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FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

SINGLE NUCLEAR UNIT AT THE BELLEFONTE PLANT SITE

Jackson County, Alabama

PREPARED BY:
TENNESSEE VALLEY AUTHORITY

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Final Supplemental Environmental Impact Statement

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Proposed project: Single Nuclear Unit at the Bellefonte Plant Site
Jackson County, Alabama

Lead agency: Tennessee Valley Authority

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Abstract: Tennessee Valley Authority (TVA) proposes to complete or construct and operate a single 1,100 to 1,260 megawatt nuclear generating unit at the Bellefonte Nuclear Plant (BLN) site located in Jackson County, Alabama. TVA may choose to complete and operate one of the partially constructed Babcock and Wilcox pressurized light water reactors (B&W) or construct and operate a new Westinghouse AP1000 advanced passive pressurized light water reactor (AP1000). Construction activities would incorporate existing facilities and structures and use previously disturbed ground within the 1,600-acre BLN site where possible. TVA has determined that the existing transmission system would need to be upgraded to prevent overloading while transmitting electricity generated at BLN. TVA would use licensing processes that are already underway for the B&W and AP1000 technologies. TVA has prepared this document to inform decision makers and the public about the potential for environmental impacts that would result from a decision to complete or construct and operate a single nuclear generating unit at the BLN site. This document supplements the original 1974 *Final Environmental Statement, Bellefonte Nuclear Plant Units 1 and 2* (TVA 1974a) for the BLN project and updates other related environmental documents, including the TVA 2008 environmental report entitled *Bellefonte Nuclear Plant Units 3&4 COL Application, Part 3* (TVA 2008a) for the construction and operation of AP1000 units at the BLN site. TVA will use this information and input provided by reviewing agencies and the public to make an informed decision about locating a single nuclear generating unit at the BLN site.

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SUMMARY

PURPOSE OF AND NEED FOR ACTION

Demand for electricity in the Tennessee Valley Authority (TVA) power service area has grown at the average rate of 2.3 percent per year from 1990 to 2008. Although the 2008-2009 economic recession has slowed load growth in the short term and adds uncertainty to the forecast of power needs, economic recovery is expected and future power needs are projected to grow at a rate that requires additional generating capacity. TVA's medium-load forecast of future demands for electricity from its power system has identified the need for approximately 7,500 megawatts (MW) of additional capacity in the 2018-2020 time frame. At the same time, TVA is striving to reduce fossil-fuel emissions and lower its delivered cost of power.

TVA proposes to complete or construct and operate a single 1,100- to 1,260-MW nuclear generating unit at its Bellefonte Nuclear Plant (BLN) site located in Jackson County, Alabama. As part of its proposal, TVA is seeking to assure future power supplies, maximize the use of existing assets and avoid larger capital outlays by using those assets, and to avoid the environmental impacts of siting and constructing new power generating facilities elsewhere. Completing or constructing a single nuclear unit at the BLN site would meet a substantial portion of TVA's future generating needs and provide a low carbon-emitting power source at a significantly lower cost per installed kilowatt than other generation options.

Currently, there are two partially constructed Babcock and Wilcox pressurized light water reactors (B&W) with an expected rated capacity of 1,260 MW each at the BLN site. TVA may choose to complete and operate either one of these partially constructed units (Alternative B) or construct and operate a new Westinghouse AP1000 advanced passive pressurized light water reactor (AP1000) using some of the existing infrastructure (Alternative C). TVA will also consider taking no action at the Bellefonte site (Alternative A). Under either of the Action Alternatives, TVA would use licensing processes that are already underway. TVA currently holds a construction permit for the two B&W units and has applied for a combined (construction and operating) license for two AP1000 units. TVA's current proposal is to complete only one of these units. The considerable work that has been accomplished toward licensing the B&W and AP1000 technologies would reduce the time and cost of bringing a single nuclear generating unit at BLN on line.

The purpose of this final supplemental environmental impact statement (FSEIS) is to inform decision makers, agencies, and the public about the potential for environmental impacts that would result from a decision to complete or construct and operate a single nuclear generating unit at the BLN site. The draft supplemental environmental impact statement (DSEIS) was published on November 4, 2009.

This document supplements the original TVA 1974 *Final Environmental Statement Bellefonte Nuclear Plant Units 1 and 2* (1974 FES) for the BLN project and updates other related environmental documents including the TVA 2008 environmental report entitled *Bellefonte Nuclear Plant Units 3&4 COL Application, Part 3* (TVA 2008a) for the construction and operation of AP1000 units at the BLN site. It also updates the need for power analysis. This SEIS tiers from TVA's *Energy Vision 2020 Integrated Resource Plan* (TVA 1995), a comprehensive environmental review of alternative means of meeting demand for power on the TVA system. In June 2009, TVA announced the preparation of a new Integrated Resource Plan (IRP) to replace *Energy Vision 2020*. The new IRP is

scheduled to be completed in early 2011. Given the long lead time for bringing a nuclear plant on line, completing the SEIS for BLN while simultaneously developing the new IRP will help ensure that a new generating unit could be built in time to meet the projected demand for base load energy.

