers and local power distributors, serving more than 10 million people in parts of seven southeastern states. TVA is fully self-financed without Federal appropriations and funds operations through electricity sales and power system bond financing. In addition to operating and investing its revenues in its electric system, TVA provides flood control, navigation and land management for the Tennessee River system, and assists local power companies and state and local governments with economic development and job creation.

Dependable electrical capacity on the TVA power system is about 33,000 MWe. TVA's current generating assets include one pumped-storage facility, one diesel generator site, three nuclear plants, five coal plants, nine combustion turbine plants, eight combined cycle plants, 14 solar energy sites, 29 hydroelectric dams, and several small renewable generating facilities. A portion of delivered power is obtained through long-term power purchase agreements. About 13 percent of TVA's annual generation is from hydro; 14 percent is from coal; 27 percent is from natural gas; 41 percent is from nuclear; and the remainder is from wind, solar, and energy efficiency programs. TVA transmits electricity from these facilities over almost 16,000 miles of transmission lines. Like other utility systems, TVA has power interchange agreements with utilities surrounding the Tennessee Valley region, and buys and sells power on an economic basis almost daily.

**Background**

The CRN Site is in Oak Ridge, Roane County, Tennessee, on 935 acres of TVA-managed land on the Clinch River arm of the Watts Bar Reservoir. The site is located adjacent to the U.S. Department of Energy's (DOE) Oak Ridge Reservation, a roughly 33,500 acre reservation with defense, research, and environmental cleanup missions.

In May 2016, TVA submitted an application to the Nuclear Regulatory Commission (NRC) for an Early Site Permit (ESP) at the CRN Site for two or more new nuclear power units demonstrating Small Modular Reactors (SMR) technology with a total combined nuclear generating capacity not to exceed 800 MWe. SMRs provide the benefits of nuclear power in situations where large units, generally considered units with approximate electrical output exceeding 1000 MWe, are not appropriate or practical because of various constraints (*i.e.* local transmission system, limited physical space or water availability, constraints on the availability of capital for construction and operation, proximity to population centers, etc.). A NRC ESP provides early resolution of site safety and environmental issues, which in turn provides predictability and stability in any subsequent NRC licensing process.

The NRC prepared and released a Final EIS in April 2019 to assess the environmental aspects of their action, to decide whether or not to issue an ESP to TVA for the CRN Site. Following the NRC ESP Final EIS determination, the NRC issued the ESP to TVA in December 2019. The ESP provides NRC approval of the CRN site for considering new nuclear power units demonstrating SMR technology; the ESP does not authorize TVA to construct or operate a nuclear facility. TVA must apply for and receive additional licenses from the NRC prior to initiating construction or operation of advanced nuclear reactors at the CRN Site.

**Project Purpose and Need**

In June 2019, TVA released the Final 2019 Integrated Resource Plan (IRP) and the associated IRP Final EIS. The IRP identified the various resources that TVA intends to pursue to meet the energy needs of the Valley over the 20-year planning period in accordance with TVA's mission. The 2019 IRP recommends that TVA continue to evaluate emerging nuclear technologies, including SMRs, as part of technology innovation efforts aimed at developing future electricity generation capabilities.

TVA's purpose and need for the CRN Advanced Nuclear Reactor Technology Park is two-fold. First is to evaluate and demonstrate the feasibility of deploying advanced nuclear reactors to support TVA's mission of providing safe, clean, reliable, and low-cost energy to the Tennessee Valley. Second is to evaluate emerging nuclear technologies as part of technology innovation efforts aimed at developing future generation capacities.

TVA will consider the potential environmental effects associated with the proposed construction, operation, and decommissioning of one or more advanced nuclear reactors, with a cumulative electrical output not to exceed 800 MWe at the CRN Site. In addition to producing energy, advanced reactors could support a low carbon future, including demonstration of technologies such as microgrids, grid resiliency, waste heat energy storage for grid support, and the production of isotopes of hydrogen and other elements.

**Preliminary Proposed Action and Alternatives**

The PEIS will address a range of alternatives for construction, operation, and decommissioning of an advanced nuclear reactor technology park at the CRN Site. Action alternatives include construction of light water reactor (LWR) alternatives and/or non-LWR alternatives at the CRN Site. There are two areas within the 935-acre CRN Site that are best suitable for development; these are designated as Area 1 and Area 2. Therefore, TVA plans to evaluate four discrete alternatives (A–D) for these proposed actions including the No-Action Alternative (A) and an advanced nuclear reactor technology park at Area 1 (B); at Area 2 (C); at Area 1 and Area 2 (D). Two additional alternatives E and F were considered but eliminated.

**Anticipated Environmental Impacts**

The PEIS will include a detailed evaluation of all environmental, social, and economic impacts associated with implementation of the proposed action. Resource areas to be addressed in the PEIS include, but are not limited to: Air quality; aquatics; botany; climate change; cultural resources; emergency planning; floodplains; geology and groundwater; hydrothermal; land use; navigation; noise and vibration; radiological safety; soil erosion and surface water; socioeconomics and environmental justice; threatened and endangered species; transportation; visual; waste; water use; wetlands; and wildlife. Measures to avoid, minimize, and mitigate adverse effects will be identified and evaluated in the PEIS.

**Anticipated Permits and Other Authorizations**

TVA anticipates consulting on the required authorities including, but not limited to: The Endangered Species Act; Bald and Golden Eagle Protection Act; Rare Species Protection and Conservation Act; National Historic

Preservation Act; Clean Air Act; and Federal Clean Water Act.

TVA anticipates seeking required permits or authorizations, from the following governmental entities: The Nuclear Regulatory Commission; Federal Aviation Administration; U.S. Department of Transportation; Tennessee Department of Transportation; U.S. Army Corps of Engineers; U.S. Coast Guard; U.S. Environmental Protection Agency; Tennessee Department of Environment and Conservation; U.S. Fish and Wildlife Service; the City of Oak Ridge; Tennessee State Historic Preservation Officer; Tribal Historic Preservation Officers; and Texas Department of State Health Services, Radiation Control Program, Radiation Safety Licensing Branch. This is not an exhaustive list, other permits or authorizations may be sought as required or appropriate.

**Public Participation and Scoping Process**

TVA seeks comment and participation from all interested parties for the proposed action, including, but not limited, to assisting TVA in determining the scope of issues for analysis in the PEIS. Information about this project is available at *https://www.tva.com/nepa,* which includes a link to an online public comment page. TVA invites the public to identify other potential alternatives, information, and analysis relevant to the proposed action. Comments must be received or postmarked no later than March 19, 2021. Federal, state, local agencies, and Native American Tribes are also invited to provide comments. Please note that any comments received, including names and addresses, will become part of the project administrative record and will be available for public inspection.

To accommodate social distancing guidelines and public health recommendations related to the COVID–19 pandemic, TVA will host a virtual open house during the scoping period. The virtual open house will be held on March 1, 2021, from 6:00–8:00 p.m. EST. Visit *https://www.tva.com/nepa* to obtain more information about the virtual open house. Additional open house details will be available on the project site by February 17, 2021.

**PEIS Preparation and Schedule**

TVA will consider comments received during the scoping period and develop a scoping report, which will be published at *https://www.tva.com/nepa.* The scoping report will summarize public and agency comments that were received and identify the projected schedule for completing the PEIS process. Following completion of the CRN Site environmental analysis, TVA will post a Draft PEIS for public review and comment on the project web page. TVA anticipates holding a public open house, which may be virtual, after releasing the Draft PEIS. Open house details will be posted on TVA's website in conjunction with the Draft PEIS. TVA expects to release the Draft PEIS in the Fall of 2021.

TVA will consider the substantive comments received on the Draft PEIS, financial assessments, engineering evaluations, risk evaluations, and other applicable evaluations in the Final PEIS before selecting one or more alternatives. TVA projects completing a Final PEIS in Spring 2022. Subsequently, a final determination on proceeding with the CRN Site will be documented in a Record of Decision.

**Authority:** 40 CFR 1501.9.

**Rebecca Tolene,**

*Vice President, Environment.*

[FR Doc. 2021–02144 Filed 2–4–21; 8:45 am]

**BILLING CODE P**

## DEPARTMENT OF TRANSPORTATION

### Federal Highway Administration

### Notice of Final Federal Agency Actions on Proposed Highway in California

**AGENCY:** Federal Highway Administration (FHWA), Department of Transportation (DOT).

**ACTION:** Notice of Limitation on Claims for Judicial Review of Actions by the California Department of Transportation (Caltrans).

**SUMMARY:** The FHWA, on behalf of Caltrans, is issuing this notice to announce actions taken by Caltrans that are final. The actions relate to a proposed highway project, I–10 Blythe Pavement Rehabilitation Project in the County of Riverside, State of California. Those actions grant licenses, permits, and approvals for the project.

**DATES:** By this notice, the FHWA, on behalf of Caltrans, is advising the public of final agency actions subject to 23 U.S.C. 139(*l*)(1). A claim seeking judicial review of the Federal agency actions on the highway project will be barred unless the claim is filed on or before July 6, 2021. If the Federal law that authorizes judicial review of a claim provides a time period of less than 150 days for filing such claim, then that shorter time period still applies.

**FOR FURTHER INFORMATION CONTACT:** For Caltrans: Antonia Toledo, Senior Environmental Planner, California Department of Transportation-District 8, 464 W 4th Street, MS–820, San Bernardino, CA 92401. Office Hours: 8:00 a.m.—5:00 p.m., Pacific Standard Time, telephone, (909) 501–5741 or email *Antonia.Toledo@dot.ca.gov.* For FHWA, contact David Tedrick at (916) 498–5024 or email *david.tedrick@dot.gov.*

**SUPPLEMENTARY INFORMATION:** Effective July 1, 2007, the FHWA assigned, and Caltrans assumed, environmental responsibilities for this project pursuant to 23 U.S.C. 327. Notice is hereby given that Caltrans has taken final agency actions subject to 23 U.S.C. 139(*l*)(1) by issuing licenses, permits, and approvals for the following highway project in the State of California: rehabilitation of the existing asphalt concrete (AC) pavement on Interstate 10 from Post Mile (PM) R134.0 to PM R156.5 in the County of Riverside. Rehabilitation Activities include removal and replacement of existing inside and outside shoulders, guardrails, rumble strips, drainage inlets, and dikes, and installation of oversized drains. The project will also involve upgrades to ramp facilities for ADA compliance, installation of two temporary detour lanes in the existing median, extension of existing rock slope protection at bridge locations, and hydroseeding the median for erosion control and vegetation restoration. The primary purpose of this project is to restore and extend the life of existing pavement for a minimum of forty years, enhance trip reliability, and consequently minimize expenditures associated with future maintenance. The actions by the Federal agencies, and the laws under which such actions were taken, are described in the Final Environmental Assessment (FEA)/Finding of No Significant Impact (FONSI) for the project, approved on July 27, 2020, and in other documents in Caltrans' project records. The FEA, FONSI and other project records are available by contacting Caltrans at the addresses provided above.

This notice applies to all Federal agency decisions as of the issuance date of this notice and all laws under which such actions were taken, including but not limited to:

1. Council on Environmental Quality (CEQ) regulations
2. National Environmental Policy Act of 1969, as amended, 42 U.S.C 4331(b)(2)
3. Federal Highway Act of 1970, U.S.C 772
4. Federal Clean Air Act of 1977 and 1987
5. Clean Water Act of 1977 and 1987
6. Federal Water Pollution Control Act of 1972
7. Safe Drinking Water Act of 1944, as amended
8. Executive Order 11988, Floodplain

# ACHS, CHS earn Tennessee Pathways certification for programs

On Feb. 2, the Tennessee Department of Education announced 159 Pathways in 94 high schools, and 51 districts have earned the Tennessee Pathways Certification for creating regional post-secondary opportunities.

This more than doubles the number of certified pathways in Tennessee, bringing the total to 281 in 136 high schools and 69 districts.

In Anderson County, the 2020 Tennessee Certified Pathways are:

• Anderson County High School/Early Childhood Education Careers (Pre-K-4);

• Clinton High School/Early Childhood Education Careers (Pre-K-4);

• Anderson County High School/Coding.

Tennessee Pathways is structured around three key elements shown to increase seamless enrollment and success in postsecondary programs:

• High-quality college and career advisement throughout K-12;

• Rigorous early postsecondary and work-based learning opportunities in high school;

• Seamless vertical alignment between K-12, postsecondary programs, and career opportunities as a result of effective partnerships among school districts, higher education institutions, employers, and community organizations .

Launched in 2019 in partnership with the Tennessee Board of Regents, the Tennessee Pathways Certification sets clear expectations for alignment, advisement, and partnerships that define strong education-to-career pathways.

Beyond establishing standards for program quality and design, the certification elevates and celebrates innovative and exemplary pathways in the state.

"Tennessee is committed to building strong college and career pathways statewide," said Commissioner Penny Schwinn. "Students benefit from having exposure to high-quality career pathways, and these pathways will serve to enhance our state's future success and outcomes.

"We are proud to have more than doubled the number of Certified Pathways and this tremendous growth speaks to our districts, communities, and partners' shared values of strong education-to-career pathways. The department is proud to support every district across all regions working to further develop, enhance, and grow these opportunities."

All schools serving grades 9-12 in Tennessee were eligible to apply and each pathway was evaluated through a rigorous application process in which schools detailed their postsecondary and employer partnerships, early college and career experiences, and structures for providing students with impactful career advisement.

Despite the challenges of the COVID-19 pandemic, districts submitted 188 total applications for the Tennessee Pathways certification, representing every region of the state, 108 high schools, and 57 districts during the 2019-20 application cycle.

PHOTO SUBMITTER | COURIER NEWS

**From left, Clinton High School band students who auditioned for the East Tennessee School Band and Orchestra Association Jazz Clinic are, from left: Ethan Yonce, Sara Boundy, Kate Boundy, and Alexander Erick. Not pictured: Austin Saltkill and Trey Meredith.**

# Clinton band students honored

On Saturday, Jan. 31, six Clinton High School band students auditioned and placed in the East Tennessee School Band and Orchestra Association Jazz Clinic.

This is an honor band that selects the best students grades 9-12 in the area of jazz.

The following students were selected for this years clinic: Junior Alexander Erick, Second Chair Alto Saxophone Red Band; senior Kate Boundy, First Chair Tenor Saxophone White Band; freshman Trey Meredith, Second Chair Alto Saxophone White Band; freshman Sara Boundy, First Chair Piano; freshman Ethan Yonce, First Chair Guitar; and senior Austin Saltkill made First Alternate on Drum Set.



## COLLEGE BRIEFS

### Austin Peay Dean's List announced

Austin Peay State University recognized more 2,000 students who were named to the Dean's List for academic achievement during the Fall 2020 semester. From Anderson County are:

Franklin Dodson and Audra Jones of Oak Ridge.

To qualify for the Dean's List, students must earn a semester GPA of 3.5 or greater.

### Bradshaw, Sparks earn degrees

Berry College in Rome, Ga., recently announced its newest class of graduates. The following local students were Fall 2020 graduates:

Elizabeth Bradshaw of Oak Ridge earned a BS degree in economics.

Dara Sparks of Clinton earned a BA degree in English.

### UC names Dean's, President's lists

In recognition of academic performance, the Office of the Vice President for Academic Affairs at University of the Cumberlands has announced the students named to the Dean's List and President's List for the fall 2020 semester.

To be eligible for the Dean's List, students must be enrolled in at least 12 credit hours (a full course load), maintain a minimum cumulative grade point average of 3.50. To be eligible for the President;s List, students must maintain an cumulative grade point average of 4.0, receive an "A" grade in UC Engage.

Of the Cumberlands students named to the Dean's List for fall 2020 from Anderson County are:

Jordan Comer of Oak Ridge, Molly Ferguson of Lake City, Madison Sickau of Norris, and Alec Williams of Clinton.

Anderson County students named to the fall 2020 President's List are:

Lauren Guthrie of Oak Ridge, and Alison McIntosh of Rocky Top.



## Public Notice

TVA

### Clinch River Nuclear Site Advanced Nuclear Reactor Technology Park

**Notice of Intent to Prepare a Programmatic Environmental Impact Statement**

TVA has released a Notice of Intent (NOI) to prepare a Programmatic Environmental Impact Statement (PEIS) to address the potential environmental effects associated with the construction, operation and decommissioning of an advanced nuclear reactor technology park at TVA's 935-acre Clinch River Nuclear (CRN) Site in Oak Ridge, Roane County, Tennessee. The park would contain one or more advanced nuclear reactors with a cumulative electrical output not to exceed 800 megawatts electric (MWe). Public comments are invited to identify other potential alternatives, information and analysis relevant to the proposed action.

This project supports TVA's 2019 Integrated Resource Plan by continuing to evaluate emerging nuclear technologies as part of technology innovation efforts aimed at developing future generation capacities. This project would evaluate and demonstrate the feasibility of deploying advanced nuclear reactors to support TVA's mission of providing safe, clean, reliable and low-cost energy to the Tennessee Valley. The consideration of a new nuclear facility at the CRN Site supports TVA's mission statement and is another way to assess how to serve the people of the Tennessee Valley.

The PEIS will address a range of alternatives for construction, operation and decommissioning of an advanced nuclear reactor technology park at the CRN Site. Action alternatives include construction of light-water reactor (LWR) alternatives and/or non-LWR alternatives at the CRN Site. There are two areas within the CRN Site that are best suitable for development; these are designated as Area 1 and Area 2. Therefore, TVA plans to evaluate four discrete alternatives (A-D) for these proposed actions, including the No-Action Alternative (A) and an advanced nuclear reactor technology park at Area 1 (B); at Area 2 (C); at Area 1 and Area 2 (D). Two additional alternatives, E and F, were considered but eliminated.

The NOI and additional information are available at www.tva.com/nepa. Comments may be submitted at www.tva.com/nepa, via email at nepa@tva.gov, or by mail to the address below. To be considered, comments must be submitted or postmarked no later than March 19, 2021. Please note that any comments received, including names and addresses, will become part of the project administrative record and will be available for public inspection. **Due to COVID-19 teleworking restrictions, electronic submission of comments is encouraged, to ensure timely review and consideration.**

TVA plans to host an open house on March 1, 2021, from 6-8 p.m. EST. Visit www.tva.com/nepa for additional information.

For more information on the National Environmental Policy Act (NEPA) process, to request an electronic or printed copy of the documents, or to submit comments, contact:

**Taylor Cates**
NEPA Specialist
jtcates@tva.gov
1101 Market St., BR 2C-C
Chattanooga, TN 37402

# Learning about Black History all year long

**By Martha Deaderick**

*"We have to seek the truth to see it and to talk about it—even if it's uncomfortable. And then we have to act."* Mary Ellen Flannery.

Last year, before the pandemic, a small group of Roane Countians met at the Greenwood School in Kingston to learn about some uncomfortable truths in our past. The class consisted of about eight people, mostly members of the NAACP and evenly divided between Blacks and Whites. We used a text by an historian of Vanderbilt University, Dr. Carrie Russell, "Reckoning with a Violent and Lawless Past." We read of the event in Erwin, TN in 1918, where an argument with a Black man and some Whites escalated into a mob attack threatening the entire Black community. This resulted in all the Black families being chased out of town. For decades, Erwin remained all White.

Using video documentaries, articles and books, the group learned how, after Reconstruction, Black Americans lost their farms, businesses and homes as they were forced out of communities by violence and threats. We compared our memories of growing up and knowing about the "sundown towns" and of our experiences in Roane County when it was racially segregated. These memories were especially vivid as our meeting classroom was in the former "Colored School" of Kingston.

An 1888 article in the "Chattanooga Times" recounted a rumored lynching of Jack Jones, who was accused of attacking a White woman in Roane County. His body was never found.

The group hopes that they may bring back to Roane County a monument to Mr. Jones, which is now on display at the National Memorial to Peace and Justice in Montgomery, Alabama. Communities that show they are willing to confront these difficult histories are able to return these to their own counties for display there. The group hopes to visit the national memorial in person once Covid restrictions are removed and vaccinations are more available.

*The opinions expressed in this column do not reflect the views of this newspaper.*

## LICK SKILLET

From Page 4A

brought up to believe in "Truth, Justice and the American Way!" Our fictional heroes, such as Superman, Wonder Woman and so many others taught us these fundamental values. So did our Sunday schools and churches. Almost all of our parents taught us that we were not to lie, nor cheat. From every playground and schoolyard could be heard the insistent utterance that we play by the rules. And any infraction immediately provoked the cry of "No Fair!" And poor losers weren't asked to play anymore.

But now?

How times have changed. And the most changed of all are the ministers of certain of our churches. It seems that so-called Evangelical preachers have decided that they no longer want to be society's spoilsports. Instead they want to be the good time Charlies; the go-along to get along echo chambers for the propagators of the big lies; lies proclaimed with proud abandon by people who at one time had reputations as truth tellers.

How these fellows can stand at a pulpit in a structure supposedly dedicated to Jesus Christ's teachings and beliefs while in front of them lies a copy of the Holy Bible containing a printed version of those teachings and beliefs, and spout the propaganda they do is beyond belief. One is reminded of Marvin Miller's query of President Truman as to whether he thought President Nixon had ever read the Constitution: to which the answer was to the effect that he didn't know if Nixon had read it or not, but if he had he hadn't understood it.

Well, we have the same thought as to these so-called Evangelical preachers. We wonder if they have ever read the Holy Bible, especially the New Testament? And, we hazard the opinion that if they have read the New Testament, especially Christ's own teachings set out therein, they most assuredly didn't understand any of it. For if they did, they would not be preaching the very things that our Lord decried, nor avoiding preaching the very things that our Lord praised, such as loving thy neighbor as thyself.

But no. They would rather tread the paths of the Liar in Chief, for that is what it now takes for this crowd that wants to rule over us. Lie, Lie, Lie.

And, of course it is no wonder, that's 30,000 lies. That is almost unbelievable, but the man has had lots of practice. Remember, his first entry on the public policy stage was to challenge Barack Obama's birthplace, a challenge which he continued even after documentary proof was offered proving he was born in the state of Hawaii. And he has never conceded that President Obama was born in the U.S.A., just as he has never conceded that he lost the 2020 election. Facts have never mattered to this man. Of course there have always been men who ignore or dispute facts.

Interestingly enough, our second president, John Adams, even before he was president, or there was a country of which to be a president (1770), in his courageous argument defending British soldiers in the Boston Massacre said:

"Facts are stubborn things; and whatever may be our wishes, our inclinations or the dictates of our passions, they cannot alter the state of facts and evidence."

What was true in 1770 is true today, but unfortunately during the reign of the Big Lie, lots of people, particularly in the new Republican Party, ignore the truth, just as they also ignore "Justice and the American Way!"

Back before he was elected president, John F. Kennedy saw to the compilation and publication of a widely sold book called "Profiles in Courage," made up of short accounts of numerous instances in U.S. history in which people stood up and did the right thing, even though it might have been the unpopular thing to do, or a thing that was almost certain to cost them politically, socially or financially. It was, and is, an inspiring story and reading it might be beneficial for some of the folks like those Republicans who are censuring their fellow Republicans, people like the widow of John McCain and Rep. Liz Cheney for doing what they all should have done, were they not scared of Trump.

If such a factual book were to be written today, unfortunately, for every Profile in Courage, there would be a half-dozen or more Profiles in Cowardice, we fear.

We sincerely hope that this column's pessimistic tenor will need never be repeated and that we can in good conscience return to our usual optimistic outlook, for we have faith in the American people and our institutions. Maybe after we have had our inoculation next week and possibly several of the Republican senators may see the right course and a few of the Evangelicals feel the Call and finally become true Christians, we'll feel better about it all. Let us hope so.

*The opinions expressed in this column do not reflect the views of this newspaper.*

# *Did you know?*

The official beginning of spring is a highly anticipated day among people who can't wait to put away their winter coats and soak up some warm sunlight. But the day of the spring equinox is just as worthy of celebration for its uniqueness as it is for its symbolic connection with the end of winter.

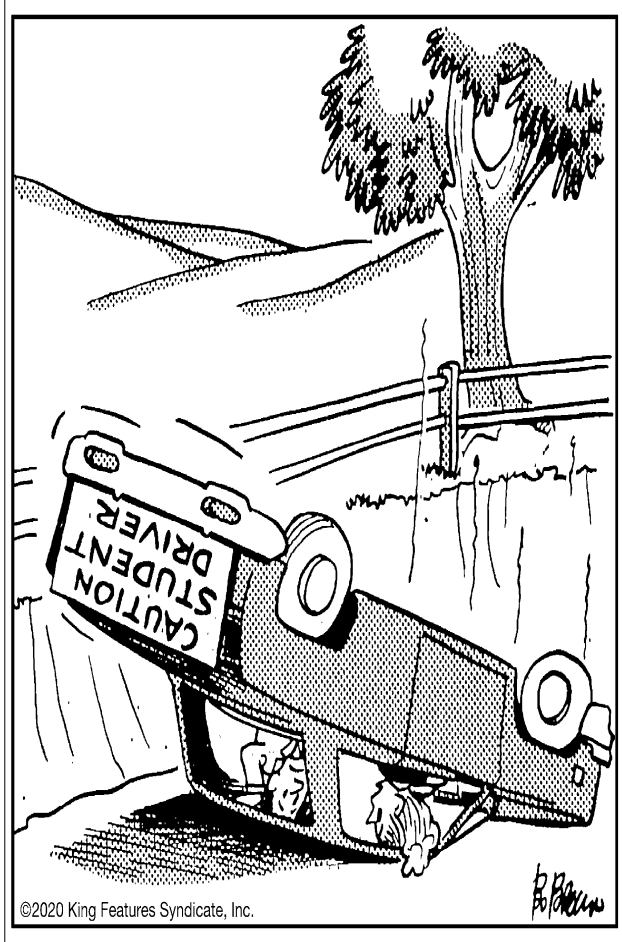
According to the *Old Farmer's Almanac*, on the spring equinox, which is sometimes referred to as the "vernal equinox" or the "March equinox," the sun crosses the celestial equator going south to north.

Equinoxes (there's another one in September each year) are the only two times a year that the sun rises due east and sets due west for everyone on Earth. As the sun passes overhead on the equinox, the tilt of Earth is zero relative to the sun.

That means that the planet's axis neither points toward or away from the sun. Though it's understandable why so many people appreciate the spring equinox, which ushers in increasing sunlight hours and later sunsets, the day's uniqueness makes it even more worthy of celebration.

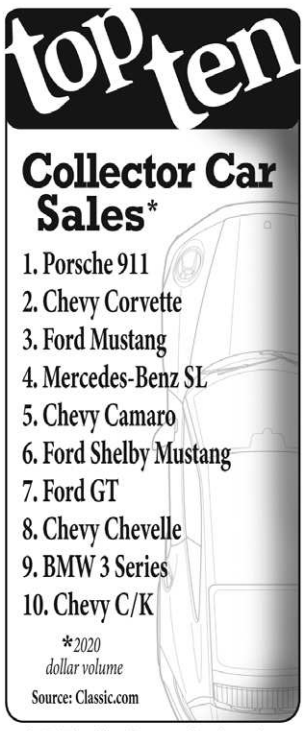
This year the spring equinox happens on Saturday, March 20 at 5:37 a.m. EDT in the northern hemisphere.

## LAFF-A-DAY






"I did something wrong, didn't I?"







*Tell us what you think about the issues of the day.*



# State housing authority to offer rental relief

## Assistance program may be in place by March 1

**Yue Stella Yu**
Nashville Tennessean
USA TODAY NETWORK – TENNESSEE

**Callie Clark, 28, with her children Peyton Rinehart, 4, left, Cain Rinehart, 2, and Ella Jo Rinehart, 7 months, in front of her apartment on Dec. 8 in Nashville. Clark is at risk of getting evicted after recently losing her job. She received some aid to help her from the Metro Action Commission.** MARK ZALESKI/FOR THE TENNESSEAN

Tennesseans struggling to pay rent due to the pandemic may soon receive help through the state's housing authority, as part of a statewide rental assistance program currently underway.

Funded by federal dollars, the program would help eligible tenants catch up on rent payments if they've experienced financial difficulties caused by the pandemic, said Ralph Perrey, director of the Tennessee Housing Development Agency.

The rental relief program, which could be in place by March 1, would come in the waning days of the nationwide eviction moratorium running through March. Meanwhile, more than 1 million Tennesseans have lost their income and filed unemployment claims since last March, and tens of thousands are still waiting to receive their benefits.

"First priority for us is going to be making sure we can keep as many people as possible decently housed," Perrey said.

Tennessee has received roughly $458 million in federal funding under the COVID-19 Rent Relief Act. More than $383 million of that would be administered by THDA and distributed to help tenants in most parts of the state, Perrey said. The agency is also allowed to spend up to 10% of the funds to cover administrative expenses.

The act allows local governments with 200,000 or more residents to receive the funds directly. In Tennessee, the remaining $75 million is split among Davidson, Knox, Rutherford, Shelby counties and Memphis, which applied for funds as a separate entity, Perrey said. The five local authorities will set up their own programs, and Memphis and Shelby County will collaborate, he said.

Tenants who lost their job or "significant income" and now make less than 80% of the area median income because of the pandemic qualify for the statewide assistance, Perrey said. The agency will prioritize residents who have been unemployed for 90 days or longer and those with earnings below half of the area median income.

Perrey said the program is estimated to help 25,000 households pay off overdue rent. Rent payments go to the landlords directly, he said. The money could also go toward late fees and utility payments, he said, and any leftover funding could help provide legal services for tenants in need.

For each household, the aid could last for up to 12 months.

"If that applicant is four months behind on their rent, we can catch them up," he said. "And if they are still not working or remain eligible, we can make payments to their landlords for eight more months."

Eligible tenants or their landlords will be able to apply for assistance via an online portal, Perrey said, and a call center will be available for questions about the process.

Landlords applying for assistance can provide THDA with tenant information, he said, and tenants need to prove their income level and inability to afford rent due to the pandemic. A check for unemployment benefits, for example, can be proof of loss of income.

"You got to show us your current finance situation is a result of COVID," he said. "We want to make this as easy as possible for applicants to show us what we need to see."

Roughly 3,000 people have signed up to receive notifications once the portal is open, Perrey said. THDA is now working with Horne, a business advisory firm contracted with the state, to staff the call center and manage the website to make sure the portal functions smoothly, he said.

"We want to be sure that, when we open the portal, that we built out the system to be able to function and take in thousands of applicants right away," Perrey said.

Despite the high volume of potential applicants, Perrey said he does not expect a wait list of them.

If the funds dry up before demand does, the U.S. Treasury Department can re-evaluate the situation in the summer and redistribute funds across the nation.

"If someone has only committed 20% of their funds, Treasury can take some of all of the balance back and send it to a place that has committed 90%," Perrey said.

THDA could also look to help other local authorities if their funds quickly burn out, he said.

"We will set up some kind of subcontracting arrangement with each of them, so that if we have sufficient reserves in these funds and they are going through theirs more rapidly, we have some abilities to shift some resources to assist them," Perrey said.

Multiple rental assistance programs have already started helping tenants who are behind on rent payments.

For example, Nashville residents in need for help can access rental assistance through various programs set up by the city government and local groups.

The city-run Metro Action Commission offers emergency assistance for three to six months to those at risk of eviction or foreclosure. Similar programs are also available at groups such as The Nashville Conflict Resolution Center and nonprofit The Housing Fund.

*Reach Yue Stella Yu at yyu@tennessean.com or 615-913-0945. Follow her on Twitter at @bystellayu_tnsn.*


# Public Notice

TVA

## Clinch River Nuclear Site Advanced Nuclear Reactor Technology Park

**Notice of Intent to Prepare a Programmatic Environmental Impact Statement**

TVA has released a Notice of Intent (NOI) to prepare a Programmatic Environmental Impact Statement (PEIS) to address the potential environmental effects associated with the construction, operation and decommissioning of an advanced nuclear reactor technology park at TVA's 935-acre Clinch River Nuclear (CRN) Site in Oak Ridge, Roane County, Tennessee. The park would contain one or more advanced nuclear reactors with a cumulative electrical output not to exceed 800 megawatts electric (MWe). Public comments are invited to identify other potential alternatives, information and analysis relevant to the proposed action.

This project supports TVA's 2019 Integrated Resource Plan by continuing to evaluate emerging nuclear technologies as part of technology innovation efforts aimed at developing future generation capacities. This project would evaluate and demonstrate the feasibility of deploying advanced nuclear reactors to support TVA's mission of providing safe, clean, reliable and low-cost energy to the Tennessee Valley. The consideration of a new nuclear facility at the CRN Site supports TVA's mission statement and is another way to assess how to serve the people of the Tennessee Valley.