PUBLIC REVIEW OF THE DRAFT SEIS

The draft supplemental environmental impact statement (DSEIS) was published on November 4, 2009. Notice of Availability of the DSEIS was posted in the Federal Register November 13, 2009 (74 Federal Register 58626). Public comments were solicited until December 28, 2009. During the 45-day DSEIS public review period, TVA received comments from 39 individuals or entities. A public meeting was held on December 8, 2009. In addition to responding to these comments in Appendix C, appropriate revisions were made to the FSEIS in support of the responses.

NEED FOR POWER

Since the release of the DSEIS, changes in planning assumptions have been made as part of the normal business planning cycle. These changes are reflected in an updated load forecast. Additionally plans now include long-term lay-up of 1,000 to 2,000 MW fossil-fueled plants by 2015. The revised high, medium, and low load forecasts all still show the need for additional capacity by 2018-2020. The completion or construction and operation of a single nuclear unit at the BLN site would provide TVA's customers with reduced risk from volatile fuel prices; a supply of reliable, low-cost power from a proven high-energy producing resource; and afford increased operating flexibility in the face of increasing environmental constraints.

TVA has updated the base case in the need for power analysis in this FSEIS to include an Energy Efficiency and Demand Response (EEDR) program that reduces required energy needs by about 5,200 gigawatt-hours by 2019. An Enhanced EEDR program, which about doubles the reduction in energy use of the base case EEDR program in the 2018-2020 time period, also has been studied. With either set of modified assumptions, TVA must still add new generation in the 2018-2020 time frame to balance resources with the projected load requirements.

ALTERNATIVES

TVA considered a number of alternatives to constructing and operating BLN 1&2 in its 1974 FES, including various sources of base load generation and alternative plant locations. Alternative sites and energy options were also included in the 2008 environmental report (TVA 2008a) as part of the combined license application process for locating AP1000 units (BLN 3&4) at the BLN site. In this FSEIS, TVA evaluates three generation alternatives and two transmission alternatives. The generation alternatives are Alternative A – No Action, Alternative B – Completion and Operation of a B&W Pressurized Light Water Reactor, and Alternative C – Construction and Operation of an AP1000 Advanced Passive Pressurized Light Water Reactor. The transmission alternatives include No Action and an Action Alternative. All of these alternatives are within the bounds of alternatives considered in previous environmental reviews, which are incorporated herein by reference. Previous reviews also considered alternatives to nuclear generation, including energy sources not requiring new generating capacity, alternatives requiring new generating capacity, and combinations of alternatives. Alternative sites for additional nuclear generation were also considered. The FSEIS supplements the discussion of energy alternatives in response to comments received on the DSEIS, including additional discussion of renewable energy sources such as biomass, wind, and solar power.

TVA conducted a study of the delivery of power produced from a single nuclear unit at the BLN site and determined that transmission network upgrades would be required to prevent overloading while transmitting electricity generated at BLN. These network upgrades represent the Action Alternative for the transmission system and consist of modifications to 222 miles of existing transmission lines and two existing switchyards. No new transmission lines would be needed under any alternative, and therefore no additional right-of-way (ROW) would be required. The decision whether to approve and fund a single nuclear generating unit would be made first. If either Alternative B (B&W) or Alternative C (AP1000) were selected and implemented, the Action Alternative for the transmission system would be selected. The scope of work for the transmission Action Alternative is the same under Alternatives B and C.

Several evaluations in the form of environmental reviews, studies, and white papers have been prepared for actions related to the construction and operation of a nuclear plant or alternative power generation source at the BLN site. As provided in the *National Environmental Policy Act* (NEPA) implementing regulations (40 Code of Federal Regulations [CFR] Part 1502), this FSEIS updates, tiers from, and incorporates by reference information contained in these documents about the BLN site and about completing or constructing and operating a single nuclear generating unit at the BLN site.