The PEIS will address a range of alternatives for construction, operation and decommissioning of an advanced nuclear reactor technology park at the CRN Site. Action alternatives include construction of light-water reactor (LWR) alternatives and/or non-LWR alternatives at the CRN Site. There are two areas within the CRN Site that are best suitable for development; these are designated as Area 1 and Area 2. Therefore, TVA plans to evaluate four discrete alternatives (A-D) for these proposed actions, including the No-Action Alternative (A) and an advanced nuclear reactor technology park at Area 1 (B); at Area 2 (C); at Area 1 and Area 2 (D). Two additional alternatives, E and F, were considered but eliminated.

The NOI and additional information are available at www.tva.com/nepa. Comments may be submitted at www.tva.com/nepa, via email at nepa@tva.gov, or by mail to the address below. To be considered, comments must be submitted or postmarked no later than March 19, 2021. Please note that any comments received, including names and addresses, will become part of the project administrative record and will be available for public inspection. **Due to COVID-19 teleworking restrictions, electronic submission of comments is encouraged, to ensure timely review and consideration.**

TVA plans to host an open house on March 1, 2021, from 6-8 p.m. EST. Visit www.tva.com/nepa for additional information.

For more information on the National Environmental Policy Act (NEPA) process, to request an electronic or printed copy of the documents, or to submit comments, contact:

**Taylor Cates**
NEPA Specialist
jtcates@tva.gov
1101 Market St., BR 2C-C
Chattanooga, TN 37402

## PUBLIC NOTICE

The Tellico Reservoir Development Agency (TRDA) Board of Directors will meet in regular quarterly session on Friday, February 12, 2021, at 11:00 a.m. In accordance with Tennessee Governor Bill Lee's Executive Order No.71, the meeting will be held by electronic means. The link to join the meeting may be obtained by calling the TRDA office at (865) 673-8599. Persons desiring to make public comment prior to the meeting must submit their comments in writing by February 11, 2021, to TRDA, 165 Deer Crossing, Vonore, Tennessee 37885. No member of the public may be physically present. However, an audio recording of the meeting will be available two business days after the meeting.

**NOTICE TO SEEK TITLE**
**2000 Ford Explorer**
**VIN# 1FMZU63E9YZA22684**
Any and all parties holding an interest in this car should contact Charles Hicks at 1298 Turn Lane, Lenoir City, TN 37771 by certified mail, return receipt requested, within ten (10) business days of this publication.
February 3, 10 & 17, 2021



## NOTICE OF PUBLIC HEARINGS

The Loudon City Council will conduct public hearings on February 22, 2021 for the following:

6:20 PM amending Title 5, Chapter 9, Section 14 of the Municipal Code of the City of Loudon regarding the parking of trucks on certain city streets

6:25 PM designating parallel on-street parking on Grove Street from Wharf Street to College Street

The ordinances are available for review at the Municipal Building. The hearings will be held in the Municipal Building located at 2480 Highway 72N. Anyone needing special accommodations in order to participate in the meetings should contact the City Manager's office or ADA Coordinator Travis Gray as soon as possible, but no later than 48 hours prior to the meeting. The city's phone number is 865-458-2033.

# P LE ANSWERS

## Weekly SUDOKU

Answer

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## COMFORT FOODS




## Super Crossword

Answers

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**Loudon County Government**
**Surplus Equipment Sale**
Loudon County Government has for auction on GovDeals.com the following:

Powermatic Upcut Saw (Model #COS-18L)
Powermatic Lathe (Model #4224)
DS-90 Folding and Inserting System for Processing Mail

Descriptions and pictures of items are available on the GovDeals.com website. The Closing Auction date will be February 22,2021. Interested bidders can contact Teresa Everett at 865-458-4663 or Susan Huskey 865-458-9042. Loudon County Government will not discriminate on the basis of sex, race, national origin, creed, age, marital status or disability.



## NOTICE OF SPECIAL MEETING OF THE INDUSTRIAL DEVELOPMENT BOARD OF LOUDON COUNTY

The Industrial Development Board of Loudon County (the "Board") will hold a special meeting on Thursday, February 18th at 11:00 a.m. Due to the COVID-19 pandemic and in accordance with Governor Lee's Executive Order No. 16, as extended by Executive Order No. 34, No. 51, No. 60 and No. 65, the Commissioners of the Board may attend the meeting either electronically or in-person at the offices of Loudon County Government located at 100 River Road, Loudon, Tennessee 37774.

There will be considered at such meeting the approval of documentation related to a payment in lieu of tax agreement with respect to Project Strength in connection with property generally located at 14542 El Camino Lane, Lenoir City, Tennessee. If any person wishes to obtain real-time, live access to the meeting, contact Jack Qualls, at (865) 988-0843 for more information. This Notice is published in compliance with Tenn. Code Ann. § 7-53-305(j).

29384008.1

# USA's Osterman looks to end decorated softball career on top

(AP) — Cat Osterman is primed to end her softball career on top.

The dominant left-handed pitcher is set to compete for Team USA at the Tokyo Olympics, then she will defend her individual championship at Athletes Unlimited later this year before retiring.

Osterman was an Olympic gold medalist in 2004 and a silver medalist in 2008. In college at Texas, she was a three-time USA Softball Collegiate Player of the Year.

She is ready for one more run at greatness, then that's it.

"It's just time," she said. "I have a family and I've been doing this for a long, long time. Slowly but surely, the signs were there that it was time for me to phase into a new direction."

Last season, Osterman was the highest point earner for Athletes Unlimited in games played during a five-week season played in a bubble at a sports complex in Rosemont, Illinois. The league featured 57 of the world's best players.

Osterman didn't go in expecting to win the individual honor — after all, she had planned to retire after the Olympics and joined the league only after the Tokyo Games were postponed because of the coronavirus pandemic and she was looking for a way to stay competitive.

She said she's glad she joined and that it was an easy decision to commit for a second season.

Pitcher Cat Osterman smiles as she answers a question during a news conference to announce the USA Softball 2020 Women's Olympic Team in Oklahoma City, in this Tuesday, Oct. 8, 2019, file photo. (AP Photo/Sue Ogrocki, File)

"The cool part is that I was able to perform the way that I was at the peak of my career when I was 27, 28," she said. "So that was an exciting moment to see. But I think more than anything, I was proving to myself that I could throw at an elite level and at a level that I was satisfied with."

Osterman initially wasn't sure that an individual points-based system would catch on, but it worked.

"It's obviously super exciting for softball that there's a pro avenue that looks like it can be sustained, not only that the fans fell in love with, but that the players fell in love with," she said. "I know plenty of players had doubts when the idea was first pitched, but once we were in it, we were all in love with it."

Osterman's work continued after the season. She and her husband turned a spare bedroom into a workout room. Her trainer, Lance Sewell, continues to help her get results after seven years of working together.

Her workouts have changed over the years.

"I do a little bit more of it, but less intensity than I used to simply because I'm older, but I have to also keep my body moving and let it recover the right way," she said. "It's very scripted out."

Osterman said she admires stars in other sports such as Tom Brady, Justin Verlander and Aaron Rodgers who have remained elite competitors at advanced ages.

"I can relate to the fact that you're passionate about what you do, and that you want to keep doing it as long as you're able to," she said. "I read articles about them and I think, 'I know what this feels like.'"

Osterman said Team USA is training together two weeks per month. If all goes as planned, the team will go into a bubble environment to limit exposure to others before heading to Tokyo.

After that, she'll try to defend her championship. She wants fans to be able to watch her play one last time before she retires.

"It's fun to return and see who takes the title after this," she said. "If it's me, there will be no Season 3 for me. If it's not me, I'm going to enjoy watching whoever comes after that championship title."

**ADAMS SIGNS** — Cole Adams receives a scholarship to play football for Valparaiso University, Indiana. Pictured with Cole are family members Ryan and Blake Overton, Paul and Lauren Adams; ORHS Principal Garfield Adams, Athletic Director Mike Mullins and Head Football Coach Joe Gaddis. Special to The Oak Ridger

# Webb's Noelle Fuchs to row at Duke University

KNOXVILLE — Webb School of Knoxville will celebrate senior Noelle Fuchs' signing with the Duke University women's rowing team, Friday, Feb. 5, 2021. The outdoor ceremony will take place at 12:10 p.m., at Webb's Science Center fountain on the Webb School campus.

Fuchs has been a member of Atomic Rowing in Oak Ridge, since her sophomore year. She helped lead her teammates to a gold-medal finish in the women's junior eight at the 2019 Head of the South regatta and first place in the women's junior four and eight at the 2020 Secret City Head Race.

A member of Webb's National Honor Society and an AP Scholar with Honor, Fuchs has been active in community service at Webb as one of the leaders of the Upper School Interact Club, and served as Club president her junior year. In addition, she is the recipient of a national President's Volunteer Service Award (PVSA) Gold Medal for contributing 250 or more volunteer hours over a 12-month period.

A co-captain of this year's Atomic junior women's crew team, Fuchs exemplifies both outstanding athletic effort and character, according to Atomic Rowing head coach, John Davis. "Noelle is a hard worker and has come a long way in a short amount of time," Davis says. "We're seeing her true potential in rowing and much of that potential is still untapped." He added that Fuchs is joining a strong rowing program at Duke "and we have high hopes for great things for Noelle," Davis noted. "We look forward to her impact on the Blue Devils rowing team."

## SUNNY SIDE UP

*by Joe A Hollingsworth Jr.*

Real friends are the people who, when you make a fool of yourself, don't feel you've done a permanent job.

Sorghum: what you have after a dental appointment.

One flea to another: "Shall we walk home, or do you want to take a dog?"



## Public Notice

TVA

### Clinch River Nuclear Site Advanced Nuclear Reactor Technology Park

**Notice of Intent to Prepare a Programmatic Environmental Impact Statement**

TVA has released a Notice of Intent (NOI) to prepare a Programmatic Environmental Impact Statement (PEIS) to address the potential environmental effects associated with the construction, operation and decommissioning of an advanced nuclear reactor technology park at TVA's 935-acre Clinch River Nuclear (CRN) Site in Oak Ridge, Roane County, Tennessee. The park would contain one or more advanced nuclear reactors with a cumulative electrical output not to exceed 800 megawatts electric (MWe). Public comments are invited to identify other potential alternatives, information and analysis relevant to the proposed action.

This project supports TVA's 2019 Integrated Resource Plan by continuing to evaluate emerging nuclear technologies as part of technology innovation efforts aimed at developing future generation capacities. This project would evaluate and demonstrate the feasibility of deploying advanced nuclear reactors to support TVA's mission of providing safe, clean, reliable and low-cost energy to the Tennessee Valley. The consideration of a new nuclear facility at the CRN Site supports TVA's mission statement and is another way to assess how to serve the people of the Tennessee Valley.

The PEIS will address a range of alternatives for construction, operation and decommissioning of an advanced nuclear reactor technology park at the CRN Site. Action alternatives include construction of light-water reactor (LWR) alternatives and/or non-LWR alternatives at the CRN Site. There are two areas within the CRN Site that are best suitable for development; these are designated as Area 1 and Area 2. Therefore, TVA plans to evaluate four discrete alternatives (A-D) for these proposed actions, including the No-Action Alternative (A) and an advanced nuclear reactor technology park at Area 1 (B); at Area 2 (C); at Area 1 and Area 2 (D). Two additional alternatives, E and F, were considered but eliminated.

The NOI and additional information are available at www.tva.com/nepa. Comments may be submitted at www.tva.com/nepa, via email at nepa@tva.gov, or by mail to the address below. To be considered, comments must be submitted or postmarked no later than March 19, 2021. Please note that any comments received, including names and addresses, will become part of the project administrative record and will be available for public inspection. **Due to COVID-19 teleworking restrictions, electronic submission of comments is encouraged, to ensure timely review and consideration.**

TVA plans to host an open house on March 1, 2021, from 6-8 p.m. EST. Visit www.tva.com/nepa for additional information.

For more information on the National Environmental Policy Act (NEPA) process, to request an electronic or printed copy of the documents, or to submit comments, contact:

**Taylor Cates**
NEPA Specialist
jtcates@tva.gov
1101 Market St., BR 2C-C
Chattanooga, TN 37402

# Appendix B

# Public and Agency Comments Submitted During the Scoping Period

## (February 2, 2021 through March 19, 2021)

**From:** Long, Larry
**To:** nepa
**Cc:** Kajumba, Ntale
**Subject:** PEIS TVA Clinch River
**Date:** Thursday, March 11, 2021 8:36:25 AM



Mr. J. Taylor Cates
Tennessee Valley Authority
NEPA Compliance
1101 Market Street
BR2C-C
Chattanooga, Tennessee 37402

Re: Draft Programmatic Environmental Impact Statement for the Clinch River Nuclear Site and the Tennessee Valley Authority

Mr. J. Taylor Cates:

The U.S. Environmental Protection Agency (EPA) has reviewed the Programmatic Environmental Impact Statement (PEIS) scoping documents for the Clinch River Nuclear (CRN) site. The PEIS will examine the environmental impacts associated with the construction, operation, and decommissioning of an advanced nuclear reactor technology park at the CRN site.

The proposed alternatives include construction of light water reactor (LWR) alternatives and non-LWR alternatives. There are two areas within the CRN site that are proposed for development (Area 1 and Area 2). TVA plans to evaluate four alternatives (A-D) for the proposed action including the No-Action Alternative (A) and an advanced nuclear reactor technology park at Area 1 (B), Area 2 (C), and Area 1 and Area 2 (D).

The EPA has identified environmental concerns associated with this project, which should be included in the Draft PEIS. The alternatives evaluate the economic feasibility (EF) of LWR and non-LWR modular type reactors. The EPA recommends that the EF studies be more inclusive and encompass the full or true cost associated with each of the alternatives. The true cost would include impacts to the environment including site preparation activities in a process-specific section of each alternative, financial assurance, social cost to the local community and those associated with civil defense for the potential impact areas in the event of a catastrophic failure. Thermal discharge effects to wetlands and streams that also include the impact of drought conditions/periods and transport and storage of waste material over the expected life of the facility should also be examined. See link below for information on drought conditions in Tennessee - https://www.drought.gov/drought/states/tennessee.

The EPA appreciates the opportunity to work with the TVA and looks forward to continuing the collaboration process on the PDEIS. If you wish to discuss this project further, please contact Mr. Larry Long, Project Manager, of the NEPA Section at (404) 562-9460 or by email at long.larry@epa.gov.

**Larry Long**
**Regional Mining Expert**
Physical Scientist/Sr. Principle Reviewer
NEPA Section/Strategic Programs Office
Office of the Regional Administrator
61 Forsyth Street, SW
Atlanta, GA 30303
404-562-9460
404-562-9598(FAX)
long.larry@epa.gov

Intelligence does not always define wisdom, but adaptability to change does

STATE OF TENNESSEE
**DEPARTMENT OF ENVIRONMENT AND CONSERVATION**
**DIVISION OF WATER RESOURCES**
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102

February 18, 2021

Ms. J Taylor Cates
Tennessee Valley Authority
1101 Market Street, BR 2C-C
Chattanooga, TN 37402

Subject: TVA Clinch River Siter Scoping for Programmatic EIS
Roane County, TN

*Sent via email to jtcates@tva.gov and nepa@tva.gov*

Dear Ms. Cates:

As this is at the scoping for a PEIS, there is not sufficient information to address the requirements for the permits in detail. The construction of a light water reactor and/or non LWR at the TVA Clinch River site will require a construction storm water permit (CGP) based on the land disturbance being expected to be well more than one acre. This facility will also be required to have a Tennessee Storm Water Multi-Sector General Permit. A National Pollutant Discharge Elimination Permit NPDES permit will be required if there is to be a discharge from the facility into the Clinch River. An Aquatic Resource Alteration Permit (ARAP) will be required if there is to be a water withdrawal for the facility.

There have not been any public water supply intakes, wells or springs identified that would be impacted from the proposed facility. The TVA Clinch River Nuclear Site Early Site Permit Application (ML16144A086) noted that due to the interactions of the Watts Bar Dam, Melton Hill Dam and Fort Loudon Dam, that the river flow "can be upstream, downstream or quiescent, depending on the modes of operation" within the vicinity of the site. This could mean that for short periods of time, an intake at the Clinch River facility would be downstream of the NPDES discharge point for the facility. It is not clear what impact if any this flow reversal would have, but it may need to be considered in the PEIS.

If you have any further questions, I will be glad to try to assist you. You may reach me at (615) 532-0170 or tom.moss@tn.gov.

Sincerely,

Thomas A. Moss, P.G.
Environmental Review Coordinator
Compliance and Enforcement Unit

cc: Michael Atchley, DWR Manager, Knoxville Environmental Field Office

**STATE OF TENNESSEE**
**DEPARTMENT OF ENVIRONMENT AND CONSERVATION**
**DIVISION OF AIR POLLUTION CONTROL**
William R. Snodgrass Tennessee Tower, 15th Floor
312 Rosa L. Parks Avenue
Nashville, TN 37243
(615) 532-0554 Voice or (615) 532-0614 FAX

March 19, 2021

J. Taylor Cates, NEPA Compliance
Tennessee Valley Authority
1101 Market Street, BR2C-C
Chattanooga, Tennessee 37402

Subject: Clinch River Nuclear (CRN) Site Advanced Nuclear Reactor Technology Park

Dear Ms. Cates:

The Division of Air Pollution Control has reviewed the scoping request/Notice of Intent (NOI) for the Clinch River Nuclear (CRN) Site advanced nuclear reactor technology park in Roane County in Tennessee. The park would contain one or more advanced nuclear reactors with a cumulative electrical output not to exceed 800 megawatts electric (MWe). Thank you for the opportunity to provide comments.

The Programmatic Environmental Impact Statement (PEIS) will address a range of alternatives for construction, operation, and decommissioning of an advanced nuclear reactor technology park at the CRN site. The Division recommends that you evaluate the potential impacts on air quality during construction, operation, and demolition in detail in the PEIS.

The Division recommends that you address air emissions from the operation and idling of heavy-duty non-road mobile sources, evaluate alternatives to open burning for the disposal of uprooted trees and other vegetation, and minimize the generation of fugitive dust from the project through best management practices. Additional information about Tennessee's fugitive dust requirements can be found at https://publications.tnsosfiles.com/rules/1200/1200-03/1200-03-08.20180904.pdf and about open burning can be found at https://publications.tnsosfiles.com/rules/1200/1200-03/1200-03-04.pdf.

The NOI acknowledges that air quality permits may be needed for this project. Be advised that air quality construction permits must be issued prior to undertaking certain construction activities. Activities that can occur prior to receipt of such permits vary depending on the type of permit needed, so it is recommended that you contact the Division prior to groundbreaking activities.

Federal regulations enforced by the EPA and TDEC DAPC apply to asbestos renovation and demolition activity. These regulations apply to any building or structure known to contain asbestos and to any buildings proposed to be demolished. When any structures are proposed to be demolished, an asbestos demolition notification must be provided in advance, and proper pre demolition surveys need to be conducted to identify any regulated asbestos containing material (ACM) present. Prior to any demolition, all facilities must to be examined for ACM, and all potential ACM in the buildings proposed for demolition must be handled and disposed of according to the applicable Federal, state, and local regulations. Tennessee's asbestos regulations can be found in chapter 1200-03-11 of the Tennessee Air Pollution Control Regulations.

If you have any questions or comments, please feel free to contact Ms. Lacey Hardin of my staff at (615) 532-0545.

Sincerely,

Michelle W. Owenby
Director

**From:** Shaun Armstrong
**To:** Michael Gilbert
**Subject:** RE: TVA: Notice of Intent to Prepare a Programmatic Environmental Impact Statement -- Clinch River Nuclear Site Advanced Nuclear Reactor Technology Park
**Date:** Monday, March 8, 2021 1:05:37 PM
**Attachments:** image001.png
image002.png
image003.jpg
image004.png

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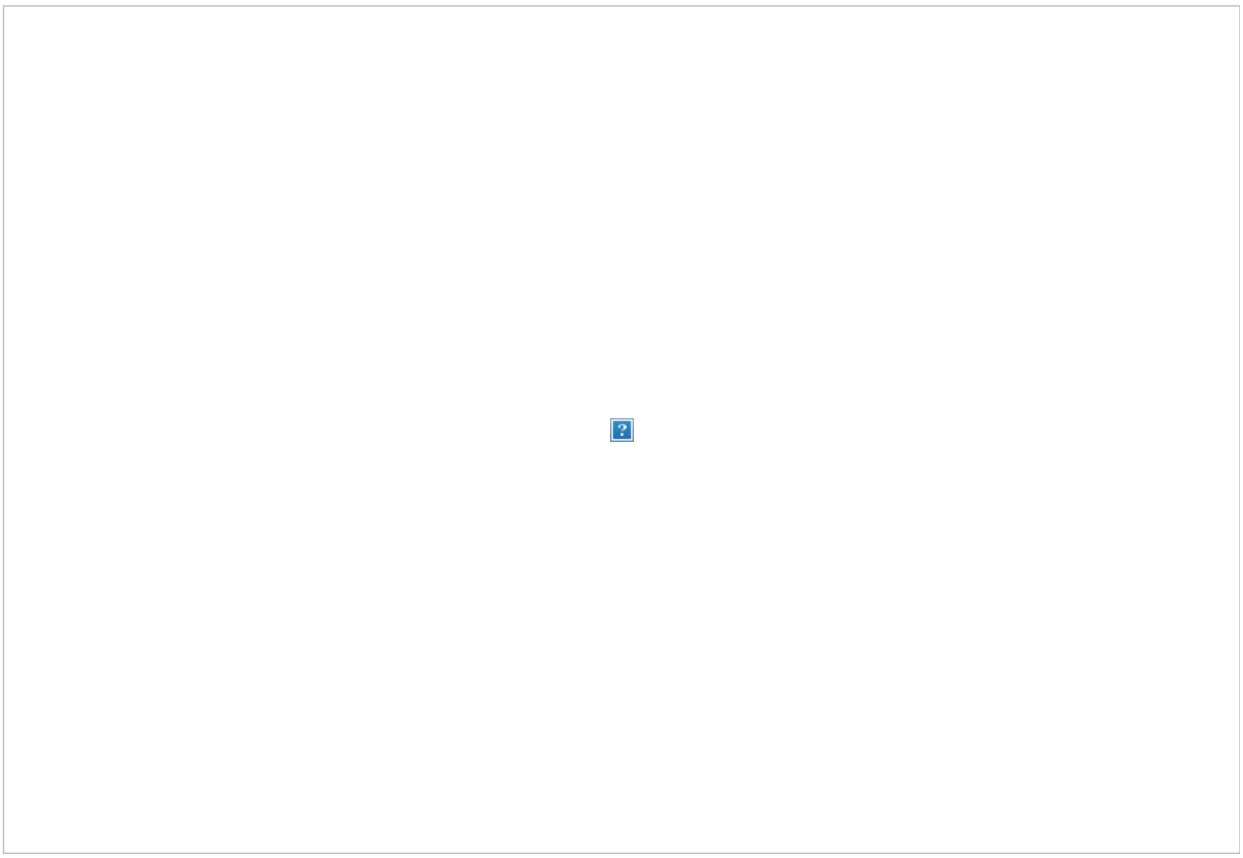
Mike,
Based on a review of the TVA site location, and there does not appear to be any active projects within close proximity of this location. SR-58 is the route that will serve the site and is currently a 5 lane facility, however the map shown does highlight potential local roadway improvements at the interchange of SR-58 and Bear Creek Road. Improvements touching the state route system and on state right-of-way will need to be coordinated through the Region 1 Traffic for review and permitting.



Thank you,
Shaun

**Shaun Armstrong, P.E.** |Civil Engineering Manager 2
Strategic Transportation Investments Division/ Project Investigation
James K. Polk Building, 10th Floor
505 Deaderick Street, Nashville, TN 37243
p. 615-253-5327
c. 615-339-7371
Shaun.Armstrong@tn.gov
http://www.tn.gov/tdot/section/strategic-transportation-investments

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**From:** Michael Gilbert <Michael.Gilbert@tn.gov>
**Sent:** Tuesday, March 2, 2021 7:39 AM
**To:** Shaun Armstrong <Shaun.Armstrong@tn.gov>

**Subject:** FW: TVA: Notice of Intent to Prepare a Programmatic Environmental Impact Statement -- Clinch River Nuclear Site Advanced Nuclear Reactor Technology Park

Hey bud just making sure this is in the queue for review.. I am sure you are on it…
Thanks for your help and let me know if you need my help at all with it dude! I think comments are due March 19th…..

Have a good one!
Mike G

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**From:** Michael Gilbert
**Sent:** Wednesday, February 10, 2021 11:11 AM
**To:** Shaun Armstrong <Shaun.Armstrong@tn.gov>
**Subject:** FW: TVA: Notice of Intent to Prepare a Programmatic Environmental Impact Statement -- Clinch River Nuclear Site Advanced Nuclear Reactor Technology Park

Here is the project we discussed. Just let me know when you all have the comments and I can send them on to Susannah. Looks like they need them by March 21st so I guess probably aim for something prior to that date if you agree!
Thanks dude and let me know if you need me….

Mike G

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**From:** Susannah Kniazewycz <Susannah.Kniazewycz@tn.gov>
**Sent:** Tuesday, February 2, 2021 3:04 PM
**To:** Michael Gilbert <Michael.Gilbert@tn.gov>
**Subject:** FW: TVA: Notice of Intent to Prepare a Programmatic Environmental Impact Statement -- Clinch River Nuclear Site Advanced Nuclear Reactor Technology Park

Hi Mike and hope all is well with you!

Thanks for you or your team reviewing other agencies capital improvement projects and commenting on behalf of the department as needed.
Susannah

**Susannah Kniazewycz, P.E.** | Director
TDOT Environmental Division
James K. Polk Bldg, 9th Floor
505 Deaderick Street, Nashville, TN 37243
p. 615-741-5373 c. 615-232-4208
susannah.kniazewycz@tn.gov
https://www.tn.gov/tdot/environmental-home.html

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**From:** Cates, J. Taylor <jtcates@tva.gov>
**Sent:** Tuesday, February 2, 2021 12:36 PM
**Cc:** Cates, J. Taylor <jtcates@tva.gov>
**Subject:** [EXTERNAL] TVA: Notice of Intent to Prepare a Programmatic Environmental Impact Statement -- Clinch River Nuclear Site Advanced Nuclear Reactor Technology Park



Hello,
Today, February 2, 2021, TVA posted the Notice of Intent (NOI) to prepare the Clinch River Nuclear Site Advanced Nuclear Reactor Technology Park Programmatic Environmental Impact Statement (CRN PEIS) on TVA's website at www.tva.com/nepa under "Open for Public Comment." To ensure consideration, any comments must be postmarked or electronically submitted no later than Friday, March 19, 2021. Please see the attached letter for more details.

Please pass this information along to anyone as appropriate.

Thank you.

**J. Taylor Cates**
NEPA Compliance Specialist
Federally Mandated Environmental Compliance
TVA logo

**M.** 423-599-9035 **E.** jtcates@tva.gov
1101 Market Street Chattanooga, TN 37402

**TVA Notice of Intent to Prepare a Programmatic Environmental Impact Statement**
**Comments from the Roane County Environmental Review Board**
**March 1, 2021**

Here are a few of my comments so far:

1. Surface water temperatures were monitored in the Clinch River arm of the Watts Bar Reservoir as part of the NRCEIS data collection activities. Is water temperature monitoring ongoing now and will future water temperature monitoring be continued during operation of any new reactors?
2. The environmental effects of discharging warmer water from reactor cooling activities needs to be addressed. The Clinch River could become warmer, thus encouraging further growth and spread of aquatic plant invasive species. Other effects of this warmer water also need to be addressed (e.g., impacts to aquatic species like fish, amphibians, reptiles, invertebrates, etc.). TVA will need to consider expanding invasive weed control activities and schedule to include this area of the Clinch River arm of the Watts Bar Reservoir, just as the effluent discharge area for the Kingston Steam Plant has been treated in the past.
3. Scoping needs to address environmentally sensitive species, like bats and pink mucket mussels. Destruction of habitats needs to be prevented. Mitigation for bats could take the form of artificial roosting habitat (such as Branden Bark) and artificial bat caves for hibernation. These could be located in the general area prior to start of construction thus making them readily available before the natural roosting or hibernation sites are lost.
4. Any Cooling-Water Discharge System may require some potential river bottom disturbance. How will the disturbed bottom silt be monitored for contaminants to prevent unplanned release of previously immobilized constituents to prevent contamination of downstream drinking water supply systems? Any discharge system needs to address how flow will be mitigated to prevent disturbance of contaminants in the sediments.
5. Any air and water discharges need to address the prevention of radioactivity being introduced into the environment, whether cooling water discharge into the Clinch River or air venting to the atmosphere.
6. Disturbed sediments carrying downstream from shoreline work and stormwater runoff into the Clinch River need to be addressed. Since any disturbed sediment will be entrained into the river currents and be carried further than probably anticipated downstream, there is considerable potential for increased fish contamination in species that currently do not have consumption restrictions on them therefore, during construction and for some calculated period afterward it may be advisable to widen the consumption restriction on fish taken in in this portion of the Clinch River arm of the Watts Bar Reservoir.
7. Consider the environmental impacts of Gasoline, diesel fuel, hydraulic lubricants, and other similar products used for equipment during construction and operation. These same constituents were used during construction and operations at Paducah Gaseous Diffusion Plant. The area designated for these activities was later found to be highly contaminated, so much so that it had contaminated the groundwater in a large area. Since the groundwater movement to the Clinch River arm has been shown to be very fast, it is essential that all such activities be contained in a maintenance pit impervious to penetration by these constituents to prevent their introduction into the environment and tainting of downstream drinking supplies.
8. Any transportation studies need to include the bicycling lanes of SR58 should be included since they are used by a high volume of cyclists for transportation and recreation purposes, especially during the summer and on weekends.

9. Scoping needs to include the impacts of plume shadowing created from reactor operations, particularly effects on the SR58 bridge crossing the Clinch River.
10. Include lessons learned from other reactor accident sites, such as Fukushima and the effects of seismic and flooding hazards. The main long-term issue with Fukushima was loss of coolant for the spent nuclear fuel, which resulted in radiological contamination (air/fallout), high radiation fields in the buildings (making repairs difficult if not impossible), and radiological contamination of the ground water. In addition, waste disposal of the contaminated material resulting from an accident needs to also be addressed as well. Include how you plan to protect the population immediately near the nuclear site, as well as those downwind of it, such as potassium iodine pills to saturate the thyroid to prevent radioactive iodine uptake?
11. The EIS needs to include and address the storage, handling, and disposal of spent fuel and low-level radwaste. These are important waste streams that carry low to high moderate risk for exposure to the public/workers and contamination of the environment.
12. Kairos Power is planning on constructing and operating a nuclear reactor on the old ETTP site in the demolished K-33 Building area. Address how cumulative effects of environmental impacts and accident scenarios will be addressed.

**From:** Hunter, Malinda
**To:** Jack Keeling
**Cc:** nepa
**Subject:** RE: TVA Asks for Public Input on the Clinch River Nuclear Site
**Date:** Tuesday, February 2, 2021 5:39:40 PM
**Attachments:** image001.png

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Mr. Keeling,
Thank you for your comment. Comments for this project should be submitted to nepa@tva.gov. I passed your comment along.

Kind Regards,

**Malinda Hunter**
Public/Media Relations

TENNESSEE VALLEY AUTHORITY

**M.** 423-718-9245 **E.** mhunter@tva.gov
1101 Market St. Chattanooga, TN 37402



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**From:** Jack Keeling <jack_k.glen_rose@yahoo.com>
**Sent:** Tuesday, February 02, 2021 4:10 PM
**To:** Hunter, Malinda <mhunter@tva.gov>
**Subject:** TVA Asks for Public Input on the Clinch River Nuclear Site



If the Administration favors Clinch River, I favor it. I do not think there should be any new nuclear power facilities. Renewable energy is becoming competitive.

Sent from Mail for Windows 10

**From:** David Lawson
**To:** nepa
**Subject:** Clinch river nuclear site
**Date:** Tuesday, February 2, 2021 6:44:32 PM



Build it.

Address: [redacted]
Date: 2.3.21

**Name:** Rick Clemenzi

**Comments:** I am shocked at the level of stupidity behind pursuing a new Nuclear plant on both Financial and Environmental grounds. This plant MUST BE DROPPED!

First to the Environment, we live in Western NC down wind from the Clinch River site and frankly it has already been proven globally that engineers have no idea how to design a fully safe Nuclear plant. Thus this would endanger our lives and MUST not happen. Every Nuclear failure to date has uncovered a new area of systemic engineering and management failure suggesting there could well be many more such failure paths that have not and could never be fully resolved for this proposed installation. As a professional engineer myself, I strongly proclaim the engineering failures in this field to date are despicable and that I have seen no reason to now suddenly trust Nuclear system engineers. For this reason alone and the Environmental Disaster any such to-be-expected-as possible failure would bring, I most strongly Oppose Any Consideration of a future Nuclear Plant in Tennessee.

But further to the well proven/demonstrated strong possibility of an Environmental Disaster that a Nuclear Plant brings to locations everywhere, the whole idea of building a New Nuclear Plant in today's market is Economic Stupidity! Per Lazard and Bloomberg, the leading Energy Power Generation Cost Analysis firms, New Nuclear costs many times what ANY of the Clean Energy options now cost. As you can clearly see in this graphic (https://intelli-products.com/market/) showing Levelized Cost of Energy (e.g., Life Cycle Cost presented as kWH/MWh), Nuclear is fully non-competitive with either Solar, Wind, or even Solar + Batteries. It would be Economic Stupidity to build a new Nuclear plant in today's market, and thus should NOT BE ALLOWED by a public entity like the TVA where costs are passed on to Consumers or Citizens. The Highly Negative Impact on Consumers MUST be taken into account, and this foolish Nuclear Plant proposal DROPPED!!

I am shocked anyone was even Stupid Enough to suggest this plant in today's rapidly evolving Wind/Solar/Battery Clean Energy market.

close window

Address: [redacted]
Date: 2.4.21

**Name:** Ken Hayse

**Comments:** So the organization that can't manage ash at a nearby fossil plant wants to be trusted with managing nuclear waste with a half-life of a couple of thousands years? Sounds like a disaster waiting to happen. I recommend that TVA put remediation costs equal to the cost of the Chernobyl on going cleanup (ongoning after 30 plus years) in escrow before construction.

close window

**From:** nepa
**To:** Cates, J. Taylor; Freeman, Carol
**Subject:** FW: Clinch River Nuclear
**Date:** Friday, February 5, 2021 10:50:10 AM

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FYI

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**From:** Daniel & Jennifer [redacted]
**Sent:** Friday, February 05, 2021 9:52 AM
**To:** nepa <nepa@tva.gov>
**Subject:** Clinch River Nuclear



To whom it my concern;

I personally feel like the proposed nuclear site on the Clinch River is a wonderful idea. It will create new jobs, and use clean nuclear energy to produce our needed energy. I live in Monroe County Tennessee so I am used to being near nuclear power, and have no concerns of a new facility being created nearby.

Respectfully,
Daniel Keller

**From:** Clay & Nancy Landers and Wilma Fisher
**To:** nepa
**Subject:** Clinch River Nuclear Site
**Date:** Friday, February 5, 2021 8:37:47 PM

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My husband and I want to go on record as supporting the development of the Clinch River Nuclear Site. Nuclear energy will be needed to help offset the emissions causing global warming. we live in Kingston, TN. I worked at the Oak Ridge National Laboratory and he worked at Y-12. We have seen first hand the effects of warming in the trees and plants of the region. When I first came to Tennessee in 1962, redbuds were blooming in early May. Now they usually bloom in late March.

Nancy Landers

[redacted]

Date: 2.8.21

**Name:** Joseph Kintz

**Comments:** Dear TVA:

I'm a strong supporter of nuclear energy, including efforts to improve the safety, reliability, cost effectiveness, and environmental aspects of this technology. I assume these be the focus of the Clinch River Nuclear Site Advanced Nuclear Reactor Technology Park.

Regardless of the care that I know everyone involved will take, there will be risks to the surrounding public and the environment. There will be pollution of some sort. Accidents will happen. Mistakes will be made. Such is the case with all human endeavor.

Rather than committing a currently unspoiled tract of land to this endeavor, why not find a place to put it somewhere in the Oak Ridge nuclear complex? With much of the old Manhattan Project facilities gone or being dismantled, surely there is room for your Nuclear Technology Park there. The Oak Ridge facility is already committed to nuclear research, and on a huge scale. They are already used to dealing with the risks, hazards, and pollution from nuclear work. They already have facilities and systems in place to deal with safety, security, environmental protection, and other issues that will be needed. Much of the needed infrastructure is already in place.

Doesn't this make more sense than converting a new piece of land, which has never been used for nuclear energy work and is surrounded by communities that have never dealt with living next door to a nuclear facility?

Thank you for being open to public comment. Please give mine serious consideration.

Kind regards,

Joe

close window

**From:** Nancy Schmitt-Hoover
**To:** nepa
**Subject:** Nuclear Reactor
**Date:** Monday, February 15, 2021 11:11:07 AM

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Are concerns about the influence of earthquake tremors being addressed?

**From:** Emma Fitzgerald
**To:** nepa
**Subject:** Programmatic Environmental Impact Statement-Clinch River Nuclear Site Advanced Nuclear Reactor Technology Park
**Date:** Tuesday, February 16, 2021 7:30:25 PM



As a student group at GVSU we understand that the economic benefits of building a nuclear plant are substantial, however we feel that the EIS needs to be more specialized to the local environment. It is discussed in the proposal to evaluate many different environmental aspects, but focusing on aquatic and surrounding species is of special concern. The EIS should also include the impact that the citizens of Oak Ridge may feel from consuming species impacted from the nuclear plant. There may also be a compounding effect with the addition of more nuclear plants. What is the anticipated plan if the EIS determines to have detrimental short and long term effects on the environment? The EIS should also include a worst case scenario for the environment and the surrounding populations

**From:** Don Safer
**To:** nepa
**Subject:** extension request for comment period for Nuclear Park PEIS
**Date:** Friday, February 19, 2021 4:10:03 PM



To: J. Taylor Cates, TVA NEPA Specialist

Mr. Cates,

Concerning the proposed Programmatic Environmental Impact Statement for an advanced nuclear reactor technology park at the Clinch River Site.

Please extend the comment period for 6 months (until September 19, 2021).

The COVID-19 pandemic is still requiring significant attention by members of the public, making review of documents and new nuclear plans difficult and extra burdensome. Plans to develop nuclear facilities on this site have been proposed for decades and ultimately not proceeded. Please do not rush another nuclear plan through under the cover of the covid crisis.

The broad scope of this proposal merits and demands extensive research on each of the possible proposed technologies: these include three different types of light water small modular reactors and five types of non-light water reactors including three that are graphite moderated: molten salt, fluoride salt, and high temperature helium gas, plus a molten chloride fast reactor and micro reactors.

Thank you for consideration of this urgent request.

Sincerely,

Don Safer
Board Member
Tennessee Environmental Council

**Bellefonte Efficiency & Sustainability Team**
**B.E.S.T.**
A local chapter of Blue Ridge Environmental Defense League ▪

February 20, 2021

J. Taylor Cates
1101 Market Street, 2C-C
Chattanooga, TN 37402

Dear Mr. Cates,

Noting TVA's call for comments regarding the preparation of a Programmatic Environmental Impact Statement related to a future Clinch River Nuclear Site Advanced Nuclear Reactor Technology Park, I ask that the comment period be extended for an additional 6 months.

What with the COVID-19 pandemic restrictions still continuing plus the large list of 'new' and 'advanced' nuclear reactors to be considered, the public needs more time to gather information in order to supply valuable comments.

Thank you for consideration of this urgent request.

Yours truly,

Sandy Kurtz

Sandra Kurtz
BEST (Bellefonte Efficiency & Sustainability Team)

Chloe O’Neil, Grace Watson, Cole Jersey and Julia Walsh

# NEPA Comment

The TVA’s Programmatic Environmental Impact Statement (PEIS) will address any foreseen environmental impacts of the project. The environmental impacts they have identified include, but are not limited to, air quality; aquatics; botany; climate change; cultural resources; emergency planning; floodplains; geology and groundwater; hydrothermal; land use; navigation; noise and vibration; radiological safety; soil erosion and surface water; socioeconomics and environmental justice; threatened and endangered species; transportation; visual; waste; water use; wetlands; and wildlife. In their PEIS, they will also provide “measures to avoid, minimize and mitigate” these adverse effects on the environment. We believe the TVA has accurately identified any impacts that arise from the construction, operation, and decommissioning of this project. The TVA covered all social and cultural influences like appearance, noise, emergency plans, safety, socioeconomics and environmental justice, and others. They have also determined the potential biophysical impacts of this project, which are crucial to consider.

The project is entirely self-supported by the TVA without federal funding, invests its profits in its electric system, aids the Tennessee River system with navigation, flood control, and land management, therefore positively affecting the economy. The TVA also helps with economic development and increasing employment rates with local and state governments and local power companies. These will positively influence the economy and do not demonstrate any potential negative impacts from this project.

**From:** Penny
**To:** Cates, J. Taylor
**Subject:** Question on Terra power
**Date:** Monday, March 1, 2021 8:42:24 PM

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Hello Ms. Cates,

Has TVA consider Terra Power?
https://www.terrapower.com/our-work/traveling-wave-reactor-technology/

Thank you,

Penny Kemle

**Name:** keith kline

**Comments:** Recommend that the scope include special study and consideration of:
hydrology and potential flooding,
karst geology,
eagle nesting, eagle prey and prey habitat,
potential populations and habitat for bats and other species of special concern,
any vegetation that has been undisturbed for 40 years or more,
future recreational uses of the river, shoreline, and flood zones, and
active outreach to engage with local communities and stakeholders.

close window

[redacted]

**Name:** ray moore

**Comments:** Will the power generated from the proposed facility at Clinch River be considered Green Energy?

close window

**Name:** Ron Woody

**Comments:** Good to see all of you this evening. Is there a plan relationship with Kairos Power who is planning a test reactor at K31 and K33 site?

close window

[redacted]

**Name:** Peggy Zukas

**Comments:** Bill Gates has a nuclear reactor company - TerraPower. Is it feasible to build one of his reactors? I was under the impression it is safer.

close window

**From:** Gwendolyn Blanton
**To:** nepa
**Subject:** Comments on Clinch River Nuclear RTP
**Date:** Tuesday, March 2, 2021 11:55:32 AM

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Dear TVA,

I am opposed to building any more nuclear reactors in Tennessee for the following reasons:

1. Nuclear power is not clean. It will never be “clean” until there is a way to recycle the spent fuel rods and to eliminate the long-lasting radioactivity of nuclear material that needs to be stored.

2. Nuclear power is not cheap. In fact, it’s so expensive that the US Government has to supplement the cost of building new reactors. If TVA is already BILLIONS of dollars in debt, then building another expensive Nuclear Reactor of any kind is the wrong direction.

3. Both Solar and Wind power are under-developed in the Tennessee Valley. We’ve known about Climate Change for 100 years. In the last 50 years, millions of people across the planet have worked to make change for the better, to almost no avail. It is now time for the big energy companies, like TVA, to take the lead in renewable energy and to phase out toxic solutions like nuclear.

4. With climate change, come increased risks of climate catastrophes, like tornadoes and flooding. The Clinch River site appears to be well within the 500 year flood plain and will almost certainly flood within the next 50-100 years, given the increased intensity of flooding due to Climate Change. Additionally, Tornado Alley has been slowly adjusting its path over the previous decade and care should be taken about putting any type of nuclear power in the path of a tornado.

5. We don’t want any more nuclear. I live within 100 miles of the proposed site and I do not feel safe. My family lives in Chattanooga and I believe they are not safe from a nuclear release as it is. We do not need nor want any more nuclear power in Tennessee.

Sincerely,

Gwendolyn E. Blanton
[redacted]

**From:** Hunter, Malinda
**To:** nepa
**Subject:** FW: Public comment of nuclear reactor on Clinch River (and nuclear energy in general)
**Date:** Wednesday, March 3, 2021 11:34:26 AM

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Did this also come to the NEPA inbox?
Want to make sure it was included in your public comments.

**From:** Jeff Lloyd [redacted]
**Sent:** Tuesday, March 02, 2021 12:33 PM
**To:** Hunter, Malinda <mhunter@tva.gov>
**Subject:** Re: Public comment of nuclear reactor on Clinch River (and nuclear energy in general)



Having issues sending you my comments.
Cheers,
Jeff

On Mon, Mar 1, 2021, 11:03 AM Jeff Lloyd <[redacted] wrote:

> nepa@tva.gov
> Dear Sir/Madam
> I am writing to you to provide comments against adding any more nuclear power including the small nuclear reactors you have asked for public comment on. I am a scientist that both lives and works in East Tennessee.
> There are many reasons against the addition of such nuclear reactors and nuclear energy in general, and I have listed some of my concerns below:
> Nuclear power has proven far too dangerous on a global scale with disasters such as 3 mile Island, Chernobyl and Fukushima immediately spring to mind. I know these new smaller reactors are supposed to be much safer and of low risk, but with the potential total loss of Roane and Knox counties as livable areas, the hazard is simply far too high.
> With respect, TVA has proven many times it is not capable of managing such terribly dangerous facilities. We have had the ash spill disaster into the TN river that not only contaminated the environment but also resulted in the loss of lives I understand. We have also had numerous safety violations and non-compliant situations at TVA's other nuclear sites including at Watts Bar. I do recognize it is a difficult management task and I would certainly not want it myself nor think that I could do better.
> There has been no long term assessment for the costs of nuclear waste disposal and plant final decommissioning at the end of life. Nuclear waste lasts effectively forever and there is nowhere safe to put it.
> There has not been a study of the costs of insurance against the loss of life and the loss of property. I would personally want an insurance policy against any nuclear incident or radiation contamination, and I am sure that every citizen in East TN would like to receive such a policy with premiums paid for by TVA.
> There are far more cost effective alternatives to nuclear including natural gas, but now it is actually cheaper to put in wind and solar generation and natural gas will need to go also due to CO2 emissions. However, biogas –natural gas captured at landfills and commercially produced with agricultural products and byproducts and even human waste is fully sustainable and could be helpful to continue the use of natural gas infrastructure (and has a double benefit in reducing methane leakage – 24 time more impacting than CO2 emissions.

No organic material should ever be allowed in non captured landfill).
Solar capability is huge especially if you also look at residential and commercial building rollouts – and TVA could lead the way and provide such installations, and even retain ownership of them. With the help of the utility there is no reason why every home and every business cannot be net zero (as is my own).
There are also other modern alternatives that should be investigated including improving our hydroelectric capability (especially as physical energy storage capacity (pump upstream – effectively adopted in Germany)) and the use of passive geothermal (thermal syphoning underground wells tapping magma or volcanic heat – now being implemented in Canada).
On a smaller scale, there are 22 million used rail ties disposed of per year and this is dwarfed by C & D material. This valuable biomass could be used in gasification such as at the Rockwood facility in Lebanon TN (Aries energy or similar Proton Energy plants – two TN based companies)) or even torrefied for use in a converted fossil plant (use of Biomass is good to fill in the 'gaps' with other renewable power sources and it can be controlled on demand).
Finally in addition to large scale wind and solar, there is also a massive opportunity to simply reduce need by the improvement of home insulation and the installation of more energy efficient equipment such as heat pumps (for heating and water heating). Most homes in TN are not built to current codes with regard to energy conservation and insulation and upgrading these homes is a huge employment opportunity as well as an opportunity to reduce energy need permanently. Such endeavors could be considered in partnership with TVA and local utilities with the billing potentially including upgrades for conservation (charge more per KW hour but the same overall per household).
Of course there are certain increasing needs due to the massive adoption of electric vehicles already underway. We will have to look at large potential increases in electrical need to power this fleet, but nuclear energy already makes up too large a percentage of our current supply and as it has not been fully costed, and has such a high hazard, it should be used only as a last resort – after we have implemented all of the above as well as other solutions not yet considered.
Thank you kindly for the opportunity to provide comment.
Yours Faithfully
Jeff Lloyd PhD

March 3, 2021

J. Taylor Cates
NEPA Specialist
1101 Market Street, BR 2C-C
Chattanooga, TN 37402

SUBJECT: Comments on TVA Programmatic Environmental Impact Statement — Clinch River Nuclear Site Advanced Nuclear Reactor Technology Park, *Federal Register*, Vol. 86, No. 23, February 5, 2021, pp. 8476-8478

Comments submitted via email to nepa@tva.gov and [redacted]

Good Day:

Pursuant to the subject *Federal Register* notice, I am commenting on the Tennessee Valley Authority's Programmatic Environmental Impact Statement (PEIS) covering "a range of alternatives for construction, operation, and decommissioning of an advanced nuclear reactor technology park" at the Clinch River site in Tennessee. TVA anticipates the PEIS will evaluate four alternatives:

1) No-Action
2) Advanced nuclear reactor technology park at Area 1 of the site
3) Advanced nuclear reactor technology park at Area 2 of the site
4) Advanced nuclear reactor technology park at Areas 1 and 2 of the site

For the PEIS to properly evaluate the No-Action alternative against the three alternatives for an advanced nuclear reactor technology park, it is essential to consider more than four decades of TVA's experience constructing and operating nuclear reactors. As detailed below, that history is replete with billions of dollars spent on unfinished nuclear reactors and billions more spent restoring under-performing finished nuclear power reactors to the minimum levels allowed for resumption of power generation.

In short, TVA's nuclear reactor history can be summed up in three words: **MONEY FOR NOTHING**.

The three advanced nuclear reactor technology options must realistically consider the very real, if not entirely unavoidable, likelihood that any nuclear reactor built by TVA might not ever operate and that any reactor operated by TVA might encounter costly repairs. Evaluations that only consider optimistic forecasts of construction projects completed on time and within initial budgets or completed reactors that operate at high capacity factors and low operating and maintenance costs would replicate mistakes TVA too many times over the past four-plus decades and result in American taxpayers and ratepayers spending even more **MONEY FOR NOTHING**.

Consider the Bellefonte debacle. TVA planned to construct and operate two reactors. Decades later with billions down the drain, TVA opted to forego finishing Bellefonte Units 1 and 2 and instead embarking on the construction of two brand new reactors at the site. That plans did not pan out either. Billions of dollars spent building and NOT operating four nuclear reactors without even a kilowatt of electricity generated.

TVA began construction of ten nuclear reactors that it gave up on after spending billions of dollars for zero electricity generated. TVA only completed and operated nine nuclear reactors.

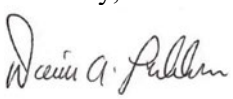
Consider the Watts Bar debacle. TVA finished construction of Watts Bar Unit 2 more than 40 years after it began constructing it — more than 40 years to construct a reactor that has a 40-year operating license.

Consider the Browns Ferry and Sequoyah nuclear plants — nine operating reactors at two plants that have, so far, experienced nine year-plus outages. These year-plus outages — more than ten times the outage length of reactors NOT mis-operated by TVA — cost billions of dollars for electricity NOT being generated.

TVA's nuclear history is filled with overly optimistic expectations for construction project and under-performance of operating reactors. The advanced nuclear reactor technology park might, repeat might, be the exception to this decades-long trend. But it is equally if not more likely that the park will cost way more and supply way less electricity than hoped for by TVA.

At some point, citizens of the Valley must stop paying for TVA's ill-advised nuclear ambitions. A realistic PEIS properly considering the past as well as forecasting the future would help prevent more **MONEY FOR NOTHING**.

Sincerely,



David Lochbaum
[redacted]

Attachments

# TVA'S OPERATING NUCLEAR PLANTS

## Browns Ferry

- Unit 2 restarted on September 10, 1976, after a 1.5-year outage
- Unit 1 restarted on September 24, 1976, after a 1.5-year outage
- Unit 3 restarted on November 28, 1984, after a 1.2-year outage
- GAO reported in May 1989 that NRC rated safety performance at Browns Ferry between 1980 and 1986 far lower than for 10 other boiling water reactor plants – no boiling water reactor was reported to have lower ratings
- Unit 2 restarted on May 24, 1991, after a 6.7-year outage that reportedly cost more than $1.3 billion ($2.5 billion today)
- Unit 3 restarted on November 19, 1995, after a 10.7-year outage that reportedly cost more than $1.4 billion ($2.4 billion today)
- Unit 1 restarted on June 2, 2007, after a 22.2-year outage that reportedly cost more than $1.8 billion ($2.27 billion today)

## Sequoyah

- Unit 2 restarted on May 13, 1988, after a 2.7-year outage.
- Unit 1 restarted on November 10, 1988, after a 3.2-year outage.
- Unit 1 restarted on April 20, 1994, after a 1.1-year outage.

## Watts Bar

- NRC issued TVA an operating license for Unit 1 on February 7, 1996, more than 21 years after TVA began its construction
- NRC issued TVA an operating license for Unit 2 on October 22, 2015, more than 41 years after TVA began its construction

***TVA's nine operating reactors experienced nine year-plus outages (50.8 years total) caused by poor performance, far worse than achieved at other U.S. nuclear power reactors.***

***The two reactors at Watts Bar required more than six decades to construct. No nuclear reactor in the United States took longer to build.***

***That's not megawatts, it's negawatts — money for nothing.***

# TVA'S NON-OPERATING NUCLEAR PLANTS

## Bellefonte

- The actual cost for constructing Units 1 and 2 through September 30, 1982, were $2.064 billion ($5.59 billion today).

- GAO reported in August 1995 that TVA had spent nearly $20 billion constructing nuclear power reactors that were not operating.($34.3 billion today)

- In November 2016. TVA announced the sale of the 1,400 acre site to Nuclear Development LLC for $111 million ($121 million today).

## Hartsville

- The actual cost for constructing Units A1 and A2 through September 30, 1982, were $1.502 billion ($4.07 billion today).

- The actual cost for constructing Units B1 and B2 through September 30, 1982, were $726 million ($1.97 billion today).

## Phipps Bend

- The actual cost for constructing Units 1 and 2 through September 30, 1982, were $997 million ($2.7 billion today).

## Yellow Creek

- The actual cost for constructing Units 1 and 2 through September 30, 1982, were $1.113 billion ($3.01 billion today).

***TVA spent over $17.3 billion dollars constructing ten nuclear power reactors that never, ever generated a single watts of electricity.***

***That's not megawatts, it's negawatts — money for nothing.***

## TVA SAFETY CULTURE

- In only eight (8) of the thirty (30) years between 1990 and 2019, the NRC received more allegations from the average U.S. nuclear plant than from the average TVA nuclear plant. That eight year period (1998-2005) ended more than a decade ago.

- In only ten (10) of the thirty (30) years between 1990 and 2019, the NRC received more allegations from the average U.S. nuclear plant than from the average TVA nuclear plant. The most recent time (2011) was nearly a decade ago.

***TVA's deficient nuclear safety culture is neither a recent affliction nor a long-healed affliction — it's a chronic malaise sustained across generations of workers, senior managers, and Board members.***

# BELLEFONTE NUCLEAR PLANT

**Scottsboro, Alabama** **Four Pressurized Water Reactors**

| Date | Event | Reference |
|---|---|---|
| April 1970 | TVA estimated that construction of the plant would cost $650 million. | U.S. General Accounting Office, "Bellefonte Nuclear Plant," March 1, 1976. (PSAD-76-86) |
| June 19, 1973 | TVA applied to the AEC for construction permits to build Units 1 and 2. | Letter dated June 19, 1973, from Lynn Seeber, General Manager, Tennessee Valley Authority, to John F. O'Leary, Director, Directorate of Reactor Licensing, U.S. Atomic Energy Commission. (ML111030259) |
| August 1974 | TVA revised the estimated cost of the plant to $1 billion. | U.S. General Accounting Office, "Bellefonte Nuclear Plant," March 1, 1976. (PSAD-76-86) |
| September 1974 | TVA began construction of the plant. | U.S. General Accounting Office, "Bellefonte Nuclear Plant," March 1, 1976. (PSAD-76-86) |
| December 24, 1974 | AEC issued TVA a construction permit for Units 1 and 2. | Letter dated March 23, 1993, from Oliver D. Kingsley, Jr., President Generating Group, Tennessee Valley Authority, to Thomas E. Murley, Director, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission. (ML111080395) |
| August 1975 | TVA revised the estimated cost of the plant to $1.2 billion. | U.S. General Accounting Office, "Bellefonte Nuclear Plant," March 1, 1976. (PSAD-76-86) |
| August 31, 1975 | Construction of the plant was estimated to be 6 percent. | U.S. General Accounting Office, "Bellefonte Nuclear Plant," March 1, 1976. (PSAD-76-86) |
| February 1, 1978 | TVA applied to the NRC for operating licenses for Units 1 and 2. | Letter dated March 23, 1993, from Oliver D. Kingsley, Jr., President Generating Group, Tennessee Valley Authority, to Thomas E. Murley, Director, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission. (ML111080395) |
| October 23, 1984 | TVA informed the NRC that the estimated fuel loading date for Unit 1 had been revised to October 1987 and to October 1989 for Unit 2. | Letter dated October 23, 1984, from L. M. Mills, Manager, Nuclear Licensing, Tennessee Valley Authority, to Chief, Management Information Branch, Office of Management |

# BELLEFONTE NUCLEAR PLANT

**Scottsboro, Alabama** **Four Pressurized Water Reactors**

| Date | Event | Reference |
|---|---|---|
| | | and Program Analysis, U.S. Nuclear Regulatory Commission. (ML082340283) |
| June 29, 1988 | TVA deferred the construction of Units 1 and 2 due to lower than expected demand for electricity and cost-cutting efforts. | Letter dated July 29, 1988, from R. Gridley, Director, Nuclear Licensing and Regulatory Affairs, Tennessee Valley Authority, to U.S. Nuclear Regulatory Commission. |
| September 30, 1982 | The construction cost for Units 1 and 2 increased from the original estimate of $650 million to $2.411 billion. | Comptroller General of the United States, "Triennial Assessment Of The Tennessee Valley Authority — Fiscal Years 1980-1982," GAO/RCED-83-123, April 15, 1983. |
| September 30, 1982 | The actual construction cost for Units 1 and 2 to date were $2.064 billion. | Comptroller General of the United States, "Triennial Assessment Of The Tennessee Valley Authority — Fiscal Years 1980-1982," GAO/RCED-83-123, April 15, 1983. |
| March 23, 1993 | TVA notified NRC of its plan to complete construction of Units 1 and 2. | Letter dated March 23, 1993, from Oliver D. Kingsley, Jr., President Generating Group, Tennessee Valley Authority, to Thomas E. Murley, Director, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission. (ML111080395) |
| December 12, 1994 | TVA halted work on Units 1 and 2. | Matthew L. Wald, *New York Times*, "T.V.A. to Stop All Work on 3 Reactors," December 13, 1994. |
| December 12, 2005 | TVA informed NRC that is placed Units 1 and 2 in terminated status. | Letter dated December 12, 2005, from Glenn W. Morris, Manager, Corporate Nuclear Licensing and Industry Affairs, Tennessee Valley Authority, to James E. Dyer, Director, Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission. (ML060120054) |
| April 6, 2006 | TVA requested that NRC terminate the construction permits for Units 1 and 2. | Letter dated September 14, 2006, from Catherine Haney, Director, Division of Operator Reactor Licensing, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, to Karl W. Singer, Chief Nuclear Officer and |

# BELLEFONTE NUCLEAR PLANT

**Scottsboro, Alabama** **Four Pressurized Water Reactors**

| Date | Event | Reference |
|---|---|---|
| | | Executive Vice President, Tennessee Valley Authority. (ML061810505) |
| September 14, 2006 | NRC notified TVA that it approved the termination of the construction permits of Units 1 and 2. | Letter dated September 14, 2006, from Catherine Haney, Director, Division of Operator Reactor Licensing, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, to Karl W. Singer, Chief Nuclear Officer and Executive Vice President, Tennessee Valley Authority. (ML061810505) |
| October 30, 2007of the appl | TVA applied to the NRC for combined licenses to build and operate Units 3 and 4. | Letter dated January 18, 2008, from David B. Matthews, Director, Division of New Reactor Licensing, Office of New Reactors, U.S. Nuclear Regulatory Commission, to Ashok S. Bhatnagar, Senior Vice President, Nuclear Generation Development and Construction, Tennessee Valley Authority. (ML080140230) |
| August 26, 2008 | TVA applied to the NRC for reinstatement of the construction permits for Units 1 and 2. | Letter dated August 10, 2009, from Ashok Bhatnagar, Senior Vice President, Nuclear Generation Development and Construction, Tennessee Valley Authority, to U.S. Nuclear Regulatory Commission. (ML092230594) |
| March 9, 2009 | NRC granted TVA reinstatement of the construction permits for Units 1 and 2. | Letter dated August 10, 2009, from Ashok Bhatnagar, Senior Vice President, Nuclear Generation Development and Construction, Tennessee Valley Authority, to U.S. Nuclear Regulatory Commission. (ML092230594) |
| August 10, 2009 | TVA notified NRC that placed Units 1 and 2 in deferred status. | Letter dated August 10, 2009, from Ashok Bhatnagar, Senior Vice President, Nuclear Generation Development and Construction, Tennessee Valley Authority, to U.S. Nuclear Regulatory Commission. (ML092230594) |
| March 28, 2016 | TVA requested the withdrawal of the combined licenses for Units 3 and 4. | Letter dated March 28, 2018, from J.W. Shea, Vice President, Nuclear Licensing, Tennessee Valley Authority, |

# BELLEFONTE NUCLEAR PLANT

**Scottsboro, Alabama** **Four Pressurized Water Reactors**

| Date | Event | Reference |
|---|---|---|
| | | to U.S. Nuclear Regulatory Commission, "Request to Withdraw the Bellefonte Nuclear Plant Units 3&4 Combined License Application." (ML16099A258) |
| November 14, 2016 | TVA announced the sale of the 1,400 acre site to Nuclear Development LLC for $111 million. | Tennessee Valley Authority, Press Release dated November 14, 2016, "TVA Completes Bellefonte Sale." (ML18036A954) |

# BROWNS FERRY NUCLEAR PLANT

**Athens, Alabama** **Three Boiling Water Reactors**

| Date | Event | Reference |
|---|---|---|
| 1966 | TVA announced plans to build 17 nuclear reactors. | U.S. General Accounting Office, "Tennessee Valley Authority: Financial Problems Raise Questions About Long-term Viability," GAO/AIMD/RCED-95-134, August 1995. |
| May 10, 1967 | Atomic Energy Commission issued Construction Permits for Units 1 and 2 | Letter dated May 10, 1967, from Peter A. Morris, Director, Division of Reactor Licensing, Atomic Energy Commission, to G. O. Wessenauer, Manager of Power, Tennessee Valley Authority |
| July 31, 1968 | Atomic Energy Commission issued Construction Permit for Unit 3 | Letter dated July 31, 1968, from Peter A. Morris, Director, Division of Reactor Licensing, Atomic Energy Commission, to G. O. Wessenauer, Manager of Power, Tennessee Valley Authority (ML020100063) |
| August 1, 1974 | TVA placed Unit 1 into commercial operation. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| January 29, 1975 | NRC ordered Unit 1 and 2 shut down for inspections of piping for signs of cracking | Article dated January 30, 1975, "Browns Ferry 2 Of 23 To Close," by William Stockton, Associated Press, *The Tennessean* |
| March 1, 1975 | TVA placed Unit 2 into commercial operation. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| March 22, 1975 | A worker using a candle to check for air leaks through walls in the cable spreading room started a fire that blazed for nearly seven hours, damaged over 1,600 electrical cables, and disabled all of the emergency core cooling systems for Unit 1 and | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |

# BROWNS FERRY NUCLEAR PLANT

**Athens, Alabama** **Three Boiling Water Reactors**

| Date | Event | Reference |
|---|---|---|
| | many of these systems for Unit 2. The control room operators manually shut down the two reactors after the fire began. | |
| May 9, 1975 | NRCs amended the operating licenses for Units 2 and 3 requiring the reactors to remain shut down until fire damage was been corrected. | Letter dated May 9, 1975, from Robert A. Purple, Chief, Operating Reactors Branch #1, Division of Reactor Licensing, Nuclear Regulatory Commission, to James E. Watson, Manager of Power, Tennessee Valley Authority (ML013610106) |
| September 10, 1976 | TVA restarted Unit 2 from a 1.5 year outage. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| September 24, 1976 | TVA restarted Unit 1 from a 1.5 year outage. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| March 1, 1977 | TVA placed Unit 3 into commercial operation. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| March 4, 1983 | NRC issued Bulletin 83-02 requiring owners of boiling water reactors to inspect piping for signs of cracking was had been found on other reactors. | Nuclear Regulatory Commission Bulletin 83-02, "Stress Corrosion Cracking in Large-Diameter Stainless Steel Recirculation System Piping at BWR Plants," dated March 4, 1983 (ML931219776) |
| July 21, 1983 | NRC required TVA to submit, in writing, its justification for continuing to operate the reactors until the requested piping inspections are completed. | Letter dated July 21, 1983, from Darrel G. Eisenhut, Director, Division of Licensing, Office of Nuclear Reactor Regulation, Nuclear Regulatory Commission, to Hugh G. Parris, Manager of Power, Tennessee Valley Authority. (ML20024D872) |