CHANGES IN THE AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Under the No Action Alternative for nuclear generation, TVA would continue to maintain the construction permits for BLN 1&2 in deferred status. In deferred status, any construction activities would be related to maintaining the existing plant infrastructure, including intake and discharge structures, cooling tower, and wastewater system. Under Alternatives B and C, construction activities would incorporate existing facilities and structures and use previously disturbed ground where possible. Both the B&W and AP1000 unit would use the existing intake channel and pumping station, cooling towers, blowdown discharge diffuser, switchyard, and transmission system. Under Alternative B, a partially constructed B&W unit would be completed on previously cleared ground, and minimal new site clearing or grading would occur. The majority of the construction activities on plant systems and components would involve replacement or refurbishment of equipment contained within the current structures. Under Alternative C, the AP1000 unit would be constructed on a new nuclear island located on vacant ground within the BLN project area. Construction of an AP1000 unit and associated structures is expected to require clearing of about 50 acres of forested land, and reclearing and grading of previously disturbed ground.

The FSEIS updates information about the affected environment of the BLN site and the affected transmission lines. Potential environmental impacts of the no action and two nuclear generation alternatives are described in Chapter 3 and summarized in Table S-1 below. Potential environmental impacts of the two alternatives for transmission system upgrades and line reenergizing that would be needed to support the generation Action Alternatives are described in Chapter 4 and summarized in Table S-2 below. TVA would implement various mitigation measures to reduce or avoid environmental impacts under any of the Action Alternatives.

MITIGATION

TVA has identified measures to mitigate the potential environmental impacts associated with completion or construction and operation of a nuclear unit at the BLN site. The following measures supplement those of earlier reviews that either were met during past construction or will be addressed by required permits and authorizations:

- Avoid disturbance of archaeological site 1JA111.
- Take appropriate steps to mitigate potential housing, traffic, and school impacts during plant construction in Jackson County as needed.
- In accordance with the take permit issued by U.S. Fish and Wildlife Service on April 15 2010, provide \$30,000 for research and recovery of pink mucket mussels.
- For Alternative C, purchase wetland mitigation credits at an approved mitigation bank in compliance with a Clean Water Act Section 404/401 permit.
- For Alternative C, mitigate noise impacts through use of noise dampening measures and limit blasting to daylight hours.

Should TVA select Alternative B or C, the following mitigation measures would be implemented to respond to the potential impacts of the proposed transmission system improvements. Prior to implementing any ground-disturbing work, TVA would:

- Survey areas to be disturbed where listed plant species have been previously reported to verify if the rare species are still present in the ROW. The location of any federally and state-listed species resources would be identified on construction plans and avoided during construction activities.
- Survey wetlands in the areas that may be disturbed as a result of upgrading/reenergizing activities. Mitigation measures that avoid, minimize or compensate for impacts to wetlands would be implemented to ensure no significant impacts or loss of wetland function occurs.
- In consultation with the State Historic Preservation Officer (for which the property is located) and other consulting parties, develop and evaluate alternatives or modifications that would avoid, minimize, or mitigate any adverse effects to historic properties.

PREFERRED ALTERNATIVE

TVA's integrated assessment of the two alternatives (completing a B&W unit or constructing an AP1000) has resulted in identifying a preferred project alternative for completing Unit 1 (one of the partially completed B&W units). The assessments conclude that from financial, schedule, and risk-minimization perspectives, this is the preferred generation option. In support of the preferred alternative, TVA also prefers upgrading the transmission systems.

NEXT STEPS

TVA will make a decision on the proposed action no sooner than 30 days after the notice of availability of the FSEIS is published in the *Federal Register*. This decision will be based on the project purpose and need and anticipated environmental impacts, as documented in the FSEIS, along with cost, schedule, technological, and other considerations. To document the decision, TVA will issue a record of decision.

Table S-1. Summary of the Environmental Impacts of the Three Alternatives Under Consideration

Resource	Attribute/Potential Effects	Alternative		
		A - No Action	B – One B&W Unit	C – One AP1000 Unit
Surface Water	Chemical or thermal degradation of surface water quality; changes to hydrology and consumptive use of surface water.	No impacts or changes anticipated.	<p>Temporary and minor impacts from construction.</p> <p>No impacts are anticipated to water supply from plant water use.</p> <p>Near-field and far-field effects (e.g., cumulative) to water quality associated with cooling water discharge are not expected to be significant.</p> <p>Minor impacts from chemical discharges.</p>	<p>Temporary and minor effects from construction.</p> <p>No impacts are anticipated to water supply from plant water use.</p> <p>Insignificant effects on water quality similar to Alternative B, but slightly less due to smaller amount of water withdrawal and blowdown discharge.</p> <p>Minor impacts from chemical discharges.</p>
Groundwater	Chemical impacts to groundwater quality; changes in use of groundwater.	No impacts expected.	No impacts expected to groundwater hydrology or groundwater use on site or locally. Insignificant impacts to groundwater quality. No cumulative effects expected.	As with Alternative B, no impacts expected to groundwater hydrology or groundwater use on site or locally. Insignificant impacts to groundwater quality. No cumulative effects expected.
Floodplain and Flood Risk	<p>Construction or modification to the floodplain.</p> <p>Flooding of the plant site from the river, Town Creek, or Probable Maximum Precipitation (PMP).</p>	<p>No anticipated adverse impacts to the floodplain.</p> <p>All safety-related structures are located above the Probable Maximum Flood (PMF) and PMP drainage levels or are flood-proofed to the resulting levels.</p>	<p>Minor impacts from construction and dredging.</p> <p>All safety-related structures are located above the PMF and PMP drainage levels or are flood-proofed to the resulting levels.</p> <p>No cumulative effects to flood risk.</p>	<p>Minor impacts from construction and dredging.</p> <p>All safety-related structures are located above the PMF and PMP drainage levels or are flood-proofed to the resulting levels. The new administrative building would be located above the 100-year and Flood Risk Profile elevations.</p> <p>No cumulative effects to flood risk.</p>