# BROWNS FERRY NUCLEAR PLANT

**Athens, Alabama** **Three Boiling Water Reactors**

| Date | Event | Reference |
|---|---|---|
| August 9, 1983 | TVA presented NRC its reasons for not inspecting the Unit 3 piping when requested. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| August 26, 1983 | NRC ordered Unit 3 to be shut down no later than September 6, 1983. Owners of other reactors voluntarily complied with the March 1983 safety bulletin. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| September 7, 1983 | TVA shut down Unit 3 to comply with a NRC order to inspect piping connected to the reactor vessel. The inspections revealed cracking that required repairs or replacements. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| June 1984 | NRC reported that TVA provided "*lack of management attention to the identification of the root cause of problems*" and had a "*lack of an effective quality assurance program*." | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| June 27, 1984 | TVA's Nuclear Safety Review Staff reported that the High Pressure Coolant Injection system, a primary reactor core cooling system, has been so unreliable since 1973 that operators are afraid to even test it for fear of breaking it. | Article dated September 25, 1984, "Browns Ferry safety system said unreliable," by Phillip Gentry, *Decatur Daily* |
| August 14, 1984 | An improperly rebuilt valve, a poorly written procedure, and an operator error resulted in piping of an emergency core cooling system being over-pressurized and damaged. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| August 21, 1984 | TVA shut down Unit 1 for repairs of damaged piping. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |

# BROWNS FERRY NUCLEAR PLANT

**Athens, Alabama** **Three Boiling Water Reactors**

| Date | Event | Reference |
|---|---|---|
| September 15, 1984 | TVA shut down Unit 2 to enter a planned refueling outage. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| October 22, 1984 | TVA attempted to restart Unit 3, but numerous serious departures from approved procedures caused the reactor to be shut back down. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| October 25, 1984 | NRC required Unit 3 to remain shut down until reasons for operators failing to follow procedures during an attempted startup on October 22, 1984, were identified and confirmed to have bene corrected. | Letter dated October 25, 1984, from James P. O'Reilly, Regional Administrator, Nuclear Regulatory Commission, to H. G. Parris, Manager of Power and Engineering, Tennessee Valley Authority (ML18029A264) |
| November 16, 1984 | NRC concurred with TVA's request to restart Unit 3. | Letter dated November 16, 1984, from James P. O'Reilly, Regional Administrator, Nuclear Regulatory Commission, to H. G. Parris, Manager of Power and Engineering, Tennessee Valley Authority (ML20100C464) |
| November 28, 1984 | TVA restarted Unit 3 after a 1.2 year outage. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| February 13, 1985 | TVA attempted to restart Unit 3 from a short outage when the three instruments measuring the water level above the reactor core showed significantly different indications. Rather than halting to discern the reason for the different readings and correct it, the operators focused on increasing the reactor power level. Similar water level instrument problems had been experienced on November 20, 1984, but ignored then, too. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |

# BROWNS FERRY NUCLEAR PLANT

**Athens, Alabama** **Three Boiling Water Reactors**

| Date | Event | Reference |
|---|---|---|
| February 27, 1985 | NRC proposed a $150,000 civil penalty for numerous safety violations during the attempted startup of Unit 3 on October 22, 1984. | Nuclear Regulatory Commission Enforcement Action 84-136 dated February 27, 1985. (ML20100M630) |
| March 9, 1985 | TVA shut down Unit 3 to investigate and correct reactor vessel water level measurement problems. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| March 19, 1985 | TVA shut down Unit 1 after several containment isolation valves failed leak rate testing. The motor-operated valves failed because workers reassembled them with the gears installed backwards. TVA announced operation of all three reactors would be suspended until broad programmatic problems affecting the site were corrected. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| July 22, 1985 | The NRC proposed a $150,000 civil penalty for safety violations during the February 13, 1985, startup of Unit 3. | Nuclear Regulatory Commission Enforcment Action 85-51 dated July 22, 1985. (ML18029A788) |
| May 1987 | TVA's Inspector General reported on its review of 100 employees "*in key positions that could significantly affect nuclear plant safety or efficiency*" and concluded 28 of the 100 did not satisfy the requirements needed for the positions and "*four provided false information regarding their qualifications*." | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| May 4, 1989 | U.S. General Accounting Office reported that the NRC conducted five Systematic Assessments of Licensee Performance (SALPs) at Browns Ferry between 1980 and 1986. The ratings (1 being | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |

# BROWNS FERRY NUCLEAR PLANT

**Athens, Alabama** **Three Boiling Water Reactors**

| Date | Event | Reference |
|---|---|---|
| | highest and 3 being lowest performance) for Browns Ferry and other boiling water reactors during this period: | |

| Plant | SALP 1 | SALP 2 | SALP 3 | SALP Avg. |
|---|---|---|---|---|
| Vermont Yankee | 67.4% | 32.6% | 0.0% | 1.3 |
| Monticello | 50.9% | 45.6% | 3.5% | 1.5 |
| Cooper | 42.4% | 52.5% | 5.1% | 1.6 |
| Quad Cities | 36.2% | 55.3% | 8.5% | 1.7 |
| FitzPatrick | 21.8% | 65.5% | 12.7% | 1.9 |
| Dresden | 23.3% | 58.3% | 18.3% | 2.0 |
| Hatch | 12.7% | 78.2% | 9.1% | 2.0 |
| Peach Bottom | 17.2% | 62.5% | 20.3% | 2.0 |
| Pilgrim | 23.1% | 50.0% | 26.9% | 2.0 |
| Brunswick | 14.9% | 57.4% | 27.7% | 2.1 |
| Browns Ferry | 2.2% | 45.7% | 52.2% | 2.5 |

| | | |
|---|---|---|
| January 1991 | TVA began efforts to restart Unit 3. | U.S. General Accounting Office, "Tennessee Valley Authority: Financial Problems Raise Questions About Long-term Viability," GAO/AIMD/RCED-95-134, August 1995. |

# BROWNS FERRY NUCLEAR PLANT

**Athens, Alabama** **Three Boiling Water Reactors**

| Date | Event | Reference |
|---|---|---|
| May 2, 1991 | NRC approved the restart of Unit 2. The repairs to Browns Ferry reportedly cost more than $1.3 billion. | Article dated May 2, 1991, "Industry Gets a Lift As Agency Approves Restarting a Reactor," by Keith Schneider, *New York Times* |
| May 24, 1991 | TVA restarted Unit 2 to end a 6.7 year outage. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| August 1995 | TVA spent about $25 billion constructing nuclear power reactors, only about $5 billion on reactor now operating. | U.S. General Accounting Office, "Tennessee Valley Authority: Financial Problems Raise Questions About Long-term Viability," GAO/AIMD/RCED-95-134, August 1995. |
| August 1995 | GAO reported steady increases in TVA's estimated cost of returning Unit 3 to operation as well as extended times to complete the recovery work. Management at Browns Ferry told GAO's investigators that cost estimates prior to August 1993 were overly optimistic. | U.S. General Accounting Office, "Tennessee Valley Authority: Financial Problems Raise Questions About Long-term Viability," GAO/AIMD/RCED-95-134, August 1995. |

# BROWNS FERRY NUCLEAR PLANT

**Athens, Alabama**

**Three Boiling Water Reactors**

| Date | Event | Reference |
|---|---|---|

Dollars in millions

| | 1990 | 1991 | 1992 | 1993 | 1994 |
|---|---|---|---|---|---|
| Balance sheet investment at year-end | $296 | $406 | $775 | $1,171 | $1,475[a] |
| TVA estimated cost to complete | 510 | 610 | 318 | 780 | 524 |
| TVA total estimated cost | $806 | $1,016 | $1,093 | $1,951 | $1,999 |
| Scheduled commercial operation date | Jan. 1993 | Sept. 1993 | March 1994 | Dec. 1995 | Feb. 1996 |

[a]Approximately $296 million of Browns Ferry 3's costs are included in completed plant and are being depreciated and included in current rates. As a result, at the end of fiscal year 1994, TVA's estimated cost to restart Browns Ferry 3 was about $1.7 billion.

| | | |
|---|---|---|
| November 19, 1995 | TVA restarted Unit 3 after more than $1.4 billion in repairs and a 10.7 year outage. | Article dated December 7, 1995, "NRC Clears Browns Ferry-3 For Full Power Operation," by Wilson Dizard III, *Nucleonics Week* |
| May 2002 | TVA Board voted to restart Unit 1 for an estimated cost of $1.7 to 1.8 billion. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| May 15, 2007 | NRC authorized restart of Unit 1. | Nuclear Regulatory Commission News Release II-07-032 dated May 15, 2007. (ML071350475) |

# BROWNS FERRY NUCLEAR PLANT

**Athens, Alabama**

**Three Boiling Water Reactors**

| Date | Event | Reference |
|---|---|---|
| June 2, 2007 | Unit 1 connected to the electrical grid to end a 22.2 year outage. | Nuclear Regulatory Commission Inspection Report 05000259/2007003, 050000260/2007003 and 05000296/2007003 dated July 30, 2007. (ML072120205) |
| July 9, 2007 | Bloomberg News reported that TVA spent over $1.8 billion preparing Unit 1 for restart and spent another $10.9 billion on eleven uncompleted reactors. | Article dated July 9, 2007, "New Reactor Costs Daunt U.S. Utilities," by Elliot Blair Smith, *Bloomberg News* |

# HARTSVILLE NUCLEAR PLANT

**Hartsville, Tennessee** **Four Boiling Water Reactors**

| Date | Event | Reference |
|---|---|---|
| January 1972 | TVA estimated construction of the plant would cost $1.425 billion. | U.S. General Accounting Office, "Tennessee Valley Authority Can Improve Estimates And Should Reassess Reserve Requirements For Nuclear Power Plants," PSAD-79-49, March 22, 1979. |
| July 1, 1974 | TVA applied to the AEC for construction permits to build two plants each having two reactors. | Elmer B. Staats, Comptroller General of the United States, Report to Representative Tom Bevill, Chairman, Public Works Subcommittee, House Committee on Appropriations, February 16, 1978. (EMD-78-37) |
| April 1976 | NRC issued TVA limited work authorizations to begin construction of the plant. | Elmer B. Staats, Comptroller General of the United States, Report to Representative Tom Bevill, Chairman, Public Works Subcommittee, House Committee on Appropriations, February 16, 1978. (EMD-78-37) |
| April 1976 | TVA began construction of the plant. | U.S. General Accounting Office, "Tennessee Valley Authority Can Improve Estimates And Should Reassess Reserve Requirements For Nuclear Power Plants," PSAD-79-49, March 22, 1979. |
| May 9, 1977 | NRC issued TVA construction permits for the four reactors. Issuance of the permits was delayed by a federal court decision that caused the NRC to temporarily stop issuing permits. | Elmer B. Staats, Comptroller General of the United States, Report to Representative Tom Bevill, Chairman, Public Works Subcommittee, House Committee on Appropriations, February 16, 1978. (EMD-78-37) |
| September 1978 | TVA estimated construction of the plant would cost $3.5 billion. | U.S. General Accounting Office, "Tennessee Valley Authority Can Improve Estimates And Should Reassess Reserve Requirements For Nuclear Power Plants," PSAD-79-49, March 22, 1979. |

# HARTSVILLE NUCLEAR PLANT

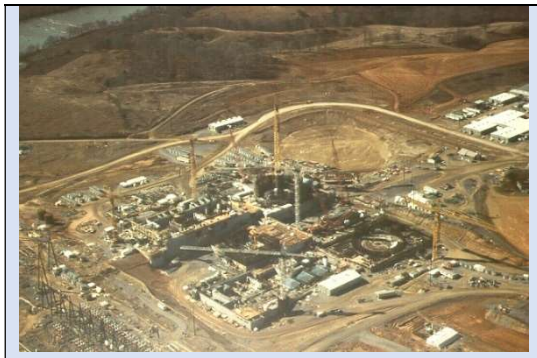
**Hartsville, Tennessee** **Four Boiling Water Reactors**

| Date | Event | Reference |
|---|---|---|
| July 24, 1981 | TVA announced it extended the projected completion date for Unit A1 to April 1991 and for Unit A2 to 1992. | U.S. Nuclear Regulatory Commission, "Construction Delays," PNO-II-81-55, July 24, 1981. (ML20063C806) |
| August 14, 1981 | TVA informed NRC that the projected fuel loading date for Unit A1 had been revised to January 1990 and for Unit A2 to January 1991. | Letter dated August 14, 1981, from L. M. Mills, Manager, Nuclear Regulation and Safety, Tennessee Valley Authority, to Harold R. Denton, Director, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission. (ML20063C806) |
| March 4, 1982 | TVA Board voted 2-1 to indefinitely defer construction of Units A1 and A2. | U.S. Nuclear Regulatory Commission, "Deferral of TVA Units," PNO-II-82-25, March 4, 1982. (ML20041F906) |
| March 19, 1982 | NRC listed the status of Unit B1 as indefinitely deferred after being 17 percent completed. | Memo dated March 19, 1982, from Kevin Cornell, Office of the Deputy Executive Director For Operations, U.S. Nuclear Regulatory Commission, to Commission Ahearne, U.S. Nuclear Regulatory Commission. (ML20063C823) |
| March 19, 1982 | NRC listed the status of Unit B2 as indefinitely deferred after being 7 percent completed. | Memo dated March 19, 1982, from Kevin Cornell, Office of the Deputy Executive Director For Operations, U.S. Nuclear Regulatory Commission, to Commission Ahearne, U.S. Nuclear Regulatory Commission. (ML20063C823) |
| April 1, 1982 | NRC listed the status of Unit A1 as deferred after being 33 percent completed. | Memo dated April 1, 1982, from A. Schwencer, Chief, Licensing Branch 2, Division of Licensing, U.S. Nuclear Regulatory Commission, to Robert L. Tedesco, Assistant Director for Licensing, Division of Licensing, U.S. Nuclear Regulatory Commission, "Use of Staff Resources of Hartsville A1, A2, B1, B2, Phipps Bend 1 & 2 and Yellow Creek – Plants Deferred by TVA." (ML20063C806) |
| April 1, 1982 | NRC listed the status of Unit A2 as deferred after being 26 percent completed. | Memo dated April 1, 1982, from A. Schwencer, Chief, Licensing Branch 2, Division of Licensing, U.S. Nuclear |

# HARTSVILLE NUCLEAR PLANT

**Hartsville, Tennessee** **Four Boiling Water Reactors**

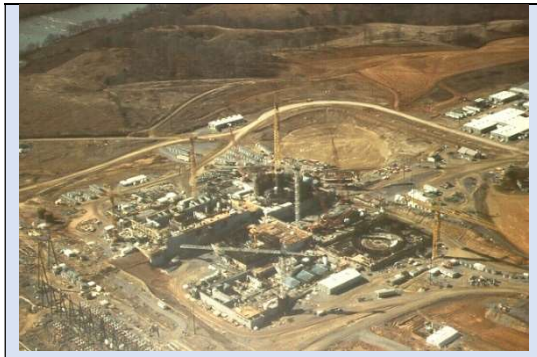
| Date | Event | Reference |
|---|---|---|
| | | Regulatory Commission, to Robert L. Tedesco, Assistant Director for Licensing, Division of Licensing, U.S. Nuclear Regulatory Commission, "Use of Staff Resources of Hartsville A1, A2, B1, B2, Phipps Bend 1 & 2 and Yellow Creek – Plants Deferred by TVA." (ML20063C806) |
| September 30, 1982 | The actual construction cost for Units A1 and A2 to date were $1.502 billion. | Comptroller General of the United States, "Triennial Assessment Of The Tennessee Valley Authority — Fiscal Years 1980-1982," GAO/RCED-83-123, April 15, 1983. |
| September 30, 1982 | The actual construction cost for Units B1 and B2 to date were $726 million. | Comptroller General of the United States, "Triennial Assessment Of The Tennessee Valley Authority — Fiscal Years 1980-1982," GAO/RCED-83-123, April 15, 1983. |
| January 21, 1983 | TVA requested that NRC extend the construction permits for Units A1 and A2. | Letter dated May 5, 1983, from L. M. Mills, Manager, Nuclear Licensing, Tennessee Valley Authority, to Harold R. Denton, Director, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission. (ML20073S859) |
| August 29, 1984 | TVA cancelled Units A1 and A2. TVA estimated that Unit A1 was 82 percent complete and Unit A2 was 67 percent complete. | Letter dated October 24, 1985, from J. W. Huffman, Manager, Licensing and Risk Protection, Tennessee Valley Authority, to Hugh L. Thompson, Jr., Director of Licensing, Division of Licensing, U.S. Nuclear Regulatory Commission. (ML20133N732) |



# PHIPPS BEND NUCLEAR PLANT

**Surgoinsville, Tennessee** **Two Boiling Water Reactors**

| Date | Event | Reference |
|---|---|---|
| January 1975 | TVA estimated construction of the plant would cost $1.6 billion. | U.S. General Accounting Office, "Tennessee Valley Authority Can Improve Estimates And Should Reassess Reserve Requirements For Nuclear Power Plants," PSAD-79-49, March 22, 1979. |
| October 1, 1975 | TVA applied to the NRC for construction permits for Units 1 and 2. TVA projected Unit 1 would be placed into commercial operation in April 1984 and Unit 2 placed in commercial operation in April 1985. | U.S. Nuclear Regulatory Commission, "Draft Environmental Statement related to construction of Phipps Bend Nuclear Plant, Units 1 and 2," August 1976. (ML20032B695) |
| December 23, 1975 | TVA submitted NRC an environmental report, needed by the NRC before it could issue a limited work authorization. The NRC rejected the environmental report as being incomplete. | Elmer B. Staats, Comptroller General of the United States, Report to Representative Tom Bevill, Chairman, Public Works Subcommittee, House Committee on Appropriations, February 16, 1978. (EMD-78-37) |
| April 1, 1976 | The NRC accepted TVA's revised environmental report. | Elmer B. Staats, Comptroller General of the United States, Report to Representative Tom Bevill, Chairman, Public Works Subcommittee, House Committee on Appropriations, February 16, 1978. (EMD-78-37) |
| October 18, 1977 | NRC issued TVA limited work authorizations for the two reactors. The issuance was delayed because TVA challenged the NRC's jurisdiction over TVA under the National Environmental Policy Act of 1969. | Elmer B. Staats, Comptroller General of the United States, Report to Representative Tom Bevill, Chairman, Public Works Subcommittee, House Committee on Appropriations, February 16, 1978. (EMD-78-37) |
| January 16, 1979 | NRC issued TVA construction permits for Units 1 and 2. | Memo dated April 1, 1982, from A. Schwencer, Chief, Licensing Branch 2, Division of Licensing, U.S. Nuclear Regulatory Commission, to Robert L. Tedesco, Assistant Director for Licensing, Division of Licensing, U.S. Nuclear Regulatory Commission, "Use of Staff Resources of Hartsville A1, A2, B1, B2, Phipps Bend 1 & 2 and Yellow Creek – Plants Deferred by TVA." (ML20063C806) |



# PHIPPS BEND NUCLEAR PLANT

**Surgoinsville, Tennessee** **Two Boiling Water Reactors**

| Date | Event | Reference |
|---|---|---|
| September 1978 | TVA estimated construction of the plant would cost $1.8 billion. | U.S. General Accounting Office, "Tennessee Valley Authority Can Improve Estimates And Should Reassess Reserve Requirements For Nuclear Power Plants," PSAD-79-49, March 22, 1979. |
| July 24, 1981 | TVA announced it had indefinitely deferred construction on both reactors. | U.S. Nuclear Regulatory Commission, "Construction Delays," PNO-II-81-55, July 24, 1981. (ML20063C806) |
| August 14, 1981 | TVA informed NRC that the projected fuel loading date for Unit 1 had been revised to January 1992. | Letter dated August 14, 1981, from L. M. Mills, Manager, Nuclear Regulation and Safety, Tennessee Valley Authority, to Harold R. Denton, Director, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission. (ML20063C806) |
| March 19, 1982 | NRC listed the status of Unit 1 as having a deferred completion date of January 1993 and being 29 percent complete. | Memo dated March 19, 1982, from Kevin Cornell, Office of the Deputy Executive Director For Operations, U.S. Nuclear Regulatory Commission, to Commission Ahearne, U.S. Nuclear Regulatory Commission. (ML20063C823) |
| March 19, 1982 | NRC listed the status of Unit 2 as indefinitely deferred after being 5 percent completed. | Memo dated March 19, 1982, from Kevin Cornell, Office of the Deputy Executive Director For Operations, U.S. Nuclear Regulatory Commission, to Commission Ahearne, U.S. Nuclear Regulatory Commission. (ML20063C823) |
| September 30, 1982 | The actual construction cost for Units 1 and 2 to date were $997 million. | Comptroller General of the United States, "Triennial Assessment Of The Tennessee Valley Authority — Fiscal Years 1980-1982," GAO/RCED-83-123, April 15, 1983. |

# SEQUOYAH NUCLEAR PLANT

**Soddy-Daisy, Tennessee** **Two Pressurized Water Reactors**

| Date | Event | Reference |
|---|---|---|
| May 27, 1970 | AEC issued TVA provisional construction permits to build Units 1 and 2. | Letter dated May 27, 1970, from Peter A. Morris, Director, Division of Reactor Licensing, Atomic Energy Commission, to James E. Watson, Manager of Power, Tennessee Valley Authority. (ML013330478) |
| November 26, 1973 | TVA informed the NRC that the estimated fuel loading date for Unit 1 had been revised to December 1976 and to August 1976 for Unit 2. | Letter dated November 26, 1973, from J. E. Gilleland, Assistant to the Manager of Power, Tennessee Valley Authority, to John F. O'Leary, Director, Directorate of Licensing, Office of Regulation, U.S. Nuclear Regulatory Commission. (ML073400390) |
| March 1975 | TVA initially estimated that Unit 1 would be placed into commercial operation in October 1973 and Unit 2 would enter commercial operation in April 1974. TVA officials told GAO that the schedule was optimistic and based on projections of when the plants' electricity would be needed rather than "*a realistic assessment of the time needed for design and construction*." | U.S. General Accounting Office, "Staff Study – Sequoyah Nuclear Plant," March 1975. |
| March 1975 | GAO reported that the cost estimate for the plant in 1968 was $346 million but increased to $675 million by September 1974 and attributed the increase to cost estimating inadequacies, design and engineering changes during construction, inflation, and high interest rates on borrowed money. Sequoyah's design was less than two percent complete when the initial cost estimate was made. Construction labor hours nearly doubled to 15.4 million hours from the | U.S. General Accounting Office, "Staff Study – Sequoyah Nuclear Plant," March 1975. |

# SEQUOYAH NUCLEAR PLANT

**Soddy-Daisy, Tennessee** **Two Pressurized Water Reactors**

| Date | Event | Reference |
|---|---|---|
| | initial estimate of 8.2 million hours. Engineering design costs tripled to $45 million from the original estimate of $15 million. | |
| March 1975 | Westinghouse Electric Corporation was still testing and analyzing the ice condenser containment design when construction started. Problems with the system required major design changes impacting the schedule and increasing the construction costs. Westinghouse plans to complete its redesigned ice condenser system in February 1975. | U.S. General Accounting Office, "Staff Study – Sequoyah Nuclear Plant," March 1975. |
| February 29, 1980 | NRC issued an operating license for Unit 1. | Letter dated February 29, 1980, from D. F. Ross, Jr., Acting Director, Division of Project Management, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, to H. G. Parris, Manager of Power, Tennessee Valley Authority. (ML013240049) |
| July 1, 1981 | TVA placed Unit 1 into commercial operation. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| September 15, 1981 | NRC issued an operating license for Unit 2. | Letter dated September 15, 1981, from Darrell G. Eisenhut, Director, Division of Licensing, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, to H. G. Parris, Manager of Power, Tennessee Valley Authority. (ML013330142) |
| June 1, 1982 | TVA placed Unit 2 into commercial operation. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |

# SEQUOYAH NUCLEAR PLANT

**Soddy-Daisy, Tennessee** **Two Pressurized Water Reactors**

| Date | Event | Reference |
|---|---|---|
| July 1985 | TVA informed NRC in writing that all safety-related equipment at the plant had been properly qualified to ensure performance in the post-accident environmental conditions (e.g., temperature, pressure radiation levels, humidity). | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| August 22, 1985 | TVA shut down Units 1 and 2 after an independent review of the environmental qualification of safety-related equipment concluded there was insufficient documentation to conclude the equipment would function properly in event of an accident. The independent consultant only found three of the first twenty-seven components reviewed to be adequately qualified. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| January 28, 1987 | With Unit 1 shut down with the reactor vessel head removed, a plugged level instrument allowed the water level to steadily drop unnoticed. The indicated water level jumped 11 inches when the plug was dislodged. When operators attempted to figure out the actual water level, they let the water level drop so low that the reactor water cooling pump lost suction. When operators attempted to restore shutdown cooling flow, the water level rose so high that water spilled out from open steam generator manways onto the containment floor. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| February 1, 1987 | With Unit 1 shut down with the reactor vessel head removed, the operators recognized that a test they were assigned to perform was not written for the plant conditions they were in. Rather than revise the | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |

## SEQUOYAH NUCLEAR PLANT

**Soddy-Daisy, Tennessee** **Two Pressurized Water Reactors**

| Date | Event | Reference |
|---|---|---|
| | inapplicable procedure, the operators decided to run it anyway. Two to three gallons of radioactively contaminated water from the Reactor Water Storage Tank overfilled the reactor vessel and spilled thtough open steam generator manways into containment, contaminating several workers. | |
| June 1987 | NRC informed TVA that it needed assurance that problems at the plant had been effectively resolved. When TVA balked at conducting a self-assessment to provide NRC this assurance, the NRC dispatched an Independent Design Inspection team to examine a single safety system — the Essential Raw Cooling Water system. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| September 11, 1987 | NRC's Independent Design Inspection report chronicled 64 problems with the sole safety system it examined — the Essential Raw Cooling Water system. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| November 13, 1987 | The Institute of Nuclear Power Operations provided TVA with results from its special assistance visit. INPO identified three areas that needed correction before restart: (1) procedures and training for operators on reactor startups, (2) maintenance practices for nuclear instrumentation, and (3) updating emergency operating procedures to incorporate recommendations from the Westinghouse Owners Group. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |

# SEQUOYAH NUCLEAR PLANT

**Soddy-Daisy, Tennessee** **Two Pressurized Water Reactors**

| Date | Event | Reference |
|---|---|---|
| January 5, 1988 | A special Operational Readiness Review chartered by TVA reported five problem areas to the Manger of Power: (1) numerous procedural and quality control problems, (2) inadequate chemistry control processes, (3) insufficient valve and electrical alignment procedures, (4) inadequate knowledge of reactivity control methods, and (5) inadequate radiological control standards. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| March 30, 1988 | The NRC authorized restart of Unit 2. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| May 13, 1988 | TVA connected Unit 2 to the electrical grid to end a 2.7 year outage. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| November 10, 1988 | Unit 1 was connected to the electrical grid to end a 3.2 year outage. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| March 1, 1993 | Unit 2 was shut down after a feedwater heater extraction steam line ruptured. The steam pipe was ten inches in diameter. | NUS Licensing Information Service Meetings Report dated December 16, 1994. |
| March 2, 1993 | TVA shut down Unit 1 for piping inspections following a pipe rupture on Unit 2. | NUS Licensing Information Service Meetings Report dated December 16, 1994. |
| March 4, 1993 | NRC issued a Confirmatory Action Letter listing seven steps that must be completed by TVA to the NRC's satisfaction before either reactor can be restarted. | Letter dated March 4, 1993, from Stewart D. Ebneter, Regional Administrator, U.S. Nuclear Regulatory Commission, to Mark G. Medford, Vice President, Nuclear Assurance, Licensing & Fuels, Tennessee Valley Authority. (ML20044B992) |

## SEQUOYAH NUCLEAR PLANT

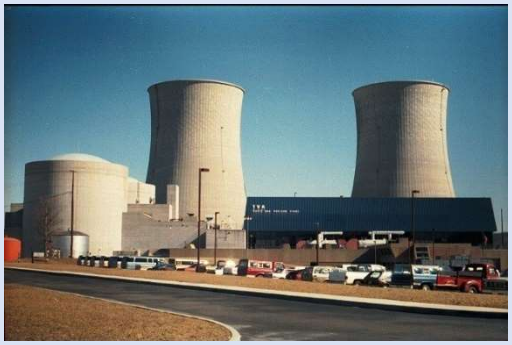
**Soddy-Daisy, Tennessee** **Two Pressurized Water Reactors**

| Date | Event | Reference |
|---|---|---|
| March 24, 1993 | NRC notified other plant owners of the mistakes made at Sequoyah:<br><br>*The augmented inspections using ultrasonic techniques showed indications that might earlier have revealed the cracks, but the licensee misinterpreted these as resulting from the geometric configuration of the pipe. After finding the leak, the licensee performed radiography on all feedwater nozzles of both units and found cracks in five of the eight nozzles* | U.S. Nuclear Regulatory Commission Information Notice No. 93-20, "Thermal Fatigue Cracking of Feedwater Piping to Steam Generators," dated March 24, 1993. (ML031080045) |
| June 15, 1993 | NRC notified other plant owners of the operator performance shortcomings in responding to the December 31, 1992, shut downs of both reactors, such as being unable to prevent an excessive cool-down rate on Unit 2. | U.S. Nuclear Regulatory Commission Information Notice No. 93-44, "Operational Challenges During a Dual-Unit Transient," dated June 15, 1993. (ML031070483) |
| August 13, 1993 | NRC notified other plant owners of the electrical breaker testing deficiencies that caused the dual-unit trips on December 31, 1992. | U.S. Nuclear Regulatory Commission Information Notice No. 93-65, "Reactor Trips Caused by Breaker Testing with Fault Protection Bypassed," dated August 13, 1993. (ML031070172) |
| October 18, 1993 | NRC approved restart of Unit 2. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| October 21, 1993 | TVA connected Unit 2 to the electrical grid. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |

## SEQUOYAH NUCLEAR PLANT

**Soddy-Daisy, Tennessee** **Two Pressurized Water Reactors**

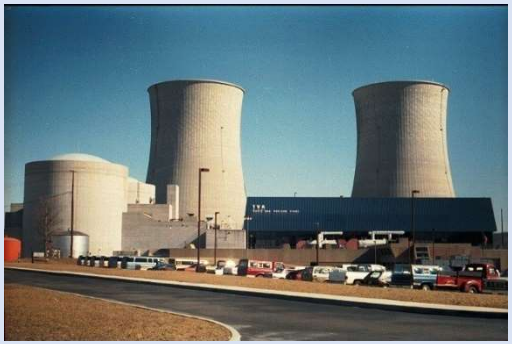
| Date | Event | Reference |
|---|---|---|
| April 12, 1994 | NRC approved restart of Unit 1. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| April 20, 1994 | TVA connected Unit 1 to the electrical grid to end a 1.1 year outage. | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |
| September 30, 1994 | Approximately 6,000 feet of piping less than two inches in diameter and about 1,000 feet of piping larger than two inches in diameter had been replaced since March 1993. | NUS Licensing Information Service Meetings Report dated December 16, 1994. |



# WATTS BAR NUCLEAR PLANT

**Spring City, Tennessee** **Two Pressurized Water Reactors**

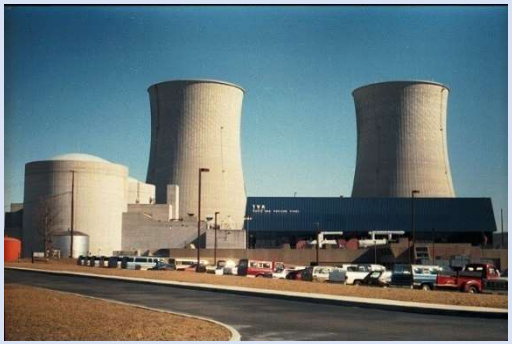
| Date | Event | Reference |
|---|---|---|
| August 25, 1970 | TVA announced that it selected Rhea County as the site for the Watts Bar nuclear plant. | Valley Watch, "History of a troubled plant – Watts Bar: 1970-1993," September 1993. |
| May 14, 1971 | TVA applied to the AEC for construction permits to build Units 1 and 2. | Letter dated May 14, 1971, from Aubrey J. Wagner, Chairman of the Board, Tennessee Valley Authority, to P. A. Morris, Director, Division of Reactor Licensing, U.S. Atomic Energy Commission. (ML073400588) |
| December 1972 | TVA began construction at the site. TVA revised the cost estimate of the two-unit plant to $685 million. | Valley Watch, "History of a troubled plant – Watts Bar: 1970-1993," September 1993. |
| November 26, 1973 | TVA informed the AEC that the estimated fuel loading date for Unit 1 had been revised to January 1978 and to October 1978 for Unit 2. | Letter dated November 26, 1973, from J. E. Gilleland, Assistant to the Manager of Power, Tennessee Valley Authority, to John F. O'Leary, Director, Directorate of Licensing, Office of Regulation, U.S. Atomic Energy Commission. (ML073400390) |
| May 14, 1974 | TVA informed the AEC that the estimated fuel loading date for Unit 1 had been revised to June 1978 and to March 1979 for Unit 2. | Letter dated May 14, 1974, from J. E. Gilleland, Assistant to the Manager of Power, Tennessee Valley Authority, to John F. O'Leary, Director, Directorate of Licensing, Office of Regulation, U.S. Atomic Energy Commission. (3002000219) |
| January 9, 1978 | TVA informed the NRC that the estimated fuel loading date for Unit 1 had been revised to June 1979 and to March 1980 for Unit 2. The delay was attributed to late delivery of ice condenser embedments. | Letter dated January 9, 1978, from J. E. Gilleland, Assistant to the Manager of Power, Tennessee Valley Authority, to S. A. Varga, Chief, Light Water Reactors Branch No. 4, Division of Project Management, U.S. Nuclear Regulatory Commission. (ML072960408) |
| November 1980 | NRC expressed concern over quality assurance programs at the plant. | Valley Watch, "History of a troubled plant – Watts Bar: 1970-1993," September 1993. |



# WATTS BAR NUCLEAR PLANT

**Spring City, Tennessee** **Two Pressurized Water Reactors**

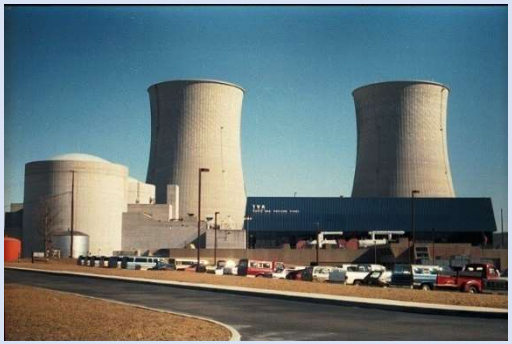
| Date | Event | Reference |
|---|---|---|
| August 1982 | NRC's Advisory Committee on Reactor Safeguards criticized TVA for a "serious quality assurance breakdown" in design and construction of the plant. The cost estimate for the plant rose to $2 billion. | Valley Watch, "History of a troubled plant – Watts Bar: 1970-1993," September 1993. |
| January 1983 | TVA reported that construction of both units was 77.4 percent complete. | Gunter Wadewitz, Project Manager, Tennessee Valley Authority, "Watts Bar Nuclear Plant Construction Progress," January 1983. (ML082310480) |
| October 23, 1984 | TVA informed the NRC that the estimated fuel loading date for Unit 1 had been revised to March 1985 and to March 1987 for Unit 2. | Letter dated October 23, 1984, from L. M. Mills, Manager, Nuclear Licensing, Tennessee Valley Authority, to Chief, Management Information Branch, Office of Management and Program Analysis, U.S. Nuclear Regulatory Commission. (ML082340283) |
| February 20, 1985 | TVA certified to the NRC that Unit 1 was essentially complete and in accordance with regulatory standards. TVA scheduled fuel loading of te Unit 1 reactor core on April 23, 1985. | Valley Watch, "History of a troubled plant – Watts Bar: 1970-1993," September 1993. |
| March 1985 | Numerous TVA employee voice safety concerns to the NRC. | Valley Watch, "History of a troubled plant – Watts Bar: 1970-1993," September 1993. |
| April 12, 1985 | After substantiating a number of employee safety concerns, NRC confronts TVA about the issues. | Valley Watch, "History of a troubled plant – Watts Bar: 1970-1993," September 1993. |
| June 1985 | TVA hired Quality Technology Company to investigate safety and harassment concerns raised by TVA workers. Estimated cost of the plant revised to $4.1 billion. | Valley Watch, "History of a troubled plant – Watts Bar: 1970-1993," September 1993. |
| March 1986 | Estimated cost of the plant revised to $5 billion. | Valley Watch, "History of a troubled plant – Watts Bar: 1970-1993," September 1993. |



# WATTS BAR NUCLEAR PLANT

**Spring City, Tennessee** **Two Pressurized Water Reactors**

| Date | Event | Reference |
|---|---|---|
| May 5, 1988 | NRC issued violations to TVA for serious quality assurance program problems and an inadequate welding program. | Valley Watch, "History of a troubled plant – Watts Bar: 1970-1993," September 1993. |
| December 1989 | TVA halts construction work at the plant due to inadequate controls. | Valley Watch, "History of a troubled plant – Watts Bar: 1970-1993," September 1993. |
| March 1990 | Estimated cost of the plant revised to $5.8 billion. | Valley Watch, "History of a troubled plant – Watts Bar: 1970-1993," September 1993. |
| August 1991 | NRC informed TVA that problems at the plant remained extensive and uncorrected. | Valley Watch, "History of a troubled plant – Watts Bar: 1970-1993," September 1993. |
| June 1992 | NRC allowed TVA to resume full construction activities at the plant following eight months of monitoring. | Valley Watch, "History of a troubled plant – Watts Bar: 1970-1993," September 1993. |
| March 1993 | Estimated costs of the plant revised to $9 billion. | Valley Watch, "History of a troubled plant – Watts Bar: 1970-1993," September 1993. |
| April 1993 | NRC criticized TVA for an inadequate quality assurance program. | Valley Watch, "History of a troubled plant – Watts Bar: 1970-1993," September 1993. |
| August 1993 | NRC released report criticizing TVA for having failed to correct safety concerns since 1982. | Valley Watch, "History of a troubled plant – Watts Bar: 1970-1993," September 1993. |
| December 12, 1994 | TVA halted work on Unit 2. | Matthew L. Wald, *New York Times*, "T.V.A. to Stop All Work on 3 Reactors," December 13, 1994. |
| August 1995 | TVA reported having replaced 457 miles of electrical cables on Unit 1 that had not been originally installed properly. The replacement cost was estimated to cost $22 million. | U.S. General Accounting Office, "Tennessee Valley Authority: Financial Problems Raise Questions About Long-term Viability," GAO/AIMD/RCED-95-134, August 1995. |
| February 7, 1996 | NRC issued TVA an operating license for Unit 1. | U.S. Nuclear Regulatory Commission, February 7, 1996. (ML073460319) |



# WATTS BAR NUCLEAR PLANT

**Spring City, Tennessee** **Two Pressurized Water Reactors**

| Date | Event | Reference |
|---|---|---|
| October 22, 2015 | NRC issued TVA an operating license for Unit 2. | U.S. Nuclear Regulatory Commission, October 22, 2015. (ML15301A140) |
| March 23, 2016 | NRC issued a "Chilled Work Environment" letter to TVA after received safety allegations from operators in late 2015 and early 2016. | Letter dated March 23, 2016, from Catherine Haney, Regional Administrator, U.S. Nuclear Regulatory Commission, to Joseph P. Grimes, Chief Nuclear Officer and Executive Vice President, Tennessee Valley Authority. (ML16083A479) |


# YELLOW CREEK NUCLEAR PLANT

**Iuka, Mississippi** **Two Pressurized Water Reactors**

| Date | Event | Reference |
|---|---|---|
| January 1975 | TVA estimated construction of the plant would cost $1.9 billion. | U.S. General Accounting Office, "Tennessee Valley Authority Can Improve Estimates And Should Reassess Reserve Requirements For Nuclear Power Plants," PSAD-79-49, March 22, 1979. |
| July 16, 1976 | TVA applied to the NRC for construction permits. TVA projected that fuel would be loaded into the Unit 1 reactor core on December 1, 1983, and into the Unit 2 reactor core on December 1, 1984. | U.S. Nuclear Regulatory Commission, "Safety Evaluation Report related to construction of Yellow Creek Nuclear Plant Units 1 & 2," NUREG-0347, December 1977. (ML13294A515) |
| February 1978 | TVA began construction of the plant. | U.S. General Accounting Office, "Tennessee Valley Authority Can Improve Estimates And Should Reassess Reserve Requirements For Nuclear Power Plants," PSAD-79-49, March 22, 1979. |
| September 1978 | TVA estimated construction of the plant would cost $2.4 billion. | U.S. General Accounting Office, "Tennessee Valley Authority Can Improve Estimates And Should Reassess Reserve Requirements For Nuclear Power Plants," PSAD-79-49, March 22, 1979. |
| November 29, 1978 | NRC issued TVA construction permits for Units 1 and 2. | U.S. Nuclear Regulatory Commission, "Order Revoking Construction Permits," August 29, 1988. (ML20153E496) |
| July 24, 1981 | TVA announced it was extending the projected completion date for Unit 1 to October 1990. | U.S. Nuclear Regulatory Commission, "Construction Delays," PNO-II-81-55, July 24, 1981. (ML20063C806) |
| August 14, 1981 | TVA notified NRC that the estimated fuel loading date for Unit 1 had been revised to July 1989. | Letter dated August 14, 1981, from L. M. Mills, Manager, Nuclear Regulation and Safety, Tennessee Valley Authority, to Harold R. Denton, Director, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission. (ML20063C806) |
| March 4, 1982 | TVA Board voted 2-1 to indefinitely defer construction of Unit 1. | U.S. Nuclear Regulatory Commission, "Deferral of TVA Units," PNO-II-82-25, March 4, 1982. (ML20041F906) |


# YELLOW CREEK NUCLEAR PLANT

**Iuka, Mississippi** **Two Pressurized Water Reactors**

| Date | Event | Reference |
|---|---|---|
| March 19, 1982 | NRC listed the status of Unit 2 as indefinitely deferred after being 3 percent completed. | Memo dated March 19, 1982, from Kevin Cornell, Office of the Deputy Executive Director For Operations, U.S. Nuclear Regulatory Commission, to Commission Ahearne, U.S. Nuclear Regulatory Commission. (ML20063C823) |
| April 1, 1982 | NRC listed the status of Unit 1 as deferred after being 28 percent completed. | Memo dated April 1, 1982, from A. Schwencer, Chief, Licensing Branch 2, Division of Licensing, U.S. Nuclear Regulatory Commission, to Robert L. Tedesco, Assistant Director for Licensing, Division of Licensing, U.S. Nuclear Regulatory Commission, "Use of Staff Resources of Hartsville A1, A2, B1, B2, Phipps Bend 1 & 2 and Yellow Creek – Plants Deferred by TVA." (ML20063C806) |
| August 6, 1982 | TVA reported Unit 1 as being 28 percent completed with estimated commercial operation between January and October 1990. | Letter dated August 6, 1982, from L. M. Mills, Manager, Nuclear Licensing, Tennessee Valley Authority, to Harold R. Denton, Director, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission. (ML073511551) |
| August 6, 1982 | TVA reported Unit 2 as being 3 percent completed with construction deferred. | Letter dated August 6, 1982, from L. M. Mills, Manager, Nuclear Licensing, Tennessee Valley Authority, to Harold R. Denton, Director, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission. (ML073511551) |
| September 30, 1982 | The actual construction cost for Units 1 and 2 to date were $1.113 billion. | Comptroller General of the United States, "Triennial Assessment Of The Tennessee Valley Authority — Fiscal Years 1980-1982," GAO/RCED-83-123, April 15, 1983. |
| January 21, 1983 | TVA requested that NRC extend the construction permits for Units 1 and 2. | Letter dated May 12, 1983, from L. M. Mills, Manager, Nuclear Licensing, Tennessee Valley Authority, to Harold R. Denton, Director, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission. (ML20023C336) |


# YELLOW CREEK NUCLEAR PLANT

**Iuka, Mississippi** **Two Pressurized Water Reactors**

| Date | Event | Reference |
|---|---|---|
| August 29, 1984 | TVA cancelled the plant. TVA estimated Unit 1 was 52 percent completed. | Letter dated October 24, 1985, from J. W. Huffman, Manager, Licensing and Risk Protection, Tennessee Valley Authority, to Hugh L. Thompson, Jr., Director of Licensing, Division of Licensing, U.S. Nuclear Regulatory Commission. (ML20133N732) |
| October 24, 1985 | TVA requested NRC withdraw the construction permits for Units 1 and 2. | U.S. Nuclear Regulatory Commission, "Order Revoking Construction Permits," August 29, 1988. (ML20153E496) |
| August 29, 1988 | NRC revoked the construction permits for Units 1 and 2. | U.S. Nuclear Regulatory Commission, "Order Revoking Construction Permits," August 29, 1988. (ML20153E496) |

# TVA'S NUCLEAR SAFETY CULTURE

| Date | Event | Reference |
|---|---|---|
| September 20, 1983 | The NRC issued TVA a violation after the U.S. Department of Labor found that TVA discriminated against William Daniel DeFord for having raised nuclear safety issues during an NRC inspection in July 1980 at Sequoyah. TVA appealed the DOL's decision, but the U.S. Court of Appeals for the Sixth Circuit upheld the decision. The NRC noted that regulations had been revised since the time of the infractions, and that under the revised regulations the violation would be accompanied by a $64,000 civil penalty. | U.S. Nuclear Regulatory Commission, "Employee Protection from Illegal Discrimination," September 20, 1983. (ML20080N306) |
| October 7, 1985 | NRC's Office of Investigations initiated an investigation of allegations by members of TVA's Nuclear Safety Review Staff that their reports were being wrongfully altered by management to downplay the significance of the findings. | U.S. Nuclear Regulatory Commission, "Notice of Violation and Proposed Imposition of Civil Penalty — $240,000 (NRC Investigation Report No. 2-85-031)," April 12, 1990. (ML073580075) |
| December 19, 1985 | NRC Commissioner James Asselstine and NRC staff members were briefed by TVA Nuclear Safety Review Staff members Jerry D. Smith, Phillip Washer, and Robert C. Sauer about non-compliances with NRC's safety regulations. | U.S. Nuclear Regulatory Commission, "Notice of Violation and Proposed Imposition of Civil Penalty — $240,000 (NRC Investigation Report No. 2-85-031)," April 12, 1990. (ML073580075) |
| February 1986 | TVA Nuclear Safety Review Staff members Jerry D. Smith, Phillips Washer, and Robert C. Sauer were transferred into a newly created, leaderless section. | U.S. Nuclear Regulatory Commission, "Notice of Violation and Proposed Imposition of Civil Penalty — $240,000 (NRC Investigation Report No. 2-85-031)," April 12, 1990. (ML073580075) |
| October 27, 1986 | "*In late August Monsour Guity, another independent TVA investigator … and* [Jerry] *Smith complained to the U.S. Labor Department that they had been harassed and intimidated by TVA managers for raising safety issues*." | Brian Dumaine, *Fortune* magazine, "Nuclear Scandal Shakes the TVA," October 27, 1986 |
| December 16, 1986 | NRC Regional Administrator J. Nelson Grace briefed his Commissioners including about a survey of TVA's nuclear workers showing that "*up to 75% lacked confidence in TVA management*." | Union of Concerned Scientists, "Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages," November 6, 2006. |

# TVA'S NUCLEAR SAFETY CULTURE

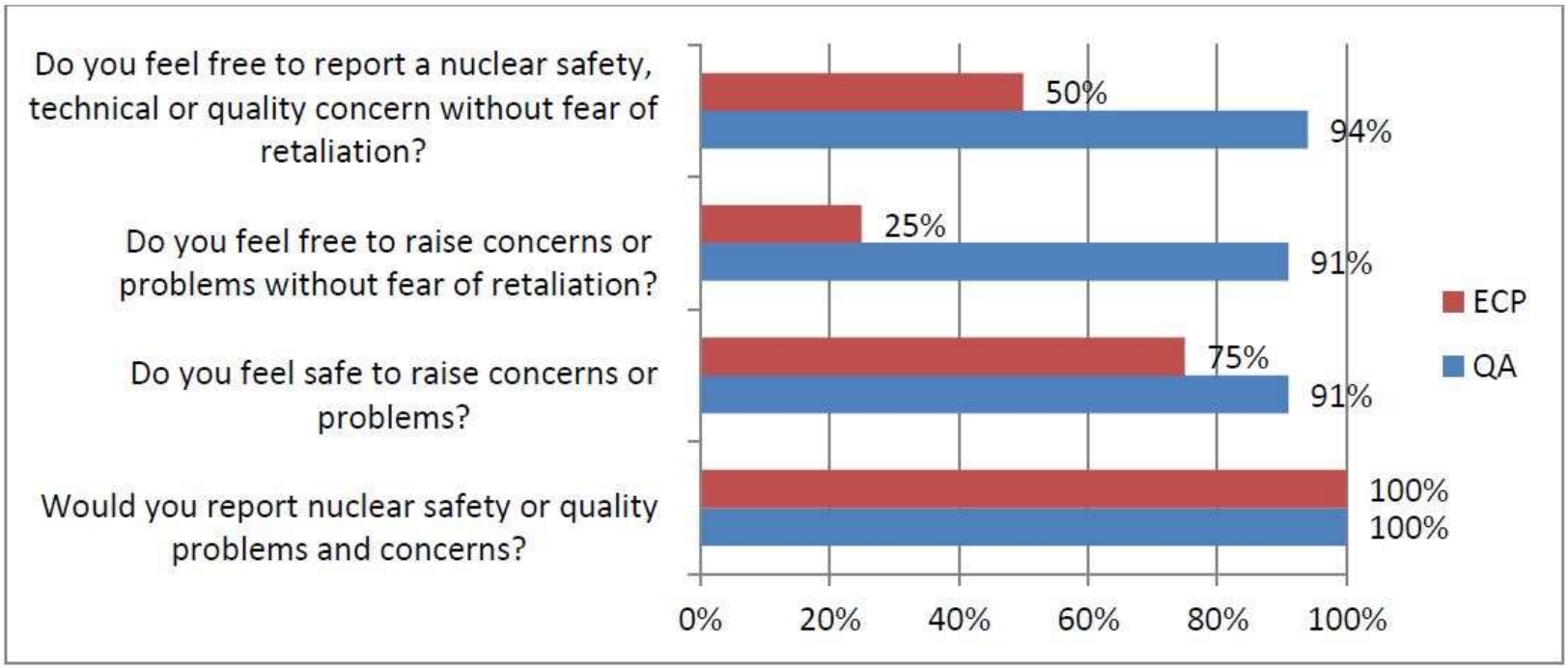
| Date | Event | Reference |
|---|---|---|
| June 23, 1988 | U.S. Department of Labor found that a contract employee at TVA's Sequoyah nuclear plant had been wrongfully terminated because he raised nuclear safety concerns at TVA's Watts Bar nuclear plant. | U.S. Nuclear Regulatory Commission, "U.S. Department of Labor Case No. 87-ERA-28," September 12, 1988. (ML12074A018) |
| April 12, 1990 | The NRC reported three violations of federal regulations protecting workers from retaliation for raising nuclear safety concerns and proposed $80,000 civil penalties each for its determinations that TVA retaliated against former Nuclear Safety Review Staff members Jerry D. Smith, Phillips Washer, and Robert C. Sauer because they raised safety concerns ($240,000 total proposed civil penalty). | U.S. Nuclear Regulatory Commission, "Notice of Violation and Proposed Imposition of Civil Penalty — $240,000 (NRC Investigation Report No. 2-85-031)," April 12, 1990. (ML073580075) |
| September 20, 1990 | NRC ordered the imposition of the $240,000 civil penalty for discriminating against Nuclear Safety Review Staff members Jerry D. Smith, Phillips Washer, and Robert C. Sauer because they raised safety concerns. TVA appealed the proposed civil penalty, but NRC denied the appeals. | U.S. Nuclear Regulatory Commission, "Order Imposing Civil Penalty — $240,000 – Watts Bar," September 20, 1990. (ML073580333) |
| April, 25, 1995 | NRC notified TVA that its investigation concluded TVA had not wrongfully removed Donald Ralph Matthews from his Superintendent of Chemistry position at Watts Bar shortly after he raised nuclear safety concerns, they were concerned that TVA may have created chilling effects at the plant for workers with concerns. | U.S. Nuclear Regulatory Commission, "Enforcement Discretion Concerning the Apparent Violation of 10 CFR 50.7, Employee Protection (Office of Investigations Case No. 2-93-057R)," April 25, 1995. (ML073270593) |
| February 14, 1996 | NRC proposed an $80,000 civil penalty after its investigation concluded TVA discriminated against Douglas Harrison, an ironworker general foreman at Browns Ferry, because he raised concerns about inadequate fire watch activities. | U.S. Nuclear Regulatory Commission, "Notice of Violation and Proposed Imposition of Civil Penalty $80,000 (Department of Labor Case No. 93-ERA-044)," February 14, 1996. (ML20097G275) |
| February 23, 1996 | NRC proposed an $80,000 civil penalty after its investigation concluded TVA discriminated against a former TVA nuclear inspector by not hiring him for positions at the Sequoyah and Watts Bar nuclear plant due to his having raised nuclear safety concerns to TVA and the NRC. | U.S. Nuclear Regulatory Commission, "NRC Staff Proposed $80,000 Civil Penalty Against TVA for Alleged Discrimination at Sequoyah and Watts Bar," February 23, 1996. (ML003706041) |

# TVA'S NUCLEAR SAFETY CULTURE

| Date | Event | Reference |
|---|---|---|
| January 13, 1997 | NRC issued an order banning Joseph R. Bynum from participating in NRC-licensed activities for five years. The order was based on the NRC's determination that in April 1993, Mr. Bynum, then TVA's Vice President of Nuclear Operations, was guilty of deliberate misconduct by discriminating against William F. Jocher for raising nuclear safety concerns. | U.S. Nuclear Regulatory Commission, "Order Prohibiting Involvement in NRC-Licensed Activities (Effective Immediately)," January 13, 1997. (ML20133F788 and ML20133F798) |
| January 13, 1997 | NRC issued a violation and proposed a $100,000 civil penalty after its investigation concluded that TVA forced William F. Jocher, its corporate Manager, Chemistry and Environmental Protection as well as Chemistry Manager at Sequoyah, to resign "because he engaged in the identification of deficiencies in the chemistry program and inconsistencies in TVA reports to the NRC." | U.S. Nuclear Regulatory Commission, "Notice of Violation and Proposed Imposition of Civil Penalty — $100,000 (NRC Office of Investigation Report No. 2-93-015 and Department of Labor Administrative Law Judge Recommended Decision and Order dated July 31, 1996)," January 13, 1997. (ML20134G857) |
| September 8, 1997 | NRC notified TVA of its concerns that remarks by a manager at Sequoyah had a chilling effect on workers' feeling they could raise safety concerns without fear of retaliation. NRC had been informed by TVA's Inspector General told a work group that an environmental engineer who reported safety concerns "had burned his bridges" and was not wanted at the site. | U.S. Nuclear Regulatory Commission, "Safety Conscious Work Environment at Sequoyah (NRC Office of Investigations Report No. 2-93-001)," September 8, 1997. (ML20217E744) |
| January 10, 2002 | NRC issued a violation to TVA for an incident at Sequoyah where a security officer was ordered by management to violate security procedures after a senior manager set off the metal detector upon entering the facility. | U.S. Nuclear Regulatory Commission, "Notice of Violation, Sequoyah Nuclear Plant (NRC Office of Investigations Report No. 2-2000-019A, and Inspection Report Nos. 50-327/01-07, 50-328/0107)," January 10, 2002. (ML020100478) |
| February 7, 2000 | NRC issued a violation and proposed a $110,000 civil penalty after concluding TVA discriminated against Gary L. Fiser for having raised nuclear safety concerns. | U.S. Nuclear Regulatory Commission, "Notice of Violation and Proposed Imposition of Civil Penalty — $110,000 *Nuclear Regulatory Commission's Office of Investigations Report No. 2-98-013)," February 7, 2000. (ML0034681385) |
| May 4, 2001 | NRC imposed a $110,000 civil penalty on TVA for discriminating against the Chemistry and Environmental Protection Program Manager after considering numerous TVA appeals. | U.S. Nuclear Regulatory Commission, "Order Imposing Civil Monetary Penalty — $110,000 Tennessee Valley Authority," EA-99-234, May 4, 2001. (ML011350133) |

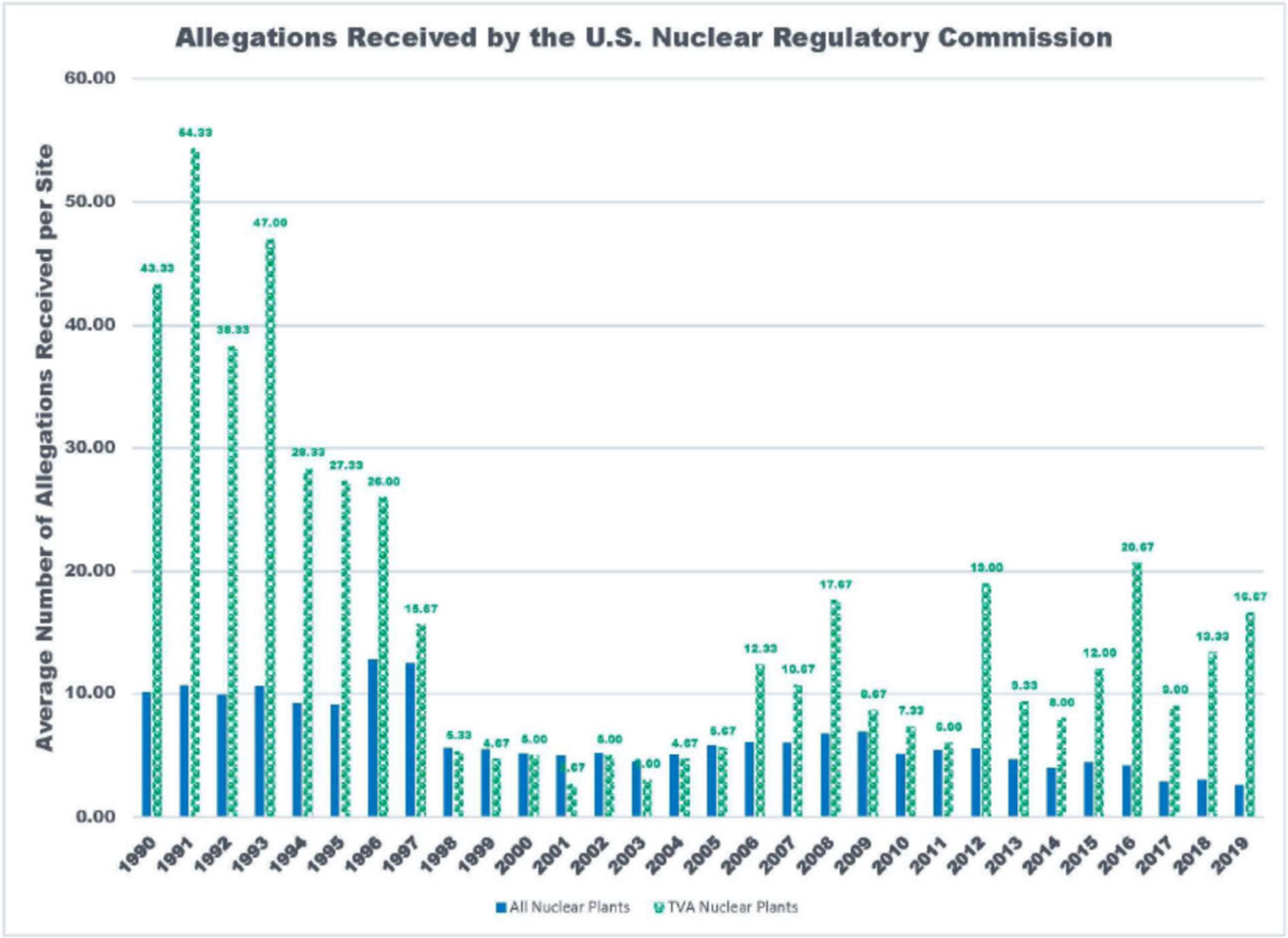
| TVA'S NUCLEAR SAFETY CULTURE | | |
|---|---|---|
| **Date** | **Event** | **Reference** |
| June 18, 2001 | NRC notified TVA that it found two apparent violations in the firing of Curtis Overall from the Watts Bar Nuclear Plant for having raised nuclear safety concerns. | U.S. Nuclear Regulatory Commission, "Apparent Violations of Employee Discrimination Requirements (U.S. Department of Labor Case No. 1997-ERA-0053)," June 18, 2001. (ML011690336) |
| October 15, 2001 | NRC issued a violation and proposed an $88,000 civil penalty on TVA for having wrongfully terminated Curtis Overall from Watts Bar for having raised nuclear safety concerns. | U.S. Nuclear Regulatory Commission, "Notice of Violation and Proposed Imposition of Civil Penalty — $88,000 (U.S. Department of Labor Case No. 1997-ERA-0053)," October 15, 2001. (ML012890117) |
| January 31, 2007 | NRC issued a violation to TVA but exercised Enforcement Discretion in not proposing a civil penalty or other sanction for a contractor at Browns Ferry being terminated because he refused to sign off sub-par work as being acceptable. | U.S. Nuclear Regulatory Commission, "Exercise of Enforcement Discretion (Office of Investigations Report No. 2-2006-001)," EA-07-013, January 31, 2007. (ML070320162) |
| December 22, 2009 | NRC issued a Confirmatory Order to TVA requiring several steps to be taken after finding that a Nuclear Assurance inspector and a maintenance mechanic at Browns Ferry had been illegally discriminated against for having raised safety concerns. | U.S. Nuclear Regulatory Commission, "Confirmatory Order (Effective Immediately) (Office of Investigation Report Nos. 2-2006-025 % 2-2009-003)," December 22, 2009. (ML093510121) |
| March 23, 2016 | NRC notified NRC of its concerns about a chilled work environment in the Operations Department for workers raising safety concerns at Watts Bar. | U.S. Nuclear Regulatory Commission, "Chilled Work Environment for Raising and Addressing Safety Concerns at the Watts Bar Nuclear Plant," EA-16-051, March 23, 2016. (ML16083A479) |
| September 15, 2016 | TVA's Inspector General reported on its evaluations of the work forces at Sequoyah and Browns Ferry and in the Nuclear Oversight organization in response to the NRC's finding of a chilled work environment within the Operations Department at Watts Bar. The Inspector General found that "most ECP [Employee Concerns Program] employees did not feel free to raise concerns or problems without fear of retaliation." The Inspector General found that 10 of 33 Quality Assurance workers did not trust TVA management below the Vice President. | Tennessee Valley Authority, Office of the Inspector General, "Request for Final Action — Evaluation 2016-15398 — Work Environment for Nuclear Oversight," September 15, 2016. |

# TVA'S NUCLEAR SAFETY CULTURE

| Date | Event | Reference |
|---|---|---|
| | **Figure 1: Responses Related to Reporting Concerns**<br>  <br> | |
| July 27, 2017 | NRC issued TVA a Confirmatory Order requiring TVA to take several steps after finding TVA violated terms of the December 22, 2009, Confirmatory Order. That order required TVA to formally review proposed adverse employment actions to ensure employee protection regulations are satisfied and to take measures when necessary to avoid having employment actions have a negative impact on the safety conscious work environment. The NRC found that TVA failed to implement these processes at Watts Bar between November 2014 and August 2016. | U.S. Nuclear Regulatory Commission, "Confirmatory Order (Effective Immediately)," EA-17-022, July 27, 2017. (ML17208A647) |
| January 10, 2018 | TVA's Inspector General reported that TVA had ineffectively implemented five of the ten actions committed to in the NRC's October 2009 | Tennessee Valley Authority, Office of the Inspector General, "Request for Final Action — Evaluation 2017-15448 — TVA Nuclear's Process for Addressing the |