Resource	Attribute/Potential Effects	Alternative		
		A - No Action	B – One B&W Unit	C – One AP1000 Unit
Wetlands	Destruction of wetlands or degradation of wetland functions.	No impacts.	No impacts.	Impacts to 12.2 acres of wetlands with no net loss of wetland function due to in-kind mitigation within the watershed, No indirect or cumulative impacts expected.
Aquatic Ecology	Destruction of aquatic organisms; degradation or destruction of aquatic habitat.	No impacts.	Minor impacts to benthos from dredging intake channel, to aquatic communities from thermal discharge, impingement, and entrainment. No cumulative effects	Effects similar to Alternative B but slightly less dredging. Impacts from thermal discharge and impingement and entrainment minor and less than Alternative B due to smaller intake water volumes. No cumulative effects.
Terrestrial Ecology	Removal or degradation of terrestrial vegetation, wildlife habitat, and/or wildlife.	No impacts.	Insignificant impacts from minor vegetation clearing. No indirect or cumulative effects expected.	Similar to Alternative B. Minor direct impacts from removal of about 50 acres of forest and native grass. No indirect or cumulative effects expected.
Endangered and Threatened Species	Mortality, harm, or harassment of federally listed or state-listed species including impacts to their critical habitat.	No impacts.	No impacts from site construction or runoff. Adverse direct, indirect, and cumulative impacts to the pink mucket mussel from dredging and towing barges. Minor indirect effects from stress of potential mussel host fish from thermal effluent; negligible effect of impingement/entrainment of potential host fish.	No impacts from site construction or runoff. Little or no impact to Indiana bats from removal of low-quality potential roost habitat with some moderate-quality potential roost trees. Adverse direct, indirect, and cumulative impacts to the pink mucket from dredging and towing barges. Fewer individuals affected than under Alternative B.

Resource	Attribute/Potential Effects	Alternative		
		A - No Action	B – One B&W Unit	C – One AP1000 Unit
				Operational impacts to pink mucket and other aquatic species same as Alternative B.
Natural Areas	Degradation of the values or qualities of natural areas.	No impacts.	No direct or indirect impacts. Minor cumulative effects.	No direct or indirect impacts. Minor cumulative effects.
Recreation	Degradation or elimination of recreation facilities or opportunities.	No impacts.	Minor impacts from construction and operation, noise, and withdrawal of water. No cumulative effects.	Minor impacts from construction and operation, noise, and withdrawal of water. No cumulative effects.
Archaeology and Historic Structures	Damage to archaeological sites or historic structures.	No impacts.	No impacts. Mark and avoid site 1JA111.	No impacts. Mark and avoid site 1JA111.
Visual	Effects on scenic quality, degradation of visual resources.	No additional impact.	Minor, temporary impacts during construction. Minor impact of vapor plume. Little or no additional impacts to scenic quality. Minor cumulative impacts to regional visual setting.	Construction of new buildings offset by removal of existing buildings; construction impacts minor. Minor impact of vapor plume. Little or no additional impacts to scenic quality. Minor cumulative impacts to regional visual setting.
Noise	Generation of noise at levels causing a nuisance to the community.	No impact.	Small to moderate impacts from temporary noise during hydrodemolition and other construction. Minor impacts during operation.	Small to moderate impacts from temporary noise during blasting and other construction. Minor impacts during operation.
Socioeconomics and Environmental Justice	Changes in population, employment, income, and tax revenues. Disproportionate effects on low income and/or minority populations.	No impact. No impact.	No substantial change in population; no significant adverse effects; minor beneficial impacts. No disproportionate impact.	No substantial change in population; no significant adverse effects; minor beneficial impacts. No disproportionate impact.