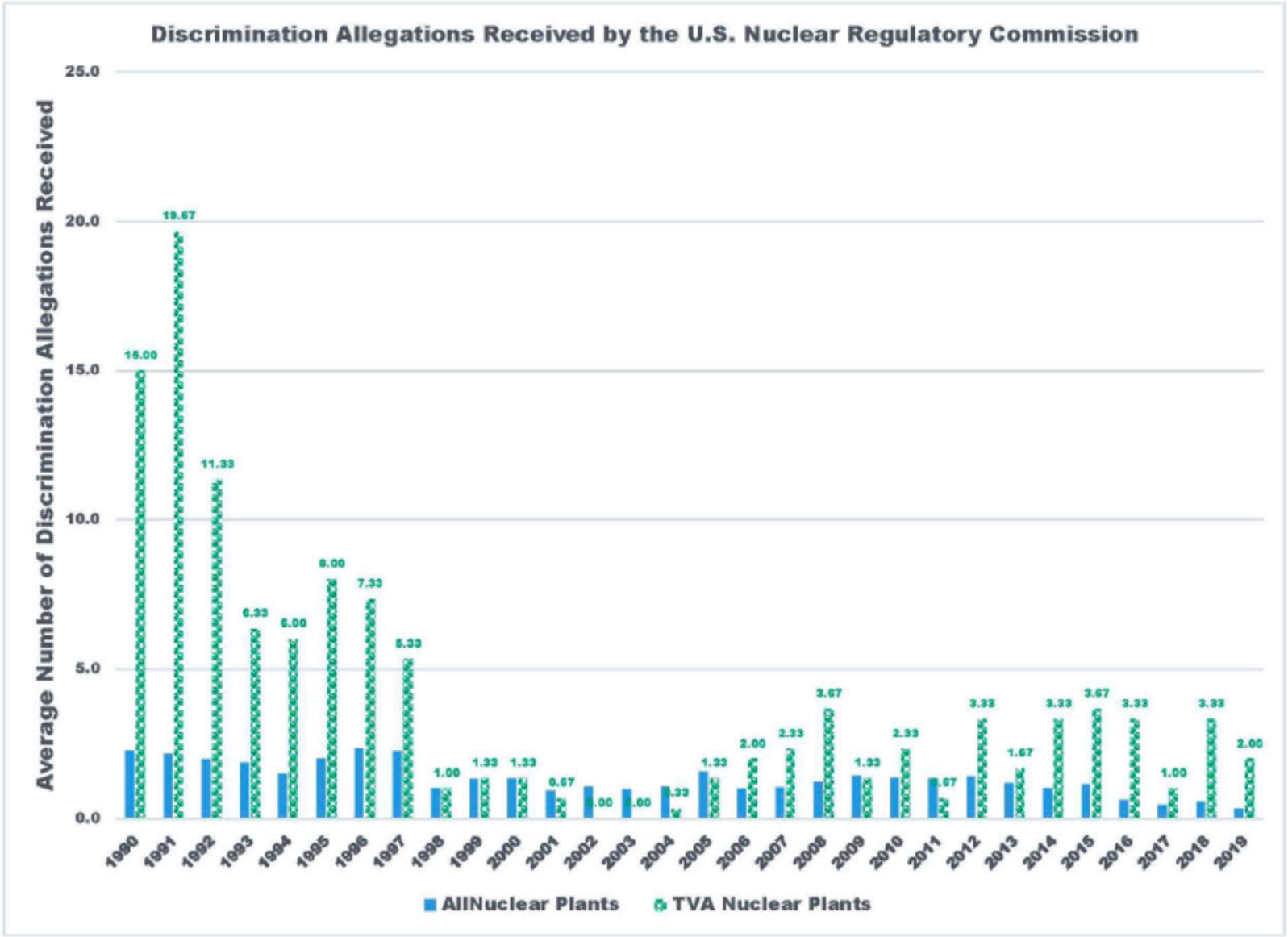
| TVA'S NUCLEAR SAFETY CULTURE | | |
|---|---|---|
| **Date** | **Event** | **Reference** |
| | Confirmatory Order. The Inspector General further reported that problems with implementation of the Confirmatory Order actions had been repeatedly identified (and repeatedly uncorrected). | Nuclear Regulatory Commission's 2009 Confirmatory Order," January 10, 2018. |
| March 14, 2018 | NRC inspectors noted that a survey of the work force at Watts Bar conducted for TVA in 2017 indicated that 10 percent of the workers provided a negative response to the question "I feel free to raise a safety concern without fear of retaliation," a relatively high level of negative response compared to nuclear industry averages. | U.S. Nuclear Regulatory Commission, "Watts Bar Nuclear Plant — Follow-up for NRC Confirmatory Order EA-17-022 and Chilled Work Environment Letter (EA-16-061; NRC Inspection Report 05000390/2017009, 05000391/2017009," March 14, 2018. (ML18073A202) |
| June 3, 2020 | I reported to the NRC results of my review of the allegations received by the NRC about nuclear plant safety issues. In only eight (8) of the past thirty (30) years, the NRC received more allegations from the average U.S. nuclear plant than from the average TVA nuclear plant. That eight year period (1998-2005) ended more than a decade ago. | Memo dated June 3, 2020, from Dave Lochbaum, Advisor to the 2.206 Petitioners, to Andrew Hon, Petition Manager, U.S. Nuclear Regulatory Commission, "Review of TVA Employee Concerns Program 2.206 Petition." |

# TVA'S NUCLEAR SAFETY CULTURE

| Date | Event | Reference |
|---|---|---|
| |  | |
| June 3, 2020 | I also reported to the NRC results of my review of the allegations of discrimination received by the | Memo dated June 3, 2020, from Dave Lochbaum, Advisor to the 2.206 Petitioners, to Andrew Hon, Petition Manager, |

| TVA'S NUCLEAR SAFETY CULTURE | | |
|---|---|---|
| **Date** | **Event** | **Reference** |
| | NRC from nuclear plant workers. In only ten (10) of the past thirty (30) years, the NRC received more allegations from the average U.S. nuclear plant than from the average TVA nuclear plant. The most recent time (2011) was nearly a decade ago. | U.S. Nuclear Regulatory Commission, "Review of TVA Employee Concerns Program 2.206 Petition." |

# TVA'S NUCLEAR SAFETY CULTURE

| Date | Event | Reference |
|---|---|---|
| |  | |
| August 24, 2020 | NRC issued four violations and proposed a $606,942 civil penalty for discriminations at Sequoyah against four workers who raised safety concerns: (1) worker | U.S. Nuclear Regulatory Commission, "Notice of Violation and Proposed Imposition of Civil Penalty, "EA-20-006 and EA-20-007, August 24, 2020. (ML20232B803) |

| TVA'S NUCLEAR SAFETY CULTURE | | |
|---|---|---|
| **Date** | **Event** | **Reference** |
| | raising concerns about a chilled work environment and inadequate responses to two NRC non-cited violations, (2) worker raising concerns about a chilled work environment, (3) worker investigated by TVA's Office of the General Counsel after raising concerns of a chilled work environment, and (4) worker who raised concerns about a chilled work environment to TVA's Vice President of Regulatory Affairs during an Office of the General Counsel investigation. | |
| September 23, 2020 | TVA responded to the August 24, 2020, NRC violations by denying all four violations and contending that if NRC insisted on issuing them, NRC should reduce the amount of the civil penalty. | U.S. Nuclear Regulatory Commission, "Order Imposing Civil Monetary Penalty," EA-20-006 and EA-20-007, October 29, 2020. (ML20297A544) |
| October 29, 2020 | NRC considered TVA's appeal, but reaffirmed the four violations issued on August 24, 2020, and ordered the $606,942 civil penalty imposed, | U.S. Nuclear Regulatory Commission, "Order Imposing Civil Monetary Penalty," EA-20-006 and EA-20-007, October 29, 2020. (ML20297A544) |
| February 4, 2021 | NRC considered TVA's appeal of its October 29, 2020, order. The NRC revised the severity of the violations from Level I to Level II but sustained the civil penalty at $606,942 – the maximum allowed under the regulations. | U.S. Nuclear Regulatory Commission, "Reduction of Severity Levels in the October 29, 2020, Order Imposing Civil Penalty – Tennessee Valley Authority," February 4, 2021. (ML21028A707) |

**From:** lisa k. Worley
**To:** nepa
**Date:** Thursday, March 4, 2021 9:16:43 AM

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Why would we invest in old technology. Look to renewables for our energy not a tech which is out dated and unnecessary

**From:** Ryan Thier
**To:** nepa
**Subject:** Support for the Clinch River Nuclear Site
**Date:** Monday, March 15, 2021 5:56:22 PM

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To whom it may concern,

I wholeheartedly support the construction of the Clinch River Nuclear Site Advanced Nuclear Reactor Technology park. Not only will nuclear power be increasingly vital in supporting a non-carbon based energy supply as the harmful effects of climate change accelerate, but the construction of such a park here in East Tennessee continues a long tradition of nuclear power innovation in the region. It positions East Tennessee to ramp up production and prosper as these technologies are proved out, standing at the vanguard of an energy renaissance. Modern nuclear risk-mitigation technology and design strategy have advanced tremendously over the years and the construction of this site can prove out the viability and low environmental impact of nuclear power. For the sake of the future I can only recommend the project proceed with full momentum.

Sincerely,
Ryan C. Thier
[redacted]

**From:** Wufoo
**To:** nepa
**Subject:** Scoping Comments - Clinch River Nuclear Site EIS [#2]
**Date:** Wednesday, March 17, 2021 10:56:34 AM



| | |
|---|---|
| Name | Jan Berry |
| City | [redacted] |
| State | [redacted] |
| Email | [redacted] |
| Phone Number | [redacted] |

Please provide your comments by uploading a file or by entering them below. *

I fully support TVA in development of the Programmatic Environmental Impact Statement for the Clinch River Nuclear Site to support implementation of TVA's 2019 Integrated Resource. The environmental impact of advanced nuclear technology is beyond the impact at the site and extends to the need to clean energy technology as rapidly as possible.

Please include an analysis or statements regarding the following in the PEIS:
o the potential for advanced nuclear technology to improve TVA's carbon-free energy portfolio over time especially whether this technology would/could eliminate the need to build new natural gas powered electricity generation;
o demonstration of nuclear technology (e.g., molten salt reactors) that can use nuclear waste as fuel, thus reducing the issue of long-term storage of fuel rods and depleted uranium;
o potential for job growth in the TVA region based on deployment of advanced technology (e.g., nuclear technology business development);
o technology development, deployment and commercialization time line;
o collaboration with the University of Tennessee and Oak Ridge National Lab in the development of advanced nuclear technology; and
o life-cycle cost comparison of alternative carbon-free technologies to produce electricity.

**From:** [redacted]
**To:** nepa
**Cc:** [redacted]
**Subject:** Pub;lic Comments -- TVA Clinch River Nuclear Site
**Date:** Wednesday, March 17, 2021 12:54:58 PM



Attn; Review of Programmatic EIS for Proposed TVA Small Modular Nuclear Reactor Test Site

I have studied Chapter 9 of

**Notification of The Issuance Of The Draft Environmental Impact Statement For The Early Site Permit Application For The Clinch River Nuclear Site In Roane County, Tennessee (Region 4 EPA).**

**ML18106B115**

and find no SMR site options discussion of the many ( and growing number) decommissioned fossil fuel power plants throughout the TVA system. These locations ( especially the soon to be closed Bull Run Fossil Plant ) have the basic infrastructure needs for siting the SMR project including a railroad in most cases, as well as cooling water , highways, transmission lines, sewage system, potable water supply, etc. Thus saving 10's of millions of dollars over a greenfield site.
Furthermore there is no indication that the 850 acre former CRBRP site has been assigned a $ value as a protected natural landscape at least half of which is undisturbed for the last 75 years and the remainder healed in the past 40 years . It is a mature forested area rich in wildlife numbers and diversity. And wildlife has returned in numbers to the extent that the Tennessee Wildlife Resources Agency in cooperation with TVA conducts permitted spring wild turkey hunting and deer hunting each fall. It is also a vital part of the greater Oak Ridge Reservation environmental research park. It has been characterized as free of any legacy cold war era contamination .
As responsible stewards of the public resources the fundamental principals of reduce/reuse should be given the highest in point ratings in site selection. Has this factor been included in the site reviews? Indications are that it has not, but rather the former CRBRP site is

considered 'free". It is far from that . The last thing we need be doing is creating another nuclear contaminated site , especially when there are many brownfield options in this instance.
I am reminded of what happened recently when ( largely without public awareness ) TVA chose the undisturbed and mature forested top of Pine Ridge for a UPF power line because it was "free" . The citizens of Oak Ridge objected when plans were discovered at the 11th hour , but by then it was too late. Some compromise was eventually reached , but some clear cutting occurred on the scenic ridge top that forms a border of Oak Ridge. This is a quantifiable loss to the community on many levels.
Undisturbed natural landscapes have great value. If you have traveled east-west on I-40 you are likely aware of the 6 mile or so diversion of I-40 to the north around Memphis. The original design routing by the Federal Highway Administration in the early 1960's, was directly through the middle of Memphis. A route partially chosen because much of the ROW would have been through a City Park, and thus "free" . Not so argued citizen grassroots organizations contending the "Old Forest" ( an old growth forest ) had great value. A fact the U. S. Supreme Court confirmed .
https://en.wikipedia.org/wiki/Citizens_to_Preserve_Overton_Park_v._Volpe
A simple calculation of I-40 through traffic making the ~ 6 mile diversion around Memphis for the past 45 years is a big number giving an indication of the value ($'s) of undisturbed natural areas.
Please consider doing a independent life cycle cost and in the instance of the former CRBRP site , an environmental preservation assessment of SMR site options . By placing the true $ value on the undisturbed CRBRP greenfield, it will be more equitably contrasted to brownfield sites and quickly lose distinction of the preferred option.
Sincerely, Doug Colclasure, [redacted]

_____

# Blue Ridge Environmental Defense League

www.BREDL.org PO Box 88 Glendale Springs, North Carolina 28629 BREDL@skybest.com (336) 982-2691

March 17, 2021

J. Taylor Cates, NEPA Specialist

[redacted]

**RE: Programmatic Environmental Impact Statement-Clinch River Nuclear Site Advanced Nuclear Reactor Technology Park**

Dear Tennessee Valley Authority,

On behalf of Blue Ridge Environmental Defense League, we submit the following comments. We are writing in opposition to construction, operation, and decommissioning of an advanced nuclear reactor technology park at the Clinch River Nuclear (CRN) Site in Oak Ridge, Roane County, Tennessee. We are in favor of the no-action alternative. These written remarks are for the public notice and comment period and will supplement any virtual or oral public hearings.

**Overview**

The Tennessee Valley Authority (TVA) intends to prepare a Programmatic Environmental Impact Statement (PEIS) to address the potential environmental effects associated with the construction, operation, and decommissioning of an advanced nuclear reactor technology park at the Clinch River Nuclear (CRN) Site in Oak Ridge, Roane County, Tennessee. The park would contain one or more advanced nuclear reactors with a cumulative electrical output not to exceed 800 megawatts electric (MWe). TVA plans to evaluate a variety of alternatives including a no-action alternative.

**Comments**

*A Variety of Negative Environmental and Human Health Impacts*

Resource areas to be addressed in the PEIS include, but are not limited to: Air quality; aquatics; botany; climate change; cultural resources; emergency planning; floodplains; geology and groundwater; hydrothermal; land use; navigation; noise and vibration; radiological safety; soil erosion and surface water; socioeconomics and environmental justice; threatened and endangered species; transportation; visual; waste; water use; wetlands; and wildlife.



1. Intergovernmental Panel on Climate Change Fifth Assessment Report, https://www.ipcc.ch/
2. Advanced nuclear reactors no safer than conventional nuclear plants, says science group, https://www.reuters.com/article/us-usa-nuclearpower/advanced-nuclear-reactors-no-safer-than-conventional-nuclear-plants-says-science-group-idUSKBN2BA0CP?utm_source=Energy+News+Network+daily+email+digests&utm_campaign=aa5ec72c58-EMAIL_CAMPAIGN_2020_05_11_11_46_COPY_01&utm_medium=email&utm_term=0_724b1f01f5-aa5ec72c58-89308088

> Nuclear waste, the by-product of nuclear reactors will remain hazardous to humans and other living beings for hundreds of thousands of years. Other radioisotopes will remain hazardous for millions of years. Thus, these wastes must be shielded for centuries and isolated from the living environment for hundreds of millenia. Therefore, construction, operation, and decommissioning of an advanced nuclear reactor technology park would have negative effects on all aspects of these environmental concerns, in fact, advanced reactors emit large amounts of radioactive gases which would be another problematic waste stream. Ed Lyman from Union of Concerned Scientists, said money going into advanced nuclear would be better spent on bolstering conventional nuclear plants from the risks of earthquakes and climate change, such as flooding. 2

*There are No Efficient and Practical Solutions for Nuclear Waste*

> The results from a Stanford study show that SMRs and nuclear power in general will not reduce the size of a geologic repository for spent nuclear fuel, nor the associated future dose rates. Rather, SMRs are poised to discharge spent fuel with relatively high concentrations of fissile material, which may pose re-criticality risks in a geologic repository. 3

There is no safe or permanent solution that has been found anywhere in the world and may never be found for the nuclear waste problem. In the U.S. the only identified and flawed high-level radioactive waste deep repository site at Yucca Mountain, Nevada has been canceled. There needs to be an end to the production of nuclear waste and for securing the existing reactor waste in hardened on-site storage. There is no need to spread nuclear and the waste produced by it further with new and better technology available now.

*Small Modular Reactors and Microreactors Are Not The Future or Cost Effective*

> The project should not go into effect, because it relies on the usage and ‘cost effectiveness’ of SMR’s and Microreactors. “Affordable” doesn’t necessarily mean “cost-effective.” According to basic economic principles, the cost per kilowatt-hour of the electricity produced by a small reactor will be higher than that of a large reactor, all other factors being equal. That is because SMRs are penalized by the economies of scale of larger reactors—a principle that drove the past industry trend to build larger and larger plants. 6



3. A Critical Analysis Of The Nuclear Waste Management Consequences For Small Modular Reactors, https://fsi.stanford.edu/events/critical-analysis-nuclear-waste-management-consequences-small-modular-reactors

4. Nuclear Power & Global Warming, Union of Concerned Scientists, https://www.ucsusa.org/resources/nuclear-power-global-warming

5. Global energy demand to plunge this year as a result of the biggest shock since the Second World War, Global Energy Review 2020, https://www.iea.org/news/global-energy-demand-to-plunge-this-year-as-a-result-of-the-biggest-shock-since-the-second-world-war

6. Small Isn't Always Beautiful: Safety, Security, and Cost Concerns about Small Modular Reactors, Union of Concerned Scientists, 2013 report

While dealing with new and advanced reactors such as SMR's and microreactors, designs are not yet finalized and cost claims made by designers are not reliable. Actual costs and maintenance would be far higher. Along with the upfront costs of SMR's, there also has to be maintenance, operational, and labor costs in a safe and secure way. "In addition to imposing a penalty on the capital cost of SMRs, economies of scale would also negatively affect operations and maintenance (O&M) costs (excluding costs for nuclear fuel, which scale proportionately with capacity). Labor costs are a significant fraction of nuclear plant O&M costs, and they do not typically scale linearly with the capacity of the plant: after all, a minimum number of personnel are required to maintain safety and security regardless of the size." 6

*Nuclear Energy is a Struggling Industry*

> Renewables are set to be the only energy source that will grow in 2020, with their share of global electricity generation projected to jump thanks to their priority access to grids and low operating costs. Despite supply chain disruptions that have paused or delayed deployment in several key regions this year, solar PV and wind are on track to help lift renewable electricity generation by 5% in 2020, aided by higher output from hydropower. 4

While TVA continues to finance nuclear power and have it as 42% of all energy generated, several of the 94 U.S. conventional nuclear plants are shutting due to high safety costs and competition from natural gas and wind and solar energy. 2 The nuclear industry is a struggling industry as more and more plants get shut down and retire. Since 2012, six reactors have shut down and there are plans that seven others will close. Shutting these plants down is not a short term trend, while the price of renewables gets cheaper. We believe that nuclear power should not be used at all and, in fact, should be replaced with truly renewable energy and energy efficiency. 5

*Energy Demands are Decreasing*

> A new report released by the International Energy Agency projects that energy demand will fall 6% in 2020 – seven times the decline after the 2008 global financial crisis. In absolute terms, the decline is unprecedented – the equivalent of losing the entire energy demand of India, the world's third largest energy consumer. Advanced economies are expected to see the biggest declines, with demand set to fall by 9% in the United States and by 11% in the European Union. The impact of the crisis on energy demand is heavily dependent on the duration and stringency of measures to curb the spread of the virus. For instance, the IEA found that each month of worldwide lockdown at the levels seen in early April reduces annual global energy demand by about 1.5%. 4

The total demand for energy is decreasing and building a new reactor park does not match the need for energy needed. And with TVA spending $4 million dollars on this project, it is a risk and wasteful spending of taxpayer and customers money. 7

*Esse quam videri*

7.Yale Environment 360, Industry Meltdown: Is the Era of Nuclear Power Coming to an End?
https://e360.yale.edu/features/industry-meltdown-is-era-of-nuclear-power-coming-to-an-end

**Conclusion**

Blue Ridge Environmental Defense League is in opposition to Tennessee Valley Authority going through with the construction, operation, and decommissioning of an advanced nuclear reactor technology park at the Clinch River Nuclear (CRN) Site in Oak Ridge, Roane County, Tennessee. for the following reasons: A variety of negative environmental and human health impacts, there are no efficient and practical solutions for nuclear waste, small modular reactors and microreactors are not the future or cost effective, nuclear energy is a struggling industry, and energy demands are decreasing.

Submitted Respectfully,

Jenn Galler, Campaign Coordinator
Blue Ridge Environmental Defense League
[redacted]

| | |
|---|---|
| **From:** | Tom Clements |
| **To:** | nepa |
| **Subject:** | Comment on PEIS on "Clinch River Nuclear Site Advanced Nuclear Reactor Technology Park" |
| **Date:** | Thursday, March 18, 2021 8:05:17 PM |
| **Attachments:** | advanced-isnt-always-better summary March 18 2021.pdf<br>Advanced-isnt-always-better-full report Lyman March 18 2021.pdf |



# Comment for PEIS on Clinch River Nuclear Site Advanced Nuclear Reactor Technology Park

Submitted by Tom Clements, Director, Savannah River Site Watch, Columbia, SC, https://srswatch.org/, March 19, 2021

In support of the No Action Alternative and for the record, I hereby submit the report on "advanced reactors" and the summary of it released on March 18, 2021 by the Union of Concerned Scientists. All the points raised in the report that would be applicable to reactors considered for the Clinch River Nuclear Site must be analyzed in the PEIS. The "advanced reactor" concept is riddled with problems and DOE should focus on safety of current reactors, until they are shut down, and better waste management.

Please confirm receipt of this comment and two attachments.

I am also forwarding for the PEIS record my comments submitted on February 12, 2021 into the draft EIS record for the Versatile Test Reactor. Oak Ridge National Lab is considered an alternate site for that reactor. I supported the No Action Alternative for the VTR project. Comments on the VTR are applicable to so-called "advanced reactors" that might be considered for the Clinch River site.

So-called "advanced reactors" are very much overhyped, not needed, could be more unsafe than traditional light-water reactors, are expensive and unfunded and could pose fuel-cycle proliferation risks if plutonium fuel or High Assay LEU (HALEU) fuel is used. The PEIS must analyze the source of the fuel and proliferation impacts of fuel production and irradiation in any reactor, especially if plutonium is produced during reactor operation.The proliferation and safety risks of sodium-cooled or salt-cooled reactors must be fully examined, including the possibility of sodium fires, as we saw in1995 with the Monju breeder reactor in Japan, or explosions.

The US Nuclear Regulatory Commission is evidently in secret preparing a draft Environmental Assessment on the Centrus High-Assay Low-Enriched Uranium Demonstration Project, in Piketon, Ohio. the public is so far not being allowed to see that document or comment on it. I have requested it be released for comment. What is relationship between the Clinch River PEIS and HALEU production by Centrus or any other HALEU provider?

Who would partner in fuel production or reactor construction and who would pay? Would public or private funds be involved? What would be the impact of sale of electricity from any so-called "advanced reactor" and would ORNL be expected to pay an elevated "special" rate (above market kwh costs) to fund reactor construction and operation? Compare such electricity costs to other forms of generation, such as solar or wind, as well as costs for conservation to reduce electricity use.

Where would all forms of waste produced by the reactors and accompanying fuel cycles be disposed of? As there is no geologic repository, where would spent fuel go? Would spent fuel eventually be reprocessed? What are the safety and proliferation risks of that and how much weapon-usable plutonium would be produced? Who would pay for reprocessing facilities, where would waste streams from reprocessing be disposed of and where would they be located? Would plutonium from reprocessing be

used as fuel?

Recalling the failed mixed oxide fuel (MOX) project at DOE's Savannah River Site, how much would a plutonium fuel facility cost? That MOX debacle serves as a warning to production of plutonium fuel, for which there will be little demand. How much would it cost to produce plutonium or HALEU fuel and what would be the associated waste streams?

As the DOE's Waste Isolation Pilot Plant (WIPP) may well be oversubscribed, due to the volume cap under the Land Withdrawal Act and due to large amounts of TRU slated for that facility, where would TRU waste from any aspect of the so-called "advanced reactors" go? Demonstrate that WIPP with the current volume cap has capacity for any TRU from "advanced reactors." As TRU from plutonium disposition, nuclear warhead pit production and the Versatile Test Reactor are slated for WIPP, explain how TRU from "advanced reactors" fits in the WIPP pecking order for disposition.

How much volume and weight of TRU would be produced? How much LLW and Mixed LLW would be produced? Would any waste go to commercial facilities in Utah or Texas, or to DOE's National Nuclear Security Site in Nevada? What would local environmental impacts be of waste disposal at those sites?

I recall that in the mid-201os that boosters and contractors at the Savannah River Site proposed a fanciful "Energy Park," with "advanced" SMRs, reprocessing and plutonium fuel fabrication. The Clinch River project sounds similar. The SRS Energy Park never got off the ground. See

The news release by the Union of Concerned Scientist about the advanced reactor report is posted here - points raised here must be addressed as part of the PEIS record:

**"Report Finds That 'Advanced' Nuclear Reactor Designs Are No Better Than Current Reactors—and Some Are Worse**
**Proposed Non-Light-Water Reactors Not Clearly Safer and Will Likely Take Decades to Achieve Reliable Commercial Operation"**

Published Mar 18, 2021

WASHINGTON (March 18, 2021)—A report released today by the Union of Concerned Scientists (UCS) analyzed the designs of a number of so-called "advanced" non-light-water nuclear reactors currently in development and found that they are no better—and in some respects significantly worse—than the light-water reactors in operation today.

The 140-page report, *"Advanced" Isn't Always Better*, assesses the pros and cons of three main types of non-light-water reactors: sodium-cooled fast reactors, high-temperature gas-cooled reactors, and molten salt-fueled reactors. It rates them on three broad criteria: safety and security; nuclear proliferation and terrorism risks; and "sustainability," which refers to how efficiently they use uranium and how much long-lived nuclear waste they generate.

"If nuclear power is to play a larger role to address climate change, it is essential for new reactor designs to be safer, more secure, and pose comparable or—better yet—lower risks of nuclear proliferation and nuclear terrorism than the existing reactor fleet," says report author Dr. Edwin Lyman, a physicist and director of nuclear power safety at UCS. "Despite the hype surrounding them, none of the non-light-water reactors on the drawing board that we reviewed meet all of those requirements."

The report takes a close look at unsubstantiated claims developers are making about their designs, which are largely based on unproven concepts from more than 50 years ago. With little hard evidence, they assert that their reactors have the potential to lower costs, reduce nuclear waste, burn uranium more efficiently, strengthen safety, and lower the risk of nuclear proliferation.
One of the proposed sodium-cooled fast reactors, TerraPower's 345 megawatt Natrium, has received considerable media attention recently because TerraPower founder Bill Gates has been citing it during interviews about his new book, *How to Avoid a Climate Disaster*. In mid-February, Gates told *60 Minutes* correspondent Anderson Cooper that the Natrium reactor will produce less nuclear waste and be safer

than a conventional light-water reactor.

In fact, according to the UCS report, sodium-cooled fast reactors such as the Natrium would likely be less “uranium-efficient.” They would not reduce the amount of waste that requires long-term isolation in a geologic repository. They also could experience safety problems that are not an issue for light-water reactors. Sodium coolant, for example, can burn when exposed to air or water, and a sodium-cooled fast reactor could experience uncontrollable power increases that result in rapid core melting.

“When it comes to safety and security, sodium-cooled fast reactors and molten salt-fueled reactors are significantly worse than conventional light-water reactors,” says Dr. Lyman. “High-temperature, gas-cooled reactors may have the potential to be safer, but that remains unproven, and problems have come up during recent fuel safety tests.”

Timing is also an issue. Some developers promise that they can demonstrate, license and deploy their non-light-water reactors on a commercial scale as early as the end of this decade, enabling them to address the climate crisis in the near term. For example, last fall the Department of Energy (DOE) gave both TerraPower and X-Energy, developer of a high-temperature, gas-cooled “pebble-bed” reactor, $80 million grants to begin operating first-of-a-kind commercial units by 2027, most likely at the Columbia Generating Station site in Washington.

According to the report, if federal regulators require the necessary safety demonstrations, it could take at least 20 years—and billions of dollars in additional costs—to commercialize non-light-water reactors, their associated fuel cycle facilities, and other related infrastructure.

“One of the new reactor designs being considered, the ‘breed-and-burn’ reactor, has the most potential because it doesn’t require reprocessing—or recycling—spent nuclear fuel, which poses unacceptable proliferation risks,” says Dr. Lyman. “But the concept is still saddled with considerable technical obstacles and safety hazards due to the fact that fuel would remain in the reactor longer than in a light-water reactor, allowing fission gases and pressure to build.”

The report recommends that the DOE suspend its advanced reactor demonstration program until the Nuclear Regulatory Commission determines whether it will require full-scale prototype tests before licensing any designs for commercial deployment, which the report argues are essential. It also calls on Congress to require the DOE to convene an independent commission to review the technical merits of all proposed non-light-water reactors and only approve projects with a high likelihood of commercialization that are clearly safer and more secure than the current fleet. Finally, the DOE and Congress should consider spending more research and development dollars on improving the safety and security of light-water reactors, rather than on commercializing immature, overhyped non-light-water reactor designs.

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Thank you for considering these comments for the PEIS record.

| | |
|---|---|
| **From:** | Tom Clements |
| **To:** | nepa |
| **Subject:** | Additional Comment of Clinch River Nuclear Site PEIS Fwd: Comment and attachments on Draft VTR EIS, by SRS Watch - please confirm receipt |
| **Date:** | Thursday, March 18, 2021 8:22:47 PM |
| **Attachments:** | Greg Jones on VTR Nov 19 2019.pdf<br>plutonium disposition scoping comments by SRS Watch Jan 28 2021.pdf<br>plutonium-inventory-SRS-2020-FOIA-rcvd-Sep-22-2020.pdf<br>Comment by SRS Watch on draft VTR EIS Feb 12 2021.pdf |



# Comment for PEIS on Clinch River Nuclear Site Advanced Nuclear Reactor Technology Park

Submitted by Tom Clements, Director, Savannah River Site Watch, Columbia, SC, https://srswatch.org/, March 19, 2021

In support of the No Action Alternative and for the PEIS record, I hereby submit my comments (and attachments) submitted on February 12, 2021 into the draft EIS record for the Versatile Test Reactor. Oak Ridge National Lab is considered an alternate site for that reactor. I supported the No Action Alternative in that NEPA process. Comments on the VTR are applicable to so-called "advanced reactors" that might be considered for the Clinch River site.

Please confirm receipt of this additional comment and four attachments (which must be considered in the PEIS).

The attached plutonium disposition comment is relevant given the issue of TRU disposal from "advanced reactors" in the Waste Isolation Pilot Plant. Such waste must be part of the requested PEIS needed on plutonium waste (TRU) disposal from various projects - plutonium disposition, pit production (for nuclear warheads) and the Versatile Test Reactor- in WIPP.

Thank you.

-----Original Message-----
From: Tom Clements [redacted]
To: [redacted]
Sent: Fri, Feb 12, 2021 10:27 am
Subject: Comment and attachments on Draft VTR EIS, by SRS Watch - please confirm receipt

February 12, 2021

To: Mr. James Lovejoy
Document Manager
U.S. Department of Energy
Idaho Operations Office
[redacted]

I hereby submit the attached comments for the record of the draft EIA on the VTR. Please confirm receipt.

I have also attached three documents for the record. Please confirm receipt of them.

The comment has been posted on the SRS Watch website at:

**https://srswatch.org/srs-watch-comments-on-plutonium-fueled-versatile-test-reactor-halt-eis-process-for-unjustified-sodium-cooled-reactor/**

I will also be mailing the above-mentioned documents.

I may submit other comments before the new comment period deadline of March 2, if I deem such comments to be relevant.

Thank you.

Tom Clements
Director, Savannah River Site Watch
[redacted]
https://srswatch.org/

TVA March 18, 2021

**Programmatic Environmental Impact Statement Comments to Consider for Proposed Advanced Nuclear Reactor Technology Park at Clinch River Nuclear Site in Oak Ridge, Roane County, Tennessee**

To whom it may concern,

Concerning the potential environmental effects association with the construction, operation, and decommissioning of an advanced nuclear reactor technology park that would produce up to 800 megawatts, thank you for listing the no-action alternative (A). Federal Register/Vol. 86, No. 23/Friday, February5, 2021/Notices

The PEIS evaluation lists a large number of possible impacts to be addressed including those of biological and environmental justice. The one not listed that should be included is climate change impacts. With increasing climate change disruptions and possible triggering feedback systems, any scoping should seek to determine whether advanced nuclear power will provide the clean, reliable and low-cost energy TVA has listed as the project purpose:

1. First, SMRS is not clean energy. Nuclear energy of any kind is not carbon free if one includes the uranium mining along with the processing and transportation emissions required to deliver a pellet to a fuel rod. Data shows us many worker illnesses from this fuel chain preparation. In these small modular reactors (SMRs), what will be the level of hydrogen buildup? Is there daily venting? What are the common wind patterns showing the path of any emissions and who will any releases impact? Is there water from the reactor being placed in the river and what is the level of tritium being deposited?
2. Is it reliable? No. Numerous shutdowns and accidents attributed to TVA nuclear reactors over the years give pause to think that we can rely on nuclear power. This base-load thinking is not going to be reliable in a climate heated world since the technology must have cool water. There have already been examples of nuclear power stations shutting down due to water being too hot or flooding and catastrophic storms. Please compare the option of renewable energy reliability when coupled with battery storage to the reliability of small nuclear reactors being considered.
3. What about low cost? Numerous studies have shown that renewable energy costs come in lower than that produced from nuclear reactors. Further, the building costs and building times are enormous and always more than originally declared e.g. seemingly never-ending Vogtle work. These upfront costs are supported by numerous loans and subsidies from DOE/taxpayers. The $4 million going to prepare this PEIS is wasted when the time to effectively constrain climate change impacts comes sooner than it will take to build a technology park. Not one kilowatt before 2030? What is the cost for equal equivalent of renewable energy construction

and megawatts production to 800MWe of nuclear power and how quickly can it come on line?

Safety

Not only does an advanced nuclear technology park not meet TVA's list of purposes for a project, but there is the matter of safety that is always of concern with nuclear power. Radiation exposure of course can be deadly. Is it worth the risk? Dr. Edwin Lyman from the Union of Concerned Scientists says it is not. In his report "Advanced Isn't Always Better" he states, "Nearly all of the NLWRs currently on the drawing board fail to provide significant enough improvements over LWRs to justify their considerable risks."

The report compares NLWRs to LWRs and shows that safety, sustainability and proliferation risk shows their safety is 'significantly worse'.

https://www.ucsusa.org/resources/advanced-isnt-always-better

Given Dr. Lyman's report pointing out the poor safety of advanced nuclear reactors, a safety perimeter and evacuation zones should not be lessened from those used for existing nuclear sites.

Then there is the radioactive waste issue. To date, no permanent solution has been found. The PEIS must address waste questions. How large is a spent fuel pool to accommodate fuel cells at appropriate distance? What storage casks will be used and where will they be stored or will the waste be transported to Western U.S. waste sites exposing humans along highways? What is the stewardship burden required to care for this long-lasting radioactive waste? What is the cost of dealing with waste. Consider this cost as part of the total cost for the park? What happens when decommissioning is required and what is the lifespan of these reactors?

Here are conclusions from a study and event by Dr. Lindsay Krall from the Stanford University Freeman Spogli Institute for International Studies regarding the various SMR designs. https://fsi.stanford.edu/events/critical-analysis-nuclear-waste-management-consequences-small-modular-reactors

*By analyzing the published design specifications for water-, sodium-, and molten salt-cooled SMRs, I here characterize their notional, high-level waste streams in terms of decay heat, radiochemistry, and fissile isotope concentration, each of which have implications for geologic repository design and long-term safety. Volumes of low- and intermediate-level decommissioning waste, in the form of reactor components, coolants, and moderators, have also been estimated.*

*The results show that SMRs will not reduce the size of a geologic repository for spent nuclear fuel, nor the associated future dose rates. Rather, SMRs are poised to discharge spent fuel with relatively high concentrations of fissile material, which may pose re-criticality risks in a geologic repository. Furthermore, SMRs—in particular, designs that call for molten salt or sodium coolants—entail increased volumes of decommissioning waste, as compared to a standard 1100 $MW_e$, water-cooled reactor. Many of the anticipated SMR waste challenges are a consequence*

*of neutron leakage, a basic physical process that reduces the fuel burnup efficiency in small reactor cores. Common approaches to attenuating neutron leakage from SMRs, such as the introduction of radial neutron reflectors, will increase the generation of decommissioning waste. The feasibility of managing SMR waste streams should be performed before these reactors are licensed, and future clean energy policies should acknowledge the adverse impact that SMRs will have on radioactive waste management and disposal.*

More information may also be found on this subject in the "Handbook of Small Modular Nuclear Reactors" (ISBN 9780857098511).

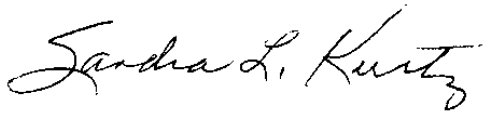
Environmental Concerns

The site sits on a peninsula at an elevation of about 800 feet surrounded by the Clinch River which is at an elevation of about 740 feet. The proposed nuclear reactors will require that water be taken from the river. This will require a system to both pump the water to the reactors and return it to the river. The site map shows a canal cut. Due to the height between the top of the site and the river, inevitably there will be erosion and perhaps landslides due to increased heavy rain events already occurring in the Tennessee Valley. Management costs must be included in the site preparation.

While the land was cleared for the earlier nuclear reactor planned that was disbanded, the land has since returned to its forested state with accompanying flora and fauna that protect the riverbank. Please assess the economic value of carbon sequestration for the forest on this site during the years of reactor life (60 years?). How will the temperature of the coolant water be returned to the river in such a way as to not limit the well-being of aquatic species?

In conclusion one might ask who needs this energy? Given climate change impacts, the safety risks, high relative costs, waste issues, questionable designs, length of time to build, and damage to the environment, the non-action option A is the best choice. The real solution to meet energy demand is to quickly move to renewable energy with battery storage at suitable sites. If SMR research comes to fruition at all, other locations should be considered including brownfields. Surely, there are places in and around the already compromised Oak Ridge National Laboratory. The Clinch River site is better used as a forested carbon sequestration site in order to address climate change in the most meaningful, effective and low-cost way.

Respectfully,



Sandra Kurtz
For BEST (Bellefonte Efficiency & Sustainability Team)
[redacted]
[redacted]

TVA Advanced Reactor Scoping Comments for PEIS Advanced Reactor Technology Park - March 2021

These comments are respectfully submitted by the Tennessee Environmental Council and the Tennessee Chapter of the Sierra Club with the sincere hope they aid TVA making a comprehensive, unbiased Programmatic Environmental Impact Statement for the range of alternatives in this proposal for an advanced reactor technology park at the Clinch River Site.

It is the belief of both environmental advocacy non-profits that the successful completion of a comprehensive and unbiased PEIS should result in the adoption of Alternative A: The No Action Alternative. Unfortunately, TVA's pro-nuclear power biases make this unlikely. The very fact that TVA is willing to spend $4 million on this PEIS while eliminating consideration of construction of alternative energy generation sources is a key indicator. Even more troubling is TVA CEO Jeffrey Lyash's conflict of interest created by his role as Vice Chairman of the Nuclear Energy Institute (NEI). NEI is self-described as the voice of the US nuclear industry; its mission is "to promote the use and growth of nuclear energy."

It is troubling that after 70 years of commercial nuclear power in the US, billions upon billions of dollars of research world-wide, scores of failed reactor concepts and projects (thirteen of these TVA projects) that TVA can not identify a single proven reactor project to move forward with but is proposing 8 different technologies to consider.

How can TVA prolong its fascination with new nuclear power after its well-documented failed projects, cost over-runs, and schedule delays? Especially those in this century, after TVA should have already learned from its past mistakes. Watts Bar Unit 2 took over 40 years to complete: https://thebulletin.org/2015/10/watts-bar-unit-2-last-old-reactor-of-the-20th-century-a-cautionary-tale/ . Original cost estimates to finish both Watts Bar units was around $845 million. By the time both were finished somewhere around $13 billion had been spent.

What is an "advanced nuclear reactor"? It was defined in 2018 Federal legislation as "a nuclear fission reactor with significant improvements over the most recent generation of nuclear fission reactors" or a nuclear fusion reactor. (Fusion reactors are not being considered by TVA in this proposal.) Advanced reactors are really nothing new. According to the Congressional Research Service (Advanced Nuclear Reactors: Technology Overview and Current Issues (congress.gov)) most of these concepts have been studied since the dawn of the nuclear age, but relatively few, such as sodium-cooled reactors and the Fort St. Vrain high temperature gas cooled reactor have advanced to commercial scale demonstrations

and that was decades ago in the US. Find a link to the history of the Fort St. Vrain reactor here: https://www.fsvfolks.org/FSVHistory.html . The Generation IV International Forum was formed over 20 years ago to promote the development of next generation reactors, with little to show for it in the way of electricity generation.

TVA is considering three different light water, small modular reactor (smr) designs and five non-light water reactor designs. (All power reactors operating in the US now are light water reactors.) TVA has been considering smrs and spending ratepayers' money on them for over a decade, with no electricity generated. The non-light water reactor designs are molten salt, fluoride salt, high temperature gas, molten chloride, and micro reactors.

Advanced nuclear power proponents provide an impressive list of unsubstantiated claims such as inherent safety features, lower waste yields, greater fuel utilization, superior reliability, nuclear weapons proliferation resistance, recycling used fuel, and on and on. None of these claims are proven, many are suspect and do not hold up to scrutiny. These claims are eerily like past, false claims of various proposed nuclear projects. In 1953 Admiral Hyman Rickover, the founder of the US Nuclear Navy, warned how trouble-free, economical, and uncomplicated proposed reactors sound and how problematic, expensive, and difficult they are to build and operate.

Please include the Union of Concerned Scientists' study: "Advanced" Isn't Always Better by Edwin Lyman in the PEIS. It was released to the public on March 18, 2021. It can be downloaded at this link: https://ucsusa.org/resources/advanced-isnt-always-better

Many of the non-light water reactor designs involve reprocessing highly irradiated used fuel, an extremely controversial process with intense environmental and weapons proliferation drawbacks. Many also involve using higher levels of enriched uranium or plutonium as fuel. The non-light water reactors offer many unresolved technical and safety challenges.

TVA should instead fully commit to transitioning to the least cost, fastest to deploy climate solutions: energy efficiency, wind and solar, and developing more energy storage technologies: https://www.reuters.com/article/us-usa-solar/u-s-solar-industry-predicts-installations-will-quadruple-by-2030-idUSKBN2B80AX?il=0; https://www.cnbc.com/2021/03/16/the-us-solar-industry-posted-record-growth-in-2020-despite-covid-19-new-report-finds.html; https://www.greentechmedia.com/articles/read/so-big-its-boring-the-rise-of-utility-scale-solar

This Nuclear Reactor Technology Park proposal is a highly speculative project that rises to the level of hyper overreach by TVA. It is a red flag that there are 8 possible reactor designs. This is not a power project; it is a hail mary pass to the failing nuclear industry. It is most certainly not an appropriate, productive, or cost-effective response to the climate crisis we are facing. Nuclear power is not clean power, it is not green power, it is not the least cost power or the lowest risk power.

It is a fundamental mistake for TVA to waste ratepayers' money on this costly technological overreach which is unlikely to ever generate any electricity. If an advanced reactor is ever completed it will certainly generate the most expensive electricity in TVA's portfolio. Given recent TVA and US experience with new reactors it will take until at least 2030 and probably much beyond that to complete any new reactor, advanced or not. It is far more likely that this project will never be completed.

Instead, TVA should put its considerable expertise and experience in building the clean, renewable energy grid of the future, utilizing a wide range of renewable resources including distributed and utility scale solar, wind, energy efficiency, and energy storage. Renewables are now the lowest cost power with the smallest negative environmental impact. Deployment of renewables and energy efficiency measures will also provide a strong economic boost to the Tennessee Valley. Please include this article: "Every Euro Invested in Nuclear Power Makes the Climate Crisis Worse" into the PEIS: https://www.dw.com/en/nuclear-climate-mycle-schneider-renewables-fukushima/a-56712368

TVA has a history of expensive, failed nuclear projects, much of the current debt was incurred from nuclear projects. TVA has started or planned 19 reactors (plus the Clinch River Breeder Reactor, which was a joint project), 7 are operating. Cost overruns of multiples of the original estimated costs are the rule, not the exception. TVA should know better by now than to continue to be fooled by the next false hope, or multiple false hopes, of the nuclear industry.

In 2005 the dominant false hope was the new, supposedly improved, and cost-effective Westinghouse AP 1000. TVA was originally slated to be the first US utility to build these (Bellefonte Units 3 and 4). TVA reversed course and the AP 1000 went on to bankrupt Westinghouse while taking its fiscal train wreck to South Carolina and Georgia. The South Carolina reactors were cancelled after some $9 billion was wasted: The failed V.C. Summer nuclear project: A timeline | Choose Energy®. The Georgia reactors are still under construction, more than 5 years behind schedule and the cost has doubled, from $14 to $28 billion: https://cleanenergy.org/blog/vogtle-units-3-4-vcm-23-six-more-months-700-million-

more-dollars/ ; Is There More Trouble Ahead for Plant Vogtle Expansion? Experts testify that serious challenges remain - SACE | Southern Alliance for Clean EnergySACE | Southern Alliance for Clean Energy

The next nuclear chimera TVA chased was small modular reactors, first mPower in 2013 and then NuScale. The mPower project collapsed and NuScale filled the breach. TVA wisely decided to let UAMPS (Utah Associated Municipal Power Systems) lead the way and that project is teetering on the edge of abandonment. Current estimates of the first completed NuScale smr are now 2029, it was originally projected to be 2023, then 2027. There are serious doubts that any will ever be completed. Here is a link to a study of problems with the UAMPS project by M.V. Ramana: https://d3n8a8pro7vhmx.cloudfront.net/oregonpsrorg/pages/21/attachments/original/1600287829/EyesWideShutReport_Final-30August2020.pdf?1600287829

Now TVA is contemplating changing course again and spending $4 million on this PEIS. It is entirely inappropriate for TVA to consider an "advanced" nuclear technology park given the experimental nature of the reactors. "Advanced reactors" is a catch-all term that is so broad it is meaningless. This is a bad financial bet for valley ratepayers.

TVA seems to have a blind eye to the immense negative environmental impacts of nuclear power. The entire nuclear fuel chain, from uranium mining through waste management needs to be recognized as harmful and factored into the analysis of environmental impacts. Nuclear reactors manufacture radiation.

Excess radiation, beyond background, is a biological threat. Man-made radiation must be contained and kept out of our biosphere until it decays into harmlessness, which can be millions of years for some isotopes. The most dramatic example is misleadingly named spent fuel. Spent fuel is millions of times more radioactive than new, unused fuel. All the highly irradiated used fuel generated by TVA's reactors is still onsite at those reactors, in the cooling pools or dry casks. At this time, after 70 or so years of nuclear power production, the United States has still not figured out what to do with this stuff. This is an immensely complicated issue, and when you dig deep into the details it gets more complicated, with many uncertainties in "aging management", especially the high-burnup fuel currently being discharged. Suffice it to say that we really do not know how to safely store "spent fuel". We are far from knowing how to dispose of it, how to keep it isolated for a million years: https://www.fairewinds.org/waste-and-spent-fuel.

TVA should be making every effort to stop making more radioactive waste, not looking for ways to create even more. That waste, accumulating in our nuclear communities is a threat to their and, indeed, the region's future. Current storage technologies have questionable safety protocols and are more of a risk than is acknowledged by TVA, the Nuclear Regulatory Commission, and the nuclear industry: https://sanonofresafety.org/nureg-2224-high-burnup-storage-and-transport/

The mythology around the benign characteristics of aging used nuclear fuel does not hold up to unbiased scrutiny. All of that radiation being contained by 5/8" thick, welded shut stainless steel canisters with no credible method to find cracks in the canisters, no way to fix them, no way to respond to an imminent or active leak, and no current method of moving the waste out of a failing canister into a new one. All this with a Chernobyl explosion's release amount of cesium in each canister. A breach of one pressurized, helium filled canister will result in massive amounts of radiation leakage and widespread contamination and disruption: (Please include this and all links in the issues to analyze for this PEIS) Spent Power Reactor Fuel: Pre-Disposal Issues (eesi.org).

The PEIS should consider the full range of environmental and safety issues around the used nuclear fuel for each of the proposed technologies. The consideration must cover both storage and disposal, and fuel aging management issues including deterioration of storage containment, breakdown of fuel structure over time, and the possibility of used fuel reaching spontaneous, uncontrolled fission during storage. Aging management over the course of decades, centuries, millennia, and eons should be carefully considered. The environmental impacts of major accidental releases of radiation from the stored fuel must be detailed for the EIS to be valid. The information available on this link should help with the analyses: https://fsi.stanford.edu/events/critical-analysis-nuclear-waste-management-consequences-small-modular-reactors .

The PEIS should evaluate the environmental impacts for the entire nuclear fuel chain separately for each of the proposed technologies.

The PEIS should consider the environmental and health impacts from uranium mining and milling: please include the following in your evaluation: After Decades of Uranium Mining, Navajo Nation Struggles With Legacy of Contamination - Bing video; The Toxic Legacy of Uranium Mining on Navajo Land: The Disproportionate Struggle of Indigenous Peoples and Water - (savethewater.org); Radioactive Waste From Uranium Mining and Milling | RadTown | US EPA; Uranium Mining and Milling Wastes: An Introduction (wise-uranium.org).

The PEIS should carefully and thoroughly consider the environmental and health impacts of processing the uranium and other fissionable materials into the specific fuel being considered for each of the proposed technologies, such as: high assay low enriched uranium (HALEU), tristructural isotropic (TRISO), and enriched uranium fuel for the light water reactors.

The PEIS should seriously and strenuously consider the environmental impacts of the most serious possible accident for each proposed technology. Past EIS's for TVA nuclear projects have dodged this issue by making the patently false claim that the chance of a serious, beyond design basis accident is so small that it is not necessary to do the work to calculate and postulate the environmental impact of such a disaster. Those words ring hollow in the aftermath of Chernobyl and Fukushima. The Fukushima melt-downs, explosions and massive radiation escape occurred to 3 General Electric Mark 1 reactors, almost identical to TVA's 3 Browns Ferry reactors.

The PEIS must consider the radiation released during normal operation, refueling, maintenance and repairs for each of the proposed technologies.

The PEIS must consider the low-level waste stream that will be created by each of the proposed technologies. This should include pathways for processing, disposal and possible reuse of any radioactive materials generated by the reactor and possible radiation exposure these cause to the public.

The PEIS must consider the eventual retirement and decommissioning of each of the proposed technologies. This should include all possible radiation exposure to the public and the environment from decommissioning.

The PEIS must consider the cumulative radiation load in and around Oak Ridge. Past activities have resulted in an enormous amount of man-made radioactivity that has been released into the environment in the area. This should include analysis of public health records for diseases know to be caused by exposure to radiation, even low doses.
http://www2.clarku.edu/mtafund/prodlib/global_green/Oak_Ridge.pdf

The PEIS should consider the nuclear weapons proliferation implications for each proposed nuclear reactor technology.

The PEIS should consider the increase in background radiation since the dawn of the nuclear age. It should consider the probable increases in background radiation in the future due to continued

manufacture of man-made radiation and the inevitable release of some portion of that radiation into the environment world-wide. The PEIS should accurately translate those increases into likely radiogenic disease generation in humans, livestock, and wildlife.

Thank you for this opportunity to help in the scoping process.

Don Safer

[redacted]

March 18, 2021

J. Taylor Cates

NEPA Specialist

Tennessee Valley Authority

TVA Advanced Reactor Scoping Comments for PEIS Advanced Reactor Technology Park - March 2021

These comments are respectfully submitted by the Tennessee Environmental Council with the sincere hope they aid TVA making a comprehensive, unbiased Programmatic Environmental Impact Statement for the range of alternatives in this proposal for an advanced reactor technology park at the Clinch River Site.

It is our belief that the successful completion of a comprehensive and unbiased PEIS should result in the adoption of Alternative A: The No Action Alternative. Unfortunately, TVA's pro-nuclear power biases make this unlikely. The very fact that TVA is willing to spend $4 million on this PEIS while eliminating consideration of construction of alternative energy generation sources is a key indicator. Even more troubling is TVA CEO Jeffrey Lyash's conflict of interest created by his role as Vice Chairman of the Nuclear Energy Institute (NEI). NEI is self-described as the voice of the US nuclear industry; its mission is "to promote the use and growth of nuclear energy."

It is troubling that after 70 years of commercial nuclear power in the US, billions upon billions of dollars of research world-wide, scores of failed reactor concepts and projects (thirteen of these TVA projects) that TVA can not identify a single proven reactor project to move forward with but is proposing 8 different technologies to consider.

How can TVA prolong its fascination with new nuclear power after its well-documented failed projects, cost over-runs, and schedule delays? Especially those in this century, after TVA should have already learned from its past mistakes. Watts Bar Unit 2 took over 40 years to complete: https://thebulletin.org/2015/10/watts-bar-unit-2-last-old-reactor-of-the-20th-century-a-cautionary-tale/ . Original cost estimates to finish both Watts Bar units was around $845 million. By the time both were finished somewhere around $13 billion had been spent.

What is an "advanced nuclear reactor"? It was defined in 2018 Federal legislation as "a nuclear fission reactor with significant improvements over the most recent generation of nuclear fission reactors" or a nuclear fusion reactor. (Fusion reactors are not being considered by TVA in this proposal.) Advanced reactors are really nothing new. According to the Congressional Research Service (Advanced Nuclear

Reactors: Technology Overview and Current Issues (congress.gov)) most of these concepts have been studied since the dawn of the nuclear age, but relatively few, such as sodium-cooled reactors and the Fort St. Vrain high temperature gas cooled reactor have advanced to commercial scale demonstrations and that was decades ago in the US. Find a link to the history of the Fort St. Vrain reactor here: https://www.fsvfolks.org/FSVHistory.html . The Generation IV International Forum was formed over 20 years ago to promote the development of next generation reactors, with little to show for it in the way of electricity generation.

TVA is considering three different light water, small modular reactor (smr) designs and five non-light water reactor designs. (All power reactors operating in the US now are light water reactors.) TVA has been considering smrs and spending ratepayers' money on them for over a decade, with no electricity generated. The non-light water reactor designs are molten salt, fluoride salt, high temperature gas, molten chloride, and micro reactors.

Advanced nuclear power proponents provide an impressive list of unsubstantiated claims such as inherent safety features, lower waste yields, greater fuel utilization, superior reliability, nuclear weapons proliferation resistance, recycling used fuel, and on and on. None of these claims are proven, many are suspect and do not hold up to scrutiny. These claims are eerily like past, false claims of various proposed nuclear projects. In 1953 Admiral Hyman Rickover, the founder of the US Nuclear Navy, warned how trouble-free, economical, and uncomplicated proposed reactors sound and how problematic, expensive, and difficult they are to build and operate.

Please include the Union of Concerned Scientists' study: "Advanced" Isn't Always Better by Edwin Lyman in the PEIS. It was released to the public on March 18, 2021. It can be downloaded at this link: https://ucsusa.org/resources/advanced-isnt-always-better

Many of the non-light water reactor designs involve reprocessing highly irradiated used fuel, an extremely controversial process with intense environmental and weapons proliferation drawbacks. Many also involve using higher levels of enriched uranium or plutonium as fuel. The non-light water reactors offer many unresolved technical and safety challenges.

TVA should instead fully commit to transitioning to the least cost, fastest to deploy climate solutions: energy efficiency, wind and solar, and developing more energy storage technologies: https://www.reuters.com/article/us-usa-solar/u-s-solar-industry-predicts-installations-will-quadruple-by-2030-idUSKBN2B80AX?il=0; https://www.cnbc.com/2021/03/16/the-us-solar-industry-posted-

record-growth-in-2020-despite-covid-19-new-report-finds.html;
https://www.greentechmedia.com/articles/read/so-big-its-boring-the-rise-of-utility-scale-solar

This Nuclear Reactor Technology Park proposal is a highly speculative project that rises to the level of hyper overreach by TVA. It is a red flag that there are 8 possible reactor designs. This is not a power project; it is a hail mary pass to the failing nuclear industry. It is most certainly not an appropriate, productive, or cost-effective response to the climate crisis we are facing. Nuclear power is not clean power, it is not green power, it is not the least cost power or the lowest risk power.

It is a fundamental mistake for TVA to waste ratepayers' money on this costly technological overreach which is unlikely to ever generate any electricity. If an advanced reactor is ever completed it will certainly generate the most expensive electricity in TVA's portfolio. Given recent TVA and US experience with new reactors it will take until at least 2030 and probably much beyond that to complete any new reactor, advanced or not. It is far more likely that this project will never be completed.

Instead, TVA should put its considerable expertise and experience in building the clean, renewable energy grid of the future, utilizing a wide range of renewable resources including distributed and utility scale solar, wind, energy efficiency, and energy storage. Renewables are now the lowest cost power with the smallest negative environmental impact. Deployment of renewables and energy efficiency measures will also provide a strong economic boost to the Tennessee Valley. Please include this article: "Every Euro Invested in Nuclear Power Makes the Climate Crisis Worse" into the PEIS:
https://www.dw.com/en/nuclear-climate-mycle-schneider-renewables-fukushima/a-56712368

TVA has a history of expensive, failed nuclear projects, much of the current debt was incurred from nuclear projects. TVA has started or planned 19 reactors (plus the Clinch River Breeder Reactor, which was a joint project), 7 are operating. Cost overruns of multiples of the original estimated costs are the rule, not the exception. TVA should know better by now than to continue to be fooled by the next false hope, or multiple false hopes, of the nuclear industry.

In 2005 the dominant false hope was the new, supposedly improved, and cost-effective Westinghouse AP 1000. TVA was originally slated to be the first US utility to build these (Bellefonte Units 3 and 4). TVA reversed course and the AP 1000 went on to bankrupt Westinghouse while taking its fiscal train wreck to South Carolina and Georgia. The South Carolina reactors were cancelled after some $9 billion was wasted: The failed V.C. Summer nuclear project: A timeline | Choose Energy®. The Georgia reactors are still under construction, more than 5 years behind schedule and the cost has doubled, from

$14 to $28 billion: https://cleanenergy.org/blog/vogtle-units-3-4-vcm-23-six-more-months-700-million-more-dollars/ ; Is There More Trouble Ahead for Plant Vogtle Expansion? Experts testify that serious challenges remain - SACE | Southern Alliance for Clean EnergySACE | Southern Alliance for Clean Energy

The next nuclear chimera TVA chased was small modular reactors, first mPower in 2013 and then NuScale. The mPower project collapsed and NuScale filled the breach. TVA wisely decided to let UAMPS (Utah Associated Municipal Power Systems) lead the way and that project is having difficulty finding enough public utilities to subscribe, threatening the viability of the project. Current estimates of the first completed NuScale smr are now 2029, it was originally projected to be 2023, then 2027. Cost estimates were increased in the Fall of 2020 from 4.2 to 6.2 billion dollars. There are serious doubts that any will ever be completed. Here is a link to a study of problems with the UAMPS project by M.V. Ramana:
https://d3n8a8pro7vhmx.cloudfront.net/oregonpsrorg/pages/21/attachments/original/1600287829/EyesWideShutReport_Final-30August2020.pdf?1600287829

Now TVA is contemplating changing course again and spending $4 million on this PEIS. It is entirely inappropriate for TVA to consider an "advanced" nuclear technology park given the experimental nature of the reactors. "Advanced reactors" is a catch-all term that is so broad it is meaningless. This is a bad financial bet for valley ratepayers.

TVA seems to have a blind eye to the immense negative environmental impacts of nuclear power. The entire nuclear fuel chain, from uranium mining through waste management needs to be recognized as harmful and factored into the analysis of environmental impacts. Nuclear reactors manufacture radiation.

Excess radiation, beyond background, is a biological threat. Man-made radiation must be contained and kept out of our biosphere until it decays into harmlessness, which can be millions of years for some isotopes. The most dramatic example is misleadingly named spent fuel. Spent fuel is millions of times more radioactive than new, unused fuel. All the highly irradiated used fuel generated by TVA's reactors is still onsite at those reactors, in the cooling pools or dry casks. At this time, after 70 or so years of nuclear power production, the United States has still not figured out what to do with this stuff. This is an immensely complicated issue, and when you dig deep into the details it gets more complicated, with many uncertainties in "aging management", especially the high-burnup fuel currently being discharged. Suffice it to say that we really do not know how to safely store "spent fuel". We are far from knowing

how to dispose of it, how to keep it isolated for a million years: https://www.fairewinds.org/waste-and-spent-fuel.

TVA should be making every effort to stop making more radioactive waste, not looking for ways to create even more. That waste, accumulating in our nuclear communities is a threat to their and, indeed, the region's future. Current storage technologies have questionable safety protocols and are more of a risk than is acknowledged by TVA, the Nuclear Regulatory Commission, and the nuclear industry: https://sanonofresafety.org/nureg-2224-high-burnup-storage-and-transport/

The mythology around the benign characteristics of aging used nuclear fuel does not hold up to unbiased scrutiny. All of that radiation being contained by 5/8" thick, welded shut stainless steel canisters with no credible method to find cracks in the canisters, no way to fix them, no way to respond to an imminent or active leak, and no current method of moving the waste out of a failing canister into a new one. All this with a Chernobyl explosion's release amount of cesium in each canister. A breach of one pressurized, helium filled canister will result in massive amounts of radiation leakage and widespread contamination and disruption: (Please include this and all links in the issues to analyze for this PEIS) Spent Power Reactor Fuel: Pre-Disposal Issues (eesi.org).

The PEIS should consider the full range of environmental and safety issues around the used nuclear fuel for each of the proposed technologies. The consideration must cover both storage and disposal, and fuel aging management issues including deterioration of storage containment, breakdown of fuel structure over time, and the possibility of used fuel reaching spontaneous, uncontrolled fission during storage. Aging management over the course of decades, centuries, millennia, and eons should be carefully considered. The environmental impacts of major accidental releases of radiation from the stored fuel must be detailed for the EIS to be valid. The information available on this link should help with the analyses: https://fsi.stanford.edu/events/critical-analysis-nuclear-waste-management-consequences-small-modular-reactors .

The PEIS should evaluate the environmental impacts for the entire nuclear fuel chain separately for each of the proposed technologies.

The PEIS should consider the environmental and health impacts from uranium mining and milling: please include the following in your evaluation: After Decades of Uranium Mining, Navajo Nation Struggles With Legacy of Contamination - Bing video; The Toxic Legacy of Uranium Mining on Navajo Land: The Disproportionate Struggle of Indigenous Peoples and Water - (savethewater.org); Radioactive

Waste From Uranium Mining and Milling | RadTown | US EPA; Uranium Mining and Milling Wastes: An Introduction (wise-uranium.org).

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The PEIS must consider the cumulative radiation load in and around Oak Ridge. Past activities have resulted in an enormous amount of man-made radioactivity that has been released into the environment in the area. This should include analysis of public health records for diseases know to be caused by exposure to radiation, even low doses.
http://www2.clarku.edu/mtafund/prodlib/global_green/Oak_Ridge.pdf

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The PEIS should consider the increase in background radiation since the dawn of the nuclear age. It should consider the probable increases in background radiation in the future due to continued manufacture of man-made radiation and the inevitable release of some portion of that radiation into the environment world-wide. The PEIS should accurately translate those increases into likely radiogenic disease generation in humans, livestock, and wildlife.

Thank you for this opportunity to comment in the scoping process.

Don Safer

Board Member

Tennessee Environmental Council

[redacted]

March 18, 2021

**From:** Virginia Dale
**To:** nepa
**Cc:** [redacted]
**Subject:** Comments regarding TVA EIS Scope
**Date:** Friday, March 19, 2021 8:49:34 AM

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These comments are in regard to the Notice of Intent (NOI) issued by TVA to prepare a Programmatic Environmental Impact Statement (PEIS) to address potential environmental effects associated with the construction, operation, and decommissioning of an advanced nuclear reactor technology park at TVA's 935-acre Clinch River Nuclear (CRN) Site in Oak Ridge. The proposed site is a forest that provides many ecosystem services and habitat such as riparian areas, areas surrounding caves, and other potential habitat for bats, salamanders, and rare species. A brownfield site would be a much more appropriate location and there are brownfields that are available.