Resource	Attribute/Potential Effects	Alternative		
		A - No Action	B – One B&W Unit	C – One AP1000 Unit
	Changes in availability of housing.	No impact.	Minor to potential significant adverse impacts during construction; minor impacts during operation. Potentially apply measures to mitigate demand for housing.	Minor to potential significant adverse impacts during construction; minor impacts during operation. Potentially apply measures to mitigate demand for housing.
	Effects on water supply, wastewater, schools, police, fire and medical services.	No impact.	Minor and insignificant with the exception of significant increase in demand for schools during construction; moderate increase in demand for schools during operation.	Minor and insignificant with the exception of significant increase in demand for schools during construction; moderate increase in demand for schools during operation.
	Changes in land use, land acquisition, land conversion or road locations.	No impact.	No change in designated land use. Minor indirect impact from increased residential use.	No change in designated land use. Minor indirect impact from increased residential use.
	Elevated levels of traffic from construction workforce and deliveries.	No impact.	Impacts on transportation corridors from construction workforce and deliveries would be minor on all roads except for County Road 33 where temporary minor to moderate impacts are expected. Operational effects expected to be minor.	Impacts on transportation corridors from construction workforce and deliveries would be minor on all roads except for County Road 33 where temporary minor to moderate impacts are expected. Operational effects would be minor; impacts would be minor.
	Cumulative effects	No impact.	Minor impact, minor cumulative effects.	Minor impacts, minor cumulative effects.

Resource	Attribute/Potential Effects	Alternative		
		A - No Action	B – One B&W Unit	C – One AP1000 Unit
Solid and Hazardous Waste	Generation and disposal of solid and hazardous waste.	No impact related to construction; Minor indirect impact of off-site disposal in permitted facilities.	No direct or cumulative impacts; minor indirect impacts during construction and operation from off-site disposal in permitted facilities.	Quantity of construction waste greater than under Alternative B. No direct or cumulative impacts; minor indirect impacts during construction and operation from off-site disposal in permitted facilities.
Seismology	Seismic adequacy.	No change.	No adverse seismic effects anticipated.	No adverse seismic effects anticipated.
Air Quality	Radiological emissions resulting in increases of air pollutants.	No impacts expected.	Small radiological doses to workers and members of the public from routine radioactive emissions during normal plant operation. Releases would be well below the regulatory limits; impacts are expected to be insignificant. Calculated impacts from design-basis accident releases would be well below the regulatory limit and therefore insignificant.	Impacts would be similar to Alternative B.
	Gasoline and diesel emissions from vehicles and equipment.	No impacts expected.	Minor impacts from vehicular and equipment emissions, controlled to meet applicable regulatory requirements.	Minor impacts from vehicular and equipment emissions, controlled to meet applicable regulatory requirements.
Radiological Effects	Effects to humans and nonhuman biota from normal radiological releases.	No impacts expected.	Annual doses to the public well within regulatory limits; no observable health impacts. Doses to nonhuman biota well below regulatory limits; no noticeable acute effects.	Annual doses to the public well within regulatory limits; no observable health impacts. Doses to nonhuman biota well below regulatory limits; no noticeable acute effects.

Table S-2. Summary of the Environmental Impacts of the Two Transmission Alternatives

Resource	Attribute/Potential Effects	Alternative	
		No Action	Action
Surface Water	Chemical or thermal degradation of surface water quality; changes to hydrology and surface water use.	No impacts.	Minor, temporary impacts during upgrade activities. Minor impacts during routine maintenance. No cumulative impacts.
Groundwater	Chemical impacts to groundwater quality; changes in use of groundwater.	Minor impacts to groundwater quality from ROW maintenance.	Minor impacts to groundwater quality from ROW maintenance.
Aquatic Ecology	Degradation of water quality; destruction of aquatic organisms.	Minor direct and indirect impacts from ROW maintenance. No cumulative impacts.	No impacts from ROW clearing; no additional impacts of ROW maintenance as compared to No Action.
Terrestrial Ecology	Removal or degradation of terrestrial vegetation, associated wildlife habitat, and wildlife.	No local or regional impacts.	Impacts to plants and wildlife on the affected ROWs would be temporary, minor and insignificant.
Endangered and Threatened Species	Mortality, harm, or harassment of federally listed or state-listed species.	No impacts.	Not likely to adversely affect any federally listed species or adversely modify critical habitat.
Wetlands	Destruction of wetlands or degradation of wetland functions.	No impacts.	With avoidance, minimization, and mitigation, no significant impacts are expected.
Floodplains	Construction or modification to a floodplain.	No floodplains affected.	With adherence to Executive Order (EO) 11988, no impacts.
Natural Areas	Degradation of the values or qualities of natural areas.	No impacts.	Minor direct impact to natural areas on ROWs, no impact to natural areas nearby.
Recreation	Degradation or elimination of recreation facilities or opportunities.	No impacts.	Minor impact from refurbishing lines and routine maintenance.
Land Use	Changes in land use and effects to uses of adjacent land.	No changes to current land use.	Minor disruption during upgrade activities.
Visual	Effects on scenic quality, degradation of visual resources.	No impacts.	Minor short-term impacts during construction and minor long-term impacts from taller structures.