Half of the area was not cleared back in the 1970's when the Clinch River Breeder Reactor (CRBR) site work started and is a remarkable old hardwood forest. The area that was cleared for the CRBR more than 40 years ago is now a beautiful forest. Wildlife has returned in numbers to the extent that the Tennessee Wildlife Resources Agency in cooperation with TVA conducts permitted spring wild turkey hunting and deer hunting each fall. Furthermore, the site has been characterized as free of any legacy cold war era contamination.

The public expects TVA to be a responsible steward of public resources and to adhere to the fundamental principle of the preferred use of brownfields in site selection. Has this factor been included in the site reviews? The last thing we need be doing is creating another nuclear contaminated site, especially when there are many brownfield options.

No site options are discussed of the many (and growing number) of decommissioned fossil fuel power plants throughout the TVA system. These locations (such as the soon-to-be- closed Bull Run Fossil Plant ) have the basic infrastructure needs for siting the SMR project including a railroad in most cases, as well as cooling water, highways, transmission lines, sewage system, potable water supply, etc. Thus saving 10's of millions of dollars over a greenfield site.
Thank you for considering these comments.

Best wishes,
Virginia Dale, [redacted]

**From:** Tom Clements
**To:** nepa
**Subject:** Comment for PEIS record: NRC may end pursuit of rulemaking for reprocessing, impacting availability of plutonium fuels for "advanced reactors"
**Date:** Friday, March 19, 2021 11:06:12 AM



# Comment for PEIS on Clinch River Nuclear Site Advanced Nuclear Reactor Technology Park

Submitted by Tom Clements, Director, Savannah River Site Watch, Columbia, SC, https://srswatch.org/, March 19, 2021

This comment is a day late but given the importance of the mentioned document, I request that this comment be accepted. This comment submits a NRC document which I believe supports the No Action Alternative.

I hereby file this March 5, 2021 NRC Policy memo, "DISCONTINUATION OF RULEMAKING SPENT FUEL REPROCESSING," for the PEIS record. The document is posted in the NRC's digital library (ADAMS) here:

https://www.nrc.gov/docs/ML2030/ML20301A388.pdf

From the document: "The purpose of this paper is to request Commission approval to discontinue the Spent Fuel Reprocessing rulemaking activity that was directed by Staff Requirements Memorandum (SRM) SECY-13- SECY-13-0093 Reprocessing Regulatory Framework 4, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML13308A403). The U.S. Nuclear Regulatory Commission (NRC) staff has determined that a continued rulemaking effort is not currently justified, as there is limited interest expressed or expected from potential applicants for reprocessing facilities, including advanced reactor designers, in the near-term use of reprocessed spent fuel. Therefore, while a rule could provide additional clarity for potential applicants, it is not currently cost-justified. This paper does not contain any new commitments or resource implications."

The document also states: "...advanced reactor applicants indicated that they have limited near-term interest (within the next
decade or two) in the use of reprocessed spent fuel."

And, the document says: "NEI and industry representatives voiced their support for continuing the rulemaking primarily on the basis of a need for a clear and stable regulatory framework for reprocessing and to support advanced reactor licensing. However, no industry stakeholders indicated that they plan to submit an application to the NRC for a reprocessing facility in the foreseeable future. Other stakeholders, such as UCS and members of the public, indicated they do not support the continuation of the rulemaking because of proliferation and other concerns."

And it states: "NEI stated that developers with advanced reactor designs that may eventually source their fuel from the spent fuel of other reactors are generally not planning to do so in the near future." And: "NEI indicated that this group has not identified any near-term plans for developing reprocessing capabilities for advanced reactor designs and that it would inform the NRC of any such plans identified in the future..." And. also stated: "Based on these interactions, the staff concluded that current DOE efforts in the area of reprocessing are aimed at providing a limited near-term supply of high-assay low-enriched uranium (HALEU) for initial advanced reactor designs."

The document concludes: "Given the estimated costs and the limited interest, expressed or expected, from potential applicants and advanced reactor designers in building facilities involving reprocessing technologies in the near-term, the staff concludes that, while a rule could provide additional clarity for potential applicants, a continued rulemaking effort is not currently justified." And that the NRC staff recommends that the NRC Commission "Discontinue the Spent Fuel Reprocessing rulemaking."

The PEIS on the Clinch River Nuclear Site must take into account the impact on the provision of plutonium fuels for so-called "advanced reactors" if the Commission does terminate the rulemaking, essentially ending pursuit of commercial reprocessing in the US. The PEIS must discuss where plutonium fuel will come from if there is no reprocessing in the US. If "advanced reactor" proponents advocate plutonium fuels what will be the source of such plutonium - Europe or plutonium pits stockpiled by NNSA at the Pantex site? If there is a lack of plutonium for fuel, how can the plutonium-fueled reactors be pursued?

**From:** Wufoo
**To:** nepa
**Subject:** Scoping Comments - Clinch River Nuclear Site EIS [#4]
**Date:** Friday, March 19, 2021 11:57:58 PM



| | |
|---|---|
| Name | D'Arrigo, Keegan |
| City | [redacted] |
| State | [redacted] |
| Organization | NIRS, CFNFGL |
| Email | [redacted] |
| Phone Number | [redacted] |
| Please provide your comments by uploading a file or by entering them below. * | Nuclear Information and Resource Service and Coalition for A Nuclear Free Great Lakes request a 6 month extension on the comment period and submit preliminary comments. |
| Upload File #1 | nirs_cfnfgl_ext_req_comments_on_tva202100010001_fed_reg_no_202102144_peis_clinch_river_smnr_park.pdf<br>148.31 KB • PDF |

**From:** [redacted]
**To:** nepa
**Cc:** [redacted]
**Subject:** Comments on scope of Programmatic EIS
**Date:** Friday, March 19, 2021 2:17:51 PM



Subject: comments on Notice of Intent to prepare a Programmatic Environmental Impact Statement (PEIS) to address potential environmental effects associated with the construction, operation, and decommissioning of an advanced nuclear reactor technology park at TVA's former Clinch River Breeder Reactor Nuclear Site in Oak Ridge.

Dear TVA,

1. Scope must review additional site alternatives. The options considered in the ESPA were too limited and the assumptions for the ESPA analysis are no longer valid or appropriate.

2. Scope must clearly define and categorize the different habitats and sensitive species that over the past two years (2019-2021) AND THAT CURRENTLY utilize the proposed sites.

3. Scope should identify sensitive natural areas including all riparian zones within 500 meters of the Clinch River, any ephemeral stream or standing water, and all caves and potential habitat for bats.

4. Scope should include development of specific definitions and mechanisms to safeguard natural areas and sensitive habitat, and focus any future disturbance on brown fields.

5. Scope should specifically include considerations to protect all flood plains from any potential disturbance.

6. Scope should consider provisions to facilitate future public access to the shoreline and floodplains.

7. Most critical change to proposed PEIS: Scope should prioritize a systematic analysis to identify and consider existing and future (soon to be idled industrial sites) brown field sites that will require investment in remediation, allowing multiple objectives to be achieved by the research park.

The current scope relies upon a flawed and limited analysis of alternative sites in the ESPA. Although the ESPA was approved by NRC, conditions and information have changed and these changes merit new review. The physical and policy context, and future plans for power plants and industrial site developments in the TVA region, have changed since the analyses for the ESPA

were initiated. Therefore, a new assessment of alternative sites is required.

Specifically, please modify current proposed scope to consider and evaluate alternatives that include all other existing and idled power plant and large industrial sites, including former nuclear research sites, in the TVA Region, using the criteria above and in the current scope. Many of the alternative sites can provide adequate space for the infrastructure, industrial (rail) access, and would allow site development at lower cost than that being proposed.
Thank you for considering these comments,

-Keith Kline

[redacted]

**From:** Wufoo
**To:** nepa
**Subject:** Scoping Comments - Clinch River Nuclear Site EIS [#3]
**Date:** Friday, March 19, 2021 7:35:14 PM



| | |
|---|---|
| Name | Laura Thurman |
| City | [redacted] |
| State | [redacted] |
| Organization | none |
| Email | [redacted] |
| Phone Number | [redacted] |

Please provide your comments by uploading a file or by entering them below. *

I am opposed to the development of a nuclear power plant in Oak Ridge. Although nuclear energy is much cleaner than energy produced by fossil fuel plants, nuclear reactors produce waste hazardous to our environment that will outlive all of us. I previously lived within the 5-10 mile radius and evacuation region of the Watts Bar Nuclear Plant and was relieved to move away from that location. My childhood home was less than one mile from the Kingston Fossil Fuel Plant on Swan Pond Road in Midtown TN where I lived from 1977 to 1991. As a child I grew up swimming in those waters around the Kinston coal plant, eating the fish, and breathing the air. That house was purchased and destroyed following the coal ash spill of 2008. In 2018 I was diagnosed with an aggressive form of non-hereditary breast cancer. Although no definitive connection can be made for my personal health experiences, fossil fuel emissions have been determined harmful to humans and the environment. The 2008 Kingston coal ash spill itself and the handling of the cleanup gives me great concern and causes me to have great doubt in TVA's ability to operate any facility safely for the community's best interest. Like fossil fuel emissions, nuclear waste has been determined harmful to humans and to our environment. There are limits on how much the hazards of nuclear waste can be controlled. For all practical purposes, nuclear waste never goes away. It only becomes a problem for someone else. Primarily it is the poorer communities who are stuck with fence line proximity to hazardous waste producing plants and to the storage of hazardous waste. I know great efforts have been made in recent years to clean Oak Ridge of its hazardous nuclear waste by relocating it to other parts of the country. Why would we want to begin creating more hazardous nuclear waste in Oak Ridge now? I oppose the further development of nuclear power and fossil fuel power plants in general, and specifically in Oak Ridge where I now live and hope to remain living. I feel the development of solar and wind energy would be more appropriate for our current and future energy needs as well as the continuing benefit of our health and environment.

TVA Advanced Reactor Scoping Comments for PEIS Advanced Reactor Technology Park - March 2021

These comments are respectfully submitted by the Tennessee Chapter of the Sierra Club with the sincere hope that they aid TVA in making a comprehensive, equitable Programmatic Environmental Impact Statement for the range of alternatives in this proposal for an advanced reactor technology park at the Clinch River Site.

It is our belief that the successful completion of a comprehensive and unbiased PEIS should result in the adoption of Alternative A: The No Action Alternative. We feel that this Alternative A should be retitled as "Alternative A: The No Nuclear Action Alternative" since current advanced energy alternatives are renewable technologies such as solar and wind, with new energy storage methods.

It is troubling that after 70 years of commercial nuclear power in the US, billions upon billions of dollars of research world-wide, scores of failed reactor concepts and projects (thirteen of these TVA projects) that TVA can not identify a single proven reactor project to move forward with but is proposing 8 different technologies to consider.

Why should TVA prolong its fascination with new nuclear power after its well-documented failed projects, cost over-runs, and schedule delays? Especially those in this century, after TVA should have already learned from its past mistakes. Watts Bar Unit 2 took over 40 years to complete: https://thebulletin.org/2015/10/watts-bar-unit-2-last-old-reactor-of-the-20th-century-a-cautionary-tale/ . Original cost estimates to finish both Watts Bar units was around $845 million. By the time both were finished somewhere around $13 billion had been spent.

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Please review the Union of Concerned Scientists' study: "Advanced" Isn't Always Better by Edwin Lyman in the PEIS. It was released to the public on March 18, 2021. It can be downloaded at this link: https://ucsusa.org/resources/advanced-isnt-always-better

Many of the non-light water reactor designs involve reprocessing highly irradiated used fuel, an extremely controversial process with intense environmental and weapons proliferation drawbacks. Many also involve using higher levels of enriched uranium or plutonium as fuel. The non-light water reactors offer many unresolved technical and safety challenges.

This Nuclear Reactor Technology Park proposal is a highly speculative project - it is a red flag that there are 8 possible reactor designs. This is not a power project; it is a hail mary pass to the failing nuclear industry.

It is a fundamental violation of the Tennessee Valley Authority Act of 1933 mission to be "a national leader in technological innovation, low-cost power, and environmental stewardship" for TVA to waste ratepayers' money on this costly nuclear endeavor which is unlikely to ever generate any electricity. If an advanced reactor is ever completed, it will certainly generate the most expensive electricity in TVA's portfolio. Given recent TVA and US experience with new reactors, it will take until at least 2030 and probably much beyond that to complete any new reactor, advanced or not. It is far more likely that this project will never be completed.

TVA should instead fully commit to putting its considerable expertise and experience in building the clean, renewable energy grid of the future, utilizing a wide range of renewable resources including distributed and utility scale solar, wind, energy efficiency, and energy storage.: https://www.reuters.com/article/us-usa-solar/u-s-solar-industry-predicts-installations-will-quadruple-by-2030-idUSKBN2B80AX?il=0; https://www.cnbc.com/2021/03/16/the-us-solar-industry-posted-record-growth-in-2020-despite-covid-19-new-report-finds.html; https://www.greentechmedia.com/articles/read/so-big-its-boring-the-rise-of-utility-scale-solar

Renewables are now the lowest cost power with the smallest negative environmental impact. Deployment of renewables and energy efficiency measures will also provide a strong economic boost to the Tennessee Valley. Please consider this article: "Every Euro Invested in Nuclear Power Makes the Climate Crisis Worse" into the PEIS: https://www.dw.com/en/nuclear-climate-mycle-schneider-renewables-fukushima/a-56712368

TVA has a history of expensive, failed nuclear projects - much of the current TVA debt was incurred from nuclear projects. TVA has started or planned 19 reactors (plus the Clinch River Breeder Reactor, which was a joint project), only 7 are operating. Cost overruns of multiples of the original estimated costs are the rule, not the exception. TVA should know better by now.

In 2005 the dominant nuclear hope was the new, supposedly improved, and cost-effective Westinghouse AP 1000. TVA was originally slated to be the first US utility to build these (Bellefonte Units 3 and 4). TVA reversed course and the AP 1000 went on to bankrupt Westinghouse while taking its fiscal train wreck to South Carolina and Georgia. The South Carolina reactors were cancelled after some $9 billion was wasted: The failed V.C. Summer nuclear project: A timeline | Choose Energy®. The Georgia reactors are still under construction, more than 5 years behind schedule and the cost has doubled, from $14 to $28 billion: https://cleanenergy.org/blog/vogtle-units-3-4-vcm-23-six-more-months-700-million-more-dollars/ ; Is There More Trouble Ahead for Plant Vogtle Expansion? Experts testify that serious challenges remain - SACE | Southern Alliance for Clean EnergySACE | Southern Alliance for Clean Energy

TVA next pursued small modular reactors, first mPower in 2013 and then NuScale. The mPower project collapsed and NuScale filled the breach. TVA wisely decided to let UAMPS (Utah Associated Municipal Power Systems) lead the way and that project is teetering on the edge of abandonment. Current estimates of the first completed NuScale smr are now 2029, it was originally projected to be 2023, then 2027. There are serious doubts that any will ever be completed. Here is a link to a study of problems

with the UAMPS project by M.V. Ramana:
https://d3n8a8pro7vhmx.cloudfront.net/oregonpsrorg/pages/21/attachments/original/1600287829/EyesWideShutReport_Final-30August2020.pdf?1600287829

Now TVA is contemplating changing course again and spending $4 million on this PEIS. It is entirely inappropriate for TVA to spend ratepayers money on an “advanced” nuclear technology park given the experimental nature of the reactors.

TVA also seems to have a blind eye to the immense negative environmental impacts of nuclear power. The entire nuclear fuel chain, from uranium mining through waste management needs to be recognized as harmful and factored into the analysis of environmental impacts. Nuclear reactors manufacture radiation which can take millions of years to decay into harmlessness for some isotopes. The most dramatic example is the misleadingly named spent fuel. Spent fuel is millions of times more radioactive than new, unused fuel. All the highly irradiated used fuel generated by TVA’s reactors is still onsite at those reactors, in the cooling pools or dry casks.

At this time, after 70 or so years of nuclear power production, the United States has still not figured out what to do with this stuff. This is an immensely complicated issue, and when you dig deep into the details it gets more complicated, with many uncertainties in “aging management”, especially for the high-burnup fuel currently being discharged. We are far from knowing how to safely store or dispose of "spent fuel", how to keep it isolated for a million years: https://www.fairewinds.org/waste-and-spent-fuel.

TVA should be making every effort to stop making more radioactive waste, not looking for ways to create even more. That waste, accumulating in our nuclear communities, is a threat to the region’s future. Current storage technologies have questionable safety protocols and are more of a risk than is acknowledged by TVA, the Nuclear Regulatory Commission, and the nuclear industry:
https://sanonofresafety.org/nureg-2224-high-burnup-storage-and-transport/

The mythology around the benign characteristics of aging used nuclear fuel does not hold up to scrutiny. All of that radiation being contained by 5/8” thick, welded shut stainless steel canisters with no credible method to find cracks in the canisters, no way to fix them, no way to respond to an imminent or active leak, and no current method of moving the waste out of a failing canister into a new one - all this with a Chernobyl explosion’s release amount of cesium in each canister. A breach of one pressurized, helium filled canister will result in massive amounts of radiation leakage and widespread contamination and

disruption: (Please include this and all links in the issues to analyze for this PEIS) Spent Power Reactor Fuel: Pre-Disposal Issues (eesi.org).

The PEIS should consider the full range of environmental and safety issues around the used nuclear fuel for each of the proposed technologies. The consideration must cover both storage and disposal, and fuel aging management issues including deterioration of storage containment, breakdown of fuel structure over time, and the possibility of used fuel reaching spontaneous, uncontrolled fission during storage. Aging management over the course of decades, centuries, millennia, and eons should be carefully considered. The environmental impacts of major accidental releases of radiation from the stored fuel must be detailed for the EIS to be valid. The information available on this link should help with the analyses: https://fsi.stanford.edu/events/critical-analysis-nuclear-waste-management-consequences-small-modular-reactors .

The PEIS should evaluate the environmental impacts for the entire nuclear fuel chain separately for each of the proposed technologies.

The PEIS should consider the environmental and health impacts from uranium mining and milling: please include the following in your evaluation: After Decades of Uranium Mining, Navajo Nation Struggles With Legacy of Contamination - Bing video; The Toxic Legacy of Uranium Mining on Navajo Land: The Disproportionate Struggle of Indigenous Peoples and Water - (savethewater.org); Radioactive Waste From Uranium Mining and Milling | RadTown | US EPA; Uranium Mining and Milling Wastes: An Introduction (wise-uranium.org).

The PEIS should carefully and thoroughly consider the environmental and health impacts of processing the uranium and other fissionable materials into the specific fuel being considered for each of the proposed technologies, such as: high assay low enriched uranium (HALEU), tristructural isotropic (TRISO), and enriched uranium fuel for the light water reactors.

The PEIS should seriously and strenuously consider the environmental impacts of the most serious possible accident for each proposed technology. Past EIS's for TVA nuclear projects have dodged this issue by making the claim that the chance of a serious, beyond design basis accident is so small that it is not necessary to do the work to calculate and postulate the environmental impact of such a disaster. Those words ring hollow in the aftermath of Chernobyl and Fukushima. The Fukushima melt-downs, explosions and massive radiation escape occurred to 3 General Electric Mark 1 reactors, almost identical to TVA's 3 Browns Ferry reactors.

The PEIS must consider the radiation released during normal operation, refueling, maintenance and repairs for each of the proposed technologies.

The PEIS must consider the low-level waste stream that will be created by each of the proposed technologies. This should include pathways for processing, disposal and possible reuse of any radioactive materials generated by the reactor and possible radiation exposure these cause to the public.

The PEIS must consider the eventual retirement and decommissioning of each of the proposed technologies. This should include all possible radiation exposure to the public and the environment from decommissioning.

The PEIS must consider the cumulative radiation load in and around Oak Ridge. Past activities have resulted in an enormous amount of man-made radioactivity that has been released into the environment in the area. This should include analysis of public health records for diseases know to be caused by exposure to radiation, even low doses.
http://www2.clarku.edu/mtafund/prodlib/global_green/Oak_Ridge.pdf

The PEIS should consider the nuclear weapons proliferation implications for each proposed nuclear reactor technology.

The PEIS should consider the increase in background radiation since the dawn of the nuclear age. It should consider the probable increases in background radiation in the future due to continued manufacture of man-made radiation and the inevitable release of some portion of that radiation into the environment world-wide. The PEIS should accurately translate those increases into likely radiogenic disease generation in humans, livestock, and wildlife.

Thank you for this opportunity to help in the scoping process.

William Moll - Conservation Chair - Tennessee Chapter, Sierra Club

Scott Banbury - Conservation Coordinator - Tennessee Chapter, Sierra Club

Don Safer - Know Nukes Chair - Tennessee Chapter, Sierra Club

March 19, 2021

**From:** [redacted]
**To:** nepa
**Subject:** COMMENTS ON PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT-CLINCH RIVER NUCLEAR SITE ADVANCED NUCLEAR REACTOR TECHNOLOGY PARK
**Date:** Saturday, March 20, 2021 12:01:35 AM



**Erwin Citizens Awareness Network, Inc. (ECAN)**
Linda Cataldo Modica, Vice President
[redacted]

19 March 2021

J. Taylor Cates
NEPA Specialist
1101 Market Street
BR 2C-C
Chattanooga, TN 37402

VIA EMAIL: nepa@tva.gov

RE: COMMENTS ON PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT-CLINCH RIVER NUCLEAR SITE ADVANCED NUCLEAR REACTOR TECHNOLOGY PARK

Dear NEPA Specialist:

Erwin Citizens Awareness Network, Inc. (ECAN) is a community group comprised of families who live in or near Erwin &/or who are downwind &/or downstream of BWXT-Nuclear Fuel Services (NFS). Because NFS has had previous contracts with TVA, and because NFS is currently engaged in another agreement to down-blend highly-enriched uranium (HEU) to low-enriched fuel for TVA reactors, ECAN has a keen interest in TVA actions.

Known as the "sieve of the nuclear industry", NFS has been declared by the Agency for Toxic Substances and Disease Registry (ATSDR) as an Indeterminant Public Health Hazard, based on past conditions, even though ATSDR did not evaluate the health impacts of "radioactive materials released from this site". (p.22)

While the ATSDR did not investigate the health impact of specific processes like the HEU-to-LEU down-blending that NFS does for TVA, the National Nuclear Security Administration

(NNSA) has. In its Supplement Analysis on the Disposition of Highly Enriched Uranium, the NNSA found that the increased risk of a Latent Cancer Fatality from the down-blending process to the total offsite population was "1 chance in 71 for NFS". (p.11, Table 4.2-2, footnote c)

Additionally, ECAN has done extensive sampling downwind and downstream from NFS and -- through analysis of soil, water and sediment samples through mass spectrometry by Dr. Michael Ketterer – proved that, in part because NFS processes uranium for TVA reactors, that the Nolichucky River is contaminated with enriched uranium for 95 river-miles downstream of Erwin.

Because a 1-in-71 chance of a cancer death is being caused by the radioactive fuel needs of TVA's nuclear power program, TVA has failed to "foster the social…welfare of the people of the Tennessee Valley".

Because TVA's nuclear fuel supplier has caused widespread offsite contamination downwind and downstream through the down-blending of HEU-to-LEU for TVA 's nuclear power program, TVA has failed to "promote the proper use and conservation of the Valley's natural resources".

Instead, TVA's nuclear program has abused the bodies of our families and northeast Tennessee's drinking water sources – including our wells, springs and, especially, the Nolichucky River -- as sacrificial nuclear waste dumps. Given TVA's past record, ECAN expects that TVA's so-called "advanced" nuclear program will do the same.

Further, because women and girls are disproportionately harmed by radiation exposure yet Nuclear Regulatory Commission (NRC) regulations fail to protect those at greatest risk of cancer and because TVA clearly lacks a safety culture as demonstrated by the bullying that management has exerted when workers raise concerns, ECAN has zero confidence in NRC oversight of the TVA nuclear program or of its fuel supplier's operations either. Nor does ECAN have any confidence in TVA's ability to build and operate its nuclear wish list without worker intimidation and abuse of the public's health and safety.

Finally, in order to "foster the economic welfare of the people of the Tennessee Valley region" TVA must first restore the health of the people already harmed by the air and water borne effluents of its dirty and dangerous nuclear program.

Therefore, Erwin Citizens Awareness Network urges the NO ACTION ALTERNATIVE. Doing no further harm is the only way that TVA will "foster the social…welfare of the people…and promote the proper use and conservation of the Valley's natural resources" as the TVA's mission requires.

Thank you for your serious consideration of these comments.

Respectfully,

Linda Cataldo Modica, Vice President
Erwin Citizens Awareness Network, Inc.

| | |
|---|---|
| **From:** | Diane D"Arrigo |
| **To:** | nepa |
| **Cc:** | Diane D"Arrigo; Mike Keegan |
| **Subject:** | NIRS CNFGL Extension Request and Comments on TVA 2021-0001-0001 Fed Reg 2021-02144 |
| **Date:** | Saturday, March 20, 2021 12:09:09 AM |
| **Attachments:** | NIRS CFNFGL Ext Req Comments on TVA-2021-0001-0001 Fed Reg No 2021-02144 PEIS Clinch River SMNR Park.pdf<br>advanced-isnt-always-better-full.pdf |



**Nuclear Information and Resource Service** and **Coalition for A Nuclear Free Great Lakes**

Extension Request and Comments re TVA-202100001-0001

Programmatic Environmental Impact Statement: Clinch River Nuclear Site Advanced Nuclear Reactor Technology Park

Federal Register Number 2021-02144

Please extend the comment period for 6 months on the future plans for the Clinch River Site.

The COVID-19 pandemic is still requiring significant attention by members of the public, making review of documents and new nuclear plans difficult and extra burdensome. Plans to develop nuclear facilities on this site have been proposed for decades and ultimately not proceeded. Please do not rush another effort at a nuclear for this site through under the cover of the continuing Covid-19 pandemic crisis. Both US House and US Senate letters have called on federal entities to hold off until after the Covid-19 crisis to embark on actions involving public participation and input. By proceeding, TVA is rushing through the first steps of the National Environmental Policy Act process. This is really a national issue affecting Tennessee, the TVA region, the parts of the country affected by the fuel chain necessary to fuel the proposed reactors at Clinch River, the parts of the country affected by the nuclear transportation and those that will be asked to sacrifice to store the long-lasting nuclear waste that would be generated.

There are many interpretations of what 'new' or 'advanced' nuclear reactors are thus commenters need more time to respond to the potential array of ideas being promoted at the site. It will take time to get the information needed to address this. Please review the Union of Concerned Scientists report on Small Modular Reactors (https://www.ucsusa.org/sites/default/files/2021-03/advanced-isnt-always-better-full.pdf) regarding technology, dangers, costs and wastes. It addresses many of the claims made by proponents of nuclear reactors which are not substantiated.

The Scope of the PEIS should consider as better alternatives--renewable, sustainable energy and energy storage. The Scope must assess what will be done with the very long-lasting high-level irradiated ('spent") fuel and low-level waste generated by every one of the nuclear power reactor designs and the routine releases into air and water, worker and public exposures and all of these at every step of the fuel chain to generate the fuel including mining and reprocessing.

We support the NO ACTION alternative especially in light of the inadequate time to fully address the proposed scope--involving one or more reactor designs that are incomplete and not licensed.

We submit for the record the Union of Concerned Scientists' new report on small modular nuclear reactors (https://www.ucsusa.org/sites/default/files/2021-03/advanced-isnt-always-better-full.pdf) and an article submitted by a retired geologist on Canada's proposal for small modular nuclear reactors. (https://www.acadienouvelle.com/mon-opinion/2021/02/24/un-desastre-economique-environnemental-social-et-politique-nous-attend/)***

Thank you for consideration of this urgent request.

Diane D'Arrigo
Nuclear Information and Resource Service

[redacted]

Michael J. Keegan

Coalition for a Nuclear Free Great Lakes

[redacted]

March 19, 2021

****New Brunswick:*

# An economic, environmental,

## social and political disaster looms

*by Mark D. Connell, Retired Geologist, l'Acadie Nouvelle, February 24, 2021*

*https://tinyurl.com/3u6vxr8k*

To the Premier of New Brunswick: your government's announcement to continue funding Small Modular Nuclear Reactor (SMNR) projects in the province is misguided and should be rescinded.

Canada does not produce enriched uranium. The enriched nuclear fuel needed for SMNRs, including plutonium, would, of necessity, be imported from the US nuclear waste stockpiles, even from its nuclear weapons programs.

Importing this material would make us a military and terrorist target. This is not a decision that a wise statesman would make.

The waste generated by SMNR creates several artificial radioactive elements, one of which has a half-life of more than one million years. Plutonium, the element used in the atomic bomb dropped on Nagasaki in 1945, has a half-life of 24,000 years. It will be present and generated both as fuel and as waste.

These diabolically toxic, mutagenic and carcinogenic elements must be kept out of the biosphere for 10 half-lives. This is hardly a good health care system for New Brunswickers, let alone the rest of the biosphere.

Over the past 1.5 million years, the planet has experienced three well-documented ice ages (recent research suggests as many as seven). Over the next 240,000 years (10 plutonium half-lives), there will be at least one ice age and the accompanying continental ice sheet will be up to 2.5 kilometers thick.

The unimaginable weight of these ice caps will push the continental crust into the underlying mantle of the earth for hundreds of meters while eroding and fracturing the surface of the continental crust in the process (the southern limits of the last continental ice cap were south of New York City).

As the earth emerges from an ice age, the ice caps melt, relieving the colossal weight imposed on the earth's crust, which bounces upward in response to the discharge, proliferating new fractures and reactivating faults that become channels for fluids, toxic or otherwise, to rise to the surface. Burial of nuclear waste can in no way safeguard the biosphere during these periods. There is no safe long-term way to dispose of nuclear waste. Once created, radioactive elements cannot be destroyed. There is no long-term technical solution.

We simply have to stop making them. Babcock and Wilcox, who built the Calandria *[reactor vessel]* at the Point Lepreau nuclear station, abandoned SMNRs as uneconomic in 2017. Transatomic Power did the same in 2018, and Westinghouse abandoned it after a decade of research in 2014.

Wall Street and U.S. banks will not finance SMNRs. Why then, Mr. Premier, should it be the role of our government to make New Brunswickers pay the bill if no one else does?

Especially considering that New Brunswick's deficit has already been created in large part by the publicly subsidized cost overruns for the construction and operation of the Point Lepreau nuclear reactor.

Throwing money out the window to pay in perpetuity for the disposal of our own radioactive waste is not a good idea in today's neo-liberal austerity orthodoxy.

Mr. Prime Minister, why would any jurisdiction willingly accept the costs of disposing of U.S. military waste in perpetuity?

If it is electrical energy that we need, wouldn't it be wiser to source it from more environmentally friendly and cheaper hydroelectric sources in Quebec or Labrador?

The entire SMNR project is an economic, environmental, social and political disaster that is just waiting to happen.

New Brunswick must cut its losses and get out of it.

Mark D. Connell, Retired Geologist

Sussex, New Brunswick

**From:** Steven Sondheim
**To:** nepa
**Subject:** No build alternative Peis Clinch River
**Date:** Saturday, March 20, 2021 12:09:52 AM

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No, this project is not necessary and in the wrong direction. Use monies to ramp up EE/Renewable. Retire nucs on a stated timetable and build no new ones

Uneconomical

Unnecessary

Waste-no more

Dangerous-leaks radioactivity, accident

Too late-we can have replacement clean energies-not nuc or fossil-by the time advanced reactors would be ready if ever.

Steven Sondheim
[redacted]

**From:** [redacted]
**To:** nepa
**Subject:** Clinch River Nuclear Reactor Project
**Date:** Thursday, March 25, 2021 4:54:01 PM

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Sorry to have missed your deadline by 6 days. It will give you the excuse to avoid answering these hard questions.

Justify why, with your record of management incompetence and lack of oversight by the TVA board, you are qualified to manage this project. Why, with TVA's history of top management improprities at Watts Bar, complete mismanagement at all management levels of the Kingston ash spill,0 and now an "F" on climate action from the Sierra Club for "talking green to the public but doing little to change practices," do you feel prepared to manage the Clinch River Project? Convince me and the public that you have the management expertise and commitment!

David Reichle
[redacted]