Resource	Attribute/Potential Effects	Alternative	
		No Action	Action
Archaeology and Historic Structures	Damage to archaeological sites or historic structures.	No impacts.	Potential for adverse impact to archaeological sites and/or historic structures. Effects would be avoided or mitigated in accordance with the memorandums of agreement (MOAs) developed in consultation with Tennessee, Alabama and Georgia State Historic Preservation Officer(s).
Socioeconomics	Changes, at local and regional scales, in the human population; employment, income, and tax revenues; and demand for public services and housing.	No impacts.	Minor impacts during construction.
Environmental Justice	Disproportionate effects on low income and/or minority populations.	No disproportionate effects.	No disproportionate effects.
Operational Impacts	Potential effects of electromagnetic fields (EMF), lightning strike hazard, electric shock hazard, and generation of noises and odors.	No impacts.	No significant impacts from EMF; no alteration of line grounding, minor noise, no odors.

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ACRONYMS, ABBREVIATIONS, AND SYMBOLS

1974 FES	<i>Final Environmental Statement Bellefonte Nuclear Plant Units 1 and 2</i>
7Q10	Lowest flow over 7 consecutive days that occurs once every 10 years
@	At Symbol, Abbreviation for the Word At
°C	Degree Celsius
°F	Degree Fahrenheit
±	Plus or Minus
§	Section
µg/m³	Micrograms per Cubic Meter
AADT	Average Annual Daily Traffic
AC	Alternating Current
ACSS	Aluminum Conductor, Steel Supported
ADCNR	Alabama Department of Conservation and Natural Resources
ADEM	Alabama Department of Environmental Management
AEA	<i>Atomic Energy Act</i>
AEC	U.S. Atomic Energy Commission
AIA	Authorized Inspection Agency
Ala.	Alabama
ALARA	As Low as Reasonably Achievable
ALDOT	Alabama Department of Transportation
AMA	American Medical Association
ANSS	Advanced National Seismic System
ANO	Arkansas Nuclear One
ANSI	American National Standards Institute
AP1000 Units	Bellefonte Units 3 and 4 or BLN 3&4 (Westinghouse Advanced Passive Pressurized Light Water Reactors)
APE	Area of Potential Effects
APHIS	Animal and Plant Health Information Service
AREOR	Annual Radiological Environmental Operating Report
AREVA	AREVA NP Inc.
ARPA	<i>Archaeological Resources Protection Act</i>
ASME	American Society of Mechanical Engineers
B&W	Babcock and Wilcox
B&W Units	Bellefonte Units 1 and 2 or BLN 1&2 (Babcock and Wilcox Pressurized Light Water Reactors)
BA	Biological Assessment
BEA	U.S. Department of Commerce, Bureau of Economic Analysis
BFN	Browns Ferry Nuclear Plant
BLN	Bellefonte Nuclear Plant
BO	Biological Opinion
BMPs	Best Management Practices
BP	Containment Bypass

BREDL	Blue Ridge Environmental Defense League
BTU	British Thermal Units
CAES	Compressed Air Energy Storage
CCP	Coal Combustion Products
CEQ	Council on Environmental Quality
CE-QUAL-W2	A two-dimensional, laterally averaged, hydrodynamic and water quality model for reservoirs
CESQG	Conditionally Exempt Small Quantity Generator
CFE	Early Containment Rupture Before Core Relocation
CFEL	Early Containment Failure by Leakage
CFER	Early Containment Failure by Rupture
CFI	Early Containment Rupture After Core Relocation
CFL	Late Containment Failure
CFR	Code of Federal Regulation
cfs	Cubic Feet per Second
CI	Containment Isolation Systems Failure
CLWR	Commercial Light Water Reactor
CLWR FEIS	<i>Final Environmental Impact Statement for the Production of Tritium in a Commercial Light Water Reactor</i>
CO₂	Carbon Dioxide
COGEMA	Compagnie Générale des Matières Nucléaires
COL	Combined License
COLA	Combined License Application
COLA ER	<i>Combined License Application Environmental Report</i>
COLA FSAR	<i>Combined License Application Final Safety Analysis Report</i>
CORMIX	Cornell Mixing Zone Expert System
CRP	Conservation Reserve Program
CSP	Concentrating Solar Power
CTBD	Cooling Tower Blowdown
CWA	<i>Clean Water Act</i>
DAW	Dry Active Waste
dB	Decibel
dba	A-weighted Decibel
DBA(s)	Design-Basis Accident(s)
DCD	Design Control Document
DCOP	Delivered Cost of Power
DEIS	Draft Environmental Impact Statement
DO	Dissolved Oxygen
DOE	U.S. Department of Energy
DOI	U.S. Department of Interior
DOT	Department of Transportation
DR	Demand Response
DR/DSM	Demand Response/Demand Side Management

DSEIS	Draft Supplemental Environmental Impact Statement
DSEP	Detailed Scoping, Estimating, and Planning
DSM	Demand-Side Management
DSN	Discharge Serial Number
EAB	Exclusion Area Boundary
ECM&D	Engineering, Construction, Monitoring, and Documentation
EE	Energy Efficiency
EEDR	Energy Efficiency/Demand Response
EF	Enhanced Fujita Scale (used to estimate tornado wind speeds)
e.g.	Latin term, <i>exempli gratia</i> , meaning “for example”
EIS	Environmental Impact Statement
EMF	Electromagnetic Field
Energy Vision 2020 FEIS	<i>Energy Vision 2020 - Integrated Resource Management Plan and Final Programmatic Environmental Impact Statement (TVA 1995)</i>
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPRI	Electric Power Research Institute
EPT	Index for measuring health of benthic macroinvertebrate community (measures Ephemeroptera, Plecoptera, Trichoptera taxa families)
ER	Environmental Report
ERCW	Essential Raw Cooling Water
ESA	<i>Endangered Species Act</i>
ESRP	Environmental Standard Review Plan
ESS	Ecologically Significant Sites
et al.	Latin term, <i>et alii</i> (masculine), <i>et aliae</i> (feminine), or <i>et alia</i> (neutral), meaning “and others”
etc.	Latin term <i>et cetera</i> , meaning “and other things” “and so forth”
et seq.	Latin term <i>et sequential</i> , meaning “and the following one”
FAA	Federal Aviation Administration
FES	Final Environmental Statement
FEIS	Final Environmental Impact Statement or Final EIS
FERC	Federal Energy Regulatory Commission
FRP	Flood Risk Profile
FSA	Farm Service Agency
FSAR	Final Safety Analysis Report
FSEIS	Final Supplemental Environmental Impact Statement
ft²	Square Feet
Ga.	Georgia
gal	Gallon(s)
GCC	Global Climate Change
GHG	Greenhouse Gases
GIS	Geographic Information System
gm/sec	Grams per Second
gpm	Gallons per Minute

Single Nuclear Unit at the Bellefonte Site

GWh	Gigawatt-Hours
HIC(s)	High Integrity Container(s)
HPA	Habitat Protection Area
HUD	U.S. Department of Housing and Urban Development
HVAC	Heating, Ventilation, and Air Conditioning
HVN	Hartsville Nuclear Plant
HWSF	Hazardous Waste Storage Facility
IAEA	International Atomic Energy Agency
IC	Intact Containment
ICRP	International Commission on Radiological Protection
i.e.	Latin term, <i>id est</i> , meaning “that is”
IGCC	Integrated Gasification Combined Cycle
IPCC	Intergovernmental Panel on Climate Change
IPEEE	Individual Plant Examination for External Events
IRP	Integrated Resource Plan
ISFSI	Independent Spent Fuel Storage Installation
kg	Kilogram
km	Kilometer
km²	Square Kilometer
kV	Kilovolt
kW	Kilowatt
kWe	Kilowatt Electric
kWh	Kilowatt-Hour
lb	Pound(s)
lb/hr	Pounds per Hour
Ldn	Day-Night Noise Level
LLRW	Low-Level Radioactive Waste
LLRWPA	<i>Low-Level Radioactive Waste Policy Amendments Act</i>
LOCA	Loss-of-Coolant Accident
LPZ	Low Population Zone
m²	Square Meter
M	Magnitude
MA	Managed Area
MACCS2	MELCOR Accident Consequence Code System
Man-rem	Unit of Radiation Dose to an Individual
Max	Maximum
mbLg	Lg Wave Magnitude
MEI	Maximally Exposed Individual
mG	Milligauss
MGD	Millions of Gallons per Day
MH	Murphy Hill
Min	Minimum

MMI	Modified Mercalli Intensity
MOA(s)	Memorandum(s) of Agreement
MPC	Multipurpose Canister
mph	Miles per Hour
mrad	Millirad
mrem	Millirem
msl	Mean Sea Level
MTU	Metric Ton Uranium
MVA	Megavolts-Ampere
MW	Megawatt
MWa	Megawatt Annual Generation/Annual Hours
MWD	Megawatt-Days
MWe	Megawatt Electric
MWt	Megawatt Thermal
MWh/year	Megawatt Hours per Year
N/A	Not Applicable
NAAQS	National Ambient Air Quality Standards
NCDC	National Climatic Data Center
NEI	Nuclear Energy Institute
NEPA	<i>National Environmental Policy Act</i>
NH₄Cl	Ammonium Chloride
NHPA	<i>National Historic Preservation Act</i>
NIEHS	National Institute of Environmental Health Sciences
No(s).	Number(s)
NOA	Notice of Availability
NOI	Notice of Intent
NO_x	Nitrogen Oxide
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NQAP	Nuclear Quality Assurance Plan
NRC	U.S. Nuclear Regulatory Commission
NRHP	National Register of Historic Places
NRI	Nationwide Rivers Inventory
NSRC	Norfolk Southern Railway Company
NUREG	U.S. Nuclear Regulatory Commission Regulatory Guidance Document
NWI	National Wetlands Inventory
NWP	Nationwide Permit
OSHA	Occupational Safety and Health Administration
Pa	Annual Average Power (MW)
PBN	Phipps Bend Nuclear Plant
PCBs	Polychlorinated Biphenyls
PCP	Process Control Program

Person-rem	Unit of Collective Radiation Dose to a Given Population
PM	Particulate Matter
PM_{2.5}	Particulate matter having a diameter of less than 2.5 microns
PMF	Probable Maximum Flood
PMP	Probable Maximum Precipitation
PNNL	Pacific Northwest National Laboratory
ppm	Parts per Million
PPA	Power Purchase Agreement
PPS	Protection Planning Site
PRA	Probabilistic Risk Assessment
PSA	Probabilistic Safety Assessment
psig	Pound-Force per Square Inch Gauge
PSAR	Preliminary Safety Analysis Report
PRA	Probabilistic Risk Assessment
PV	Photovoltaic
PWR(s)	Pressurized Light Water Reactor(s)
QA	Quality Assurance
Radwaste	Radioactive Waste
RBI	Reservoir Benthic Index
RCRA	<i>Resource Conservation and Recovery Act</i>
REMP	Radiological Environmental Monitoring Program
RFAI	Reservoir Fish Assemblage Index
RIMS II	Regional Input-Output Modeling System Economic Model
ROD	Record of Decision
ROI	Region of Interest
ROS	Reservoir Operations Study
ROS FEIS	<i>Reservoir Operations Study Final Programmatic Environmental Impact Statement (TVA 2004)</i>
ROW(s)	Right(s)-of-Way
rpm	Revolutions per Minute
RV	Recreational Vehicle
SACE	Southern Alliance for Clean Energy
SALP	NRC Systematic Assessment of Licensee Performance
SAR	Sensitive Area Review
SCCW	Supplemental Condenser Cooling Water
SEIS	Supplemental Environmental Impact Statement
SEPA	Southeastern Power Administration
SERC	SERC Reliability Corporation
SFP	Spent Fuel Pool
SGB	Steam Generator Blowdown
SHPO	State Historic Preservation Officer
SNA	State Natural Area
SMZ	Streamside Management Zone

SO₂	Sulfur Dioxide
SOW	Scope of Work
SPCC	Spill Prevention Control and Countermeasure
SQG	Small Quantity Generator
SQN	Sequoyah Nuclear Plant
SRM	Sequatchie River Mile
SRP	Standard Review Plan
SSCs	Structures, Systems, and Components
STO	Saltillo
SWPPP	Storm Water Pollution Prevention Plan
SWA	Small Wild Area
TBD	To Be Determined
TDEC	Tennessee Department of Environment and Conservation
TEDE	Total Effective Dose Equivalent
Tenn.	Tennessee
TCRs	Tree Growth Regulators
TNC	The Nature Conservancy
TPS-TOM	TVA Transmission Operations and Maintenance
TRM	Tennessee River Mile
TVA	Tennessee Valley Authority
TVAPSA	TVA Power Service Area
TWRA	Tennessee Wildlife Resources Agency
U	Uranium
UFC	Uranium Fuel Cycle
UO₂	Uranium Dioxide
U.S.	United States
USACE	U.S. Army Corps of Engineers
U.S.C.	U.S. Code
USGS	U.S. Geological Survey
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
VS	Vital Signs
vs.	Versus
WAW	Wet Active Waste
WBN	Watts Bar Nuclear Plant
WCF	Widows Creek Fossil Plant
WEC	Westinghouse Electric Company
WHO	World Health Organization
WMA	Wildlife Management Area
WOA	Wildlife Observation Area
χ/Q	Atmospheric Dispersion Factors
YCN	Yellow Creek Nuclear Plant

